

Cognitive and Neural Mechanisms Underlying Comprehension of Legal Language and  
Concepts

by

Joseph Alan Wszalek

A dissertation submitted in partial fulfillment  
of the requirements for the degree of

Doctor of Philosophy

(Neuroscience)

at the

UNIVERSITY OF WISCONSIN–MADISON

2017

Date of final oral examination: August 31, 2017

The dissertation is approved by the following members of the Final Oral Committee:

Lyn S. Turkstra, Professor, Neuroscience Training Program & Communication  
Sciences and Disorders

Mary Halloran, Professor, Neuroscience Training Program

Mike Koenigs, Professor, Neuroscience Training Program

Michele Lavigne, Clinical Professor, University of Wisconsin Law School

Pilar Ossorio, Professor, University of Wisconsin Law School

## Table of Contents

Table of Contents.....	i
Dedication.....	ii
Acknowledgements.....	iii
 <b>Chapter 1</b>	
Introduction.....	1
 <b>Chapter 2</b>	
Manuscript 1: Comprehension of Legal Language in Adults with and without Traumatic Brain Injury.....	32
 <b>Chapter 3</b>	
Manuscript 2: Comprehension of Social-Legal Exchange Rules in Adults with and without Traumatic Brain Injury.....	85
 <b>Chapter 4</b>	
Manuscript 3: Structural and Functional Brain Correlates of Legal-language and Social-Legal Rules .....	123
 <b>Chapter 5</b>	
Conclusion.....	224
 <b>Appendix A</b>	
Conversational Interviews: Self-Reported Legal Knowledge.....	231
 <b>Appendix B</b>	
Policy and Law Publications.....	358

## Dedication

*To my grandfather, whom I never had the good fortune to meet but who was, by all accounts, an exemplary gentleman*

## Acknowledgements

I would like to give the deepest and most sincere thanks to my advisor, Dr. Lyn Turkstra, for a level of support and advocacy far beyond what I deserved; for being not just an exceptional mentor but also an exceptional human being; and, above all, for being the sort of researcher, scientist, clinician, educator, and thinker that I hope to be one day.

I would like to thank my committee (Mary, Mike, Michele, and Pilar), for their roles in helping me create the sort of research I believe this program can represent.

I would like to thank the Neuroscience Training Program and the Neuroscience and Public Policy Program. It's been emotional.

I would like to thank my mom, Nancy. It's not fer me; it's fer me ma.

I would like to thank my dad, Dale. You modeled many of the qualities that allowed me to be as successful as I was.

I would like to thank my grandmothers, Betty and Mary. A strong relationship with you is one of the blessings for which I am most grateful.

I would like to thank my sister, Sarah, and brother, Tim. I am proud to be your siblings.

I would like to thank my cousin, Jack, for sending me those good tunes and funny clips and for being my lifelong cuz.

I would like to thank Danièle. I'm glad I was able to share this experience with you, and I'm looking forward to the many more that are sure to come.

I would like to thank Dr. Erica Richmond. I really cannot emphasize how appreciated all the work you did behind the scenes was and is, but I can say that without your assistance I would not have finished.

I would like to thank Aimee and Annie, for being outstanding student helpers and for being willing and able to help with the more tedious portions of my study's protocol.

I would like to thank the past and present members of the Communication and Cognition Lab. You are, and I hope will continue to be, a wonderful group of colleagues and friends.

I would like to thank Janet Stockhausen. I hope you're enjoying your well-deserved retirement.

I would like to thank Tom, Alicia, and the other members of the UWS-OGC. Your flexibility and accommodation during my employment was very much appreciated.



I would like to thank Prof. David Schultz, for his willingness to get roped into a neuroscience research project.

I would like to thank Csanád and the Center for European Studies für die Mittel, womit ich in Deutschland studieren konnte.

I would like to thank my various sources of funding, including the US Department of Education and the Wisconsin Alumni Research Fund. I like to think it was money well spent.

I would like to thank the Wisconsin Criminal Jury Instructions Committee, and the various judges who invited me into their courts. Your support of data-driven, humanistic research does you credit.

I would like to thank Connie Bettin, for being a great mentor, a great person, and for showing me how to get things done.

I would like to thank Lisa Duffy (aka “Boss”), who gave me a much-needed opportunity to define myself and my professional goals.

I would like to thank C.P., for helping me sort out all that DIPA nonsense. You’re almost done, man.

I would like to thank the swim instructors at Pinnacle. Tuesday/Thursday Masters class gave me that good cardio workout for much of my schooling.

I would like to thank Jesse, for asking an important question: “Do you want to be someone’s son, or do you want to be number one?”

I (and my core and balance) would like to thank the instructors and staff at Bliss Flow for keeping the Power Flow going.

I would like to thank Mrs. Fay Marchant. The musical gifts you gave to me are inseparably woven into the rest of my life.

I would like to thank Coach Gatzke. I’m still running.

I would like to thank DJ Okawari, for dropping “Compass” right before my birthday so I could hear those beats.

I would like to thank blueberries, for being nutritious and delicious.

Finally, I would like to thank all the other teachers, coaches, and mentors I’ve had throughout my life. I want you to know that you made a difference.

This work was supported by: NICHD/NCMRR award number R01 HD071089; US Dept. of Education award numbers P015B100189 and P015B140126; WARF Interdisciplinary award number MSN1177080; the University of Wisconsin–Madison’s Center for German & European Studies; and the Wisconsin Idea Scholars Endowment.

## **Overall Introduction**

*During his observations of the American democratic milieu nearly two centuries ago, Alexis de Tocqueville noted: “Social condition is commonly the result of circumstances, sometimes of laws, oftener still of these two causes united.” Few aspects of modern society better illustrate that observation’s shrewdness than the experiences of individuals with cognitive or mental disorders within legal establishments. While incarcerated or supervised populations show elevated rates of conditions ranging from psychosis to language disorders [1-5], one of the most worrisome trends is the high rate of traumatic brain injury (TBI). Prevalence estimates for TBI in offenders range from 20% to as high as 100% [6-10], so even conservative estimates suggest that TBI is the norm rather than the exception. Although these data do not support a causal relationship between TBI and legally proscribed behavior, and although there are other variables that likely influence an individual’s legally implicating actions, it is undeniable that TBI factors into the calculus of legal outcomes for thousands of individuals worldwide.*

*As de Tocqueville’s observation suggests, focusing on only a scientific understanding of TBI likely limits the ability to address this complex social problem. An approach that eschews scientific data to rely solely on a legal framework is equally untenable. An interdisciplinary strategy that synthesizes the scientific “circumstances” and the law will be better equipped to understand and improve the social-legal circumstances of individuals with TBI. The question my thesis begins to answer, therefore, is: how can scientific knowledge about TBI and governing legal standards, “two causes united,” be used to more accurately and validly assess the social-legal condition that individuals with TBI may face? The findings described by my research advance scientific*

*understanding, inform legal application, and further the Neuroscience & Public Policy Program's admirable and progressive goal of producing scholarship (and scholars) that is truly and legitimately multi-disciplinary.*

## **I) Background**

### **A. Traumatic Brain Injury**

TBI, “the most complex disease of our most complex organ,”<sup>1</sup> is the disruption of normal brain function caused by an external force [11]. At the time of the initial injury, TBI is assessed and scored using the Glasgow Coma Scale (GCS) [12]. This scale rates the patient in three categories (eye response, motor response, and verbal responses), with higher scores indicating a less-severe injury. A combination of GCS scores and other injury parameters are used to categorize TBI severity as “moderate-to-severe” or “definite,” “mild” or “probable,” and “symptomatic” or “possible” [13]. Although outcomes are heterogeneous within each of these categories, moderate-to-severe TBI is regularly associated with more pronounced cognitive and sensorimotor impairments and poorer recovery trajectories [14].

TBI causes primary, mechanical damage (e.g., axonal shearing, contusions, and haemorrhages) and secondary, biochemical damage (e.g., excitotoxicity, ischaemia, apoptosis, and inflammation) [15-17]. This damage is diffuse and is implicated in whole-brain disruption of neural function. As recently identified by Bigler et al. (2016), and in Hayes et al. (2016), TBI should best be considered as a disorder of neuroconnectivity, with disrupted neural networks serving as the link between neural damage and human behavior [17, 18] **(Figure One)** Data from functional and structural connectomics

---

<sup>1</sup> CENTER-TBI, available at <https://www.center-tbi.eu/project/background>.

suggest that even relatively well-delineated lesions disrupt neural function within networks that drive attention, executive control, and resting brain activity [17, 18], so the importance of examining the relationship between TBI (at the systems level) and behavior is paramount.

Because TBI can cause pervasive neurological disruption, individuals with TBI can suffer a range of psychological and cognitive sequelae. Individuals with TBI demonstrate impairments in lower-level functions, such as working memory and memory storage [19, 20], processing speed [21-24], and perceptual organization [25]; and in higher-level functions, such as executive functions [26] and social communication [27]. Among these impairments are deficits in language. Individuals with TBI show slower processing times for individual words [28], make more inference errors [27], and demonstrate poorer understanding of gist-level meaning [29]. It appears that there is a link between the distributed neurological damage in TBI and impairments in distributed cognitive functions; how TBI affects an individual's ability to process complex social-legal language, however, remains unclear.

### **B. The Brain and Language**

Any investigation of language and language comprehension must begin with a consideration of the neural and cognitive bases of language and language comprehension. Unlike sensory mechanisms with consistent, well-defined neural architecture (e.g., the primary visual cortex [30]), however, language is a complex, distributed function rooted in neuroarchitecture throughout the brain and [31-34]; consequently, while it is crucially important to note the anatomy of language, it is equally important to understand the components of language as a gestalt behavior. Therefore, this review will summarize

evidence to describe both areas of the brain likely recruited during language comprehension and the cognitive framework that likely represents the process through which humans mentally create comprehension.

### **1. Where does the brain do language comprehension?**

The traditional conceptualization of the brain's language network was a simple model in which language was localized to two cortical regions in the left hemisphere: the inferior frontal gyrus, corresponding to Brodmann's Areas 45 and 46, controlled speech and language production; while the posterior region of the superior temporal gyrus, Brodmann's Areas 21 and 22, controlled language understanding [35, 36]. The arcuate fasciculus, a white-matter tract within the superior longitudinal fasciculus, connected these two regions to complete the model [31, 37-39].

This framework has given way to the current network model, which conceptualizes language as a distributed function that recruits cortical areas throughout the neocortex [31, 40-48]. Particularly informative for this new conceptualization are neuroimaging data, which allow for a more sophisticated and precise mapping between neurological structures and language functions. Recent, extensive reviews of functional imaging data (both PET and fMRI) revealed broad recruitment of left-hemisphere areas during spoken and written language [32, 45]. These areas were: medial and superior temporal gyri, from the anterior pole to the posterior temporal-parietal junction (TPJ); ventral and posterior portions of the inferior frontal gyrus (partes orbitalis, triangularis, and opercularis); areas of the cortex corresponding to the TPJ, including (the angular gyri); pre-motor areas in the precentral gyrus; and primary sensory areas within the sylvian fissure (auditory) and occipital lobe (visual) [32, 45]. These areas correspond to a

suite of functional aspects of language, ranging from the primary sensory functions of hearing or seeing words to word production to semantic integration. In addition to the left hemisphere, some corresponding areas in the right hemisphere appear to be recruited during language functions: in particular, the inferior frontal gyrus and TPJ/parietal areas in both hemispheres are on-line during language comprehension and production [32, 45].

Neural activity underlying language is not confined to the cortical areas just described, however. Functional neuroimaging data suggest that language comprehension also recruits sub-cortical structures (the basal ganglia and the thalamus) as well as regions of the cerebellum, particularly the regions corresponding to lobules VI, VII, and VIII [32, 45]. On a more cellular level, findings from experiments using event-related potentials (ERP) suggest that two ERP components are closely related to language. N170, a negative-going component lateralized to the left hemisphere, appears to be a neural marker of language decoding. N400, a negative-going component over the central-parietal cortex, appears to be a neural marker of language “meaning” implicated in both language production and comprehension [49-52].

Imaging data clearly indicate that language is a distributed function that recruits many areas within the brain. This thesis focuses on the areas of the brain recruited during language comprehension, which have been operationalized as the Extended Language Network (ELN) [40, 41] (**Figure Two**). Researchers have identified ELN areas using experimental designs that create contrasts between brain responses to increasingly complex linguistic stimuli. Areas of cortical activity that differ significantly between “lower”-level language stimuli (e.g. text stimuli) and “higher”-level language stimuli (e.g., complete, logical sentences) are assumed to be associated with language

comprehension. In a meta-analysis of language comprehension imaging studies, Ferstl et al. used an activation likelihood estimation (ALE) design to create four contrasts of language comprehension [40]. The first contrast compared language stimuli to resting baseline. The second contrast compared language stimuli to non-language stimuli to account for the effects of language. The third contrast compared coherent text to incoherent text to account for language coherence. The fourth and final contrast compared “special” language (i.e., non-literal language such as metaphor) with literal language to account for language comprehension. This analysis revealed eight regional coordinates associated with language comprehension (see Figures 1 and 2). [40]. The coordinates correspond to cortical areas in the amTG in both hemispheres, the TPJ in the right hemisphere, and IFG/PFG in both hemispheres. The authors noted that the variety of tasks and methods represented within the meta-analysis prevented them from attributing specific “subprocesses” of language comprehension to ELN; nevertheless, they suggested that these areas comprised the ELN and were all associated with language comprehension.

Recent data from more sophisticated fMRI analyses confirm that areas within the amTG, the IFG, and the TPJ are likely part of the ELN and that these cortical areas are recruited during language comprehension. In 2013, Abrams et al. [44] used both univariate and multivariate analyses to assess whether areas of inferior-frontal and parietal cortex were preferentially active during comprehension of speech versus unintelligible speech. The univariate analysis showed statistically significant increases in signal only in the anterior/posterior STG (corresponding to auditory association cortex). The multivariate analysis, however, identified increases in signal within areas associated



with the ELN and language comprehension, including areas in the anterior middle temporal gyrus [amTG], posterior middle temporal gyrus [pmTG], and frontal gyri / prefrontal cortex [FG/PFC] (**Figure 3**). The authors also computed functional, left-hemisphere connectivity among the five identified ROIs (amTG, pmTG, inferior frontal gyri [IFG], aTPJ, pTPJ), and found that nine of the ten connections were significantly linked during the speech condition. Importantly, the authors suggested that the MVPA analysis demonstrated greater convergence between activity patterns associated with language discrimination (i.e., intelligible vs. unintelligible words) and language comprehension [44], one of the shortcomings identified by Ferstl et al. during their earlier analyses. These data support both the cortical composition and the functional recruitment of the ELN during language comprehension, and are consistent with findings of the meta-analyses by Price [32, 45], which suggest that the amTG, the TPJ, and the inferior frontal gyrus are all recruited during “semantic”-level language comprehension.

The N400, the ERP component identified as a consistent marker of language functions, appears to specifically mark language comprehension [50-54]. For example, Mossbridge et al. (2013) averaged ERP recordings across the entire scalp and found that “good” comprehenders showed current sinks across the frontal areas of the cortex (possibly corresponding to the IFG and amTG) when comprehending language [50]. Similarly, several studies [52, 55, 56] have established a causal relationship between N400 strength and the semantic coherence of language stimuli, suggesting that N400 activity is associated with the mental process of integrating information into comprehension. These results directly link neuronal activity in areas putatively associated

with language comprehension to behavioral results on language-comprehension tasks, which further supports a language-comprehension role for these brain regions.

In further support of the hypothesis that language comprehension is a distributed function, Turken et al. [31] examined the functional and anatomical connections of cortical areas implicated in language comprehension and showed that language comprehension recruits an extensive set of white-matter pathways. The researchers selected six ROIs implicated in language comprehension (**Table 1**). Turken et al. mapped the functional and structural connectivity of these six ROIs and revealed that these regions were associated with six long-distance white-matter pathways: the arcuate fasciculus (AF), the interior occipitofrontal fasciculus (IOFF), the inferior longitudinal fasciculus (ILF), the middle longitudinal fasciculus (MdLF), the uncinate fasciculus (UF), and the corpus collosum (CC). The researchers interpreted their results as evidence that language is driven by a bilateral temporo-parieto-frontal network, and noted that their findings were consistent with an earlier meta-analysis of fMRI studies of language (comprehension) processing [31]. Interestingly, these data are consistent with portions of the meta-analysis results by Price [32, 45]; for example, the IOFF passes between the insula and the putamen, which could explain how the basal ganglia connect to the cortical language network.

In conclusion, language and language comprehension likely recruit an “extended language network” comprising cortical areas in the IFG, (a)mTL, TPJ, and numerous white-matter pathways, both longitudinal (IOFF, mdLF, and ILF) and more local (UF, CC, AF). Because these findings point to a distributed network that recruits broadly distributed anatomical and functional regions of the brain during language

comprehension, it is reasonable to hypothesize that TBI causes deficits in language comprehension by disrupting functional and anatomical integrity throughout the ELN.

## **2. How does the brain do language comprehension?**

Computational models are the primary method of characterizing cognitive processes involved in language comprehension [57]. Over the past four decades, many researchers have proposed conceptual models in order to describe functional and theoretical aspects of comprehension [58-62]. Arguably the most influential of these models was Kintsch and van Dijk's Construct-Integration ("CI") model [63-65]. The CI model describes an iterative process through which comprehension is "constructed" from information in the current text and any related knowledge and then "integrated" across a network of cognitive activity in order to form a coherent whole [57, 64].

The CI model assumes a neural network<sup>2</sup> that comprises nodes and links. Nodes represent words, propositions, and concepts, while links represent the relationships among the nodes (e.g., predicates, causal connections, and verbs) and the strength of those relationships [57, 65]. Integration refers to the process by which related nodes in the network are activated while unrelated nodes are deactivated, until the network "settles" at a final, integrated outcome based on the strengths of the links. As part of the activation and integration process, the comprehending individual makes inferences to link the current text or discourse to any related background knowledge. These inferences allow the comprehending individual to resolve implicit or explicit gaps in the text or discourse and facilitate network integration [67-71]. The integrated network output of current

---

<sup>2</sup> As a form of neural-network models, the CI model uses terminology originally borrowed from neuroscience [66] J.A. Stegemann, N.R. Buenfeld, A Glossary of Basic Neural Network Terminology for Regression Problems, *Neural Computing & Applications*, 8 (1999) 290-296. These terms are used only in a conceptual manner and do not suggest any information about the neurological structure.

information, prior information, and inferences is the “situation model,” so called because it represents a real-life situation described by the text that forms the basis of the comprehending individual’s mental representation [57, 65, 67, 68].<sup>3</sup>

Computational models generally make a number of assumptions about their underlying cognitive processes. First, the models assume the existence of a connectionist architecture, in which text information, underlying meaning, prior knowledge, and inferences all activate in the network in parallel [57, 64].<sup>4</sup> Second, the models assume that spreading activation will activate related nodes to varying degrees based on the various strengths or values of the links in the network; i.e., nodes with higher activation will be favored while nodes with less activation will be rejected.<sup>5</sup> Third, the models assume that the spreading network activation will settle when it converges on an activation pattern of the highest overall activated nodes. So, the comprehending individual’s network activation will settle when the overall activation pattern for any given sample of language is at that individual’s “optimal” activation based on the textual information, any available background information, and any inferences. These assumptions suggest that a comprehending individual will activate nodes in the network based on the ideas, concepts, and words in the current text; related knowledge or information; and inferences; and that this activation will spread based on the strengths of the links between those nodes until the system settles on a final, integrated output.

---

<sup>3</sup> Put more simply, the situation model is the mental picture of a comprehended piece of language.

<sup>4</sup> For example, when a comprehending individual reads the sentence, “you have the right to remain silent,” nodes within the network that correspond to the textual information, the underlying meaning, any prior knowledge about the right to remain silent, and any inferences (e.g., a courtroom, police interrogation, you’ve been arrested, cop shows) all activate together.

<sup>5</sup> For example, when a comprehender reads the sentence, “you have the right to remain silent,” the spreading activation for “right” will be higher for concepts like “justice” or “law” and lower for concepts like “left” and “correct.”

Two other assumptions are particularly important in the contexts of legal-language comprehension. First, language-comprehension models assume that during language comprehension some cognitive processes are either automatic (e.g., lower-level language processes such as parsing speech sounds and semantic mapping) or effortful (e.g. executive functions). Second, the language-comprehension model is subject to memory constraints as activated concepts are integrated within the network [57]. The CI model assumes, therefore, that the comprehender is able to read the text or hear the speech, automatically decode the words in the sentence, and focus attention on the sentence. Additionally, the comprehender will be limited by his or her memory capacity as he or she constructs the situation model and completes the lower-level language processes. The assumption that lower-level cognitive processes are automatic and intact is important, particularly because the construction of a situation model may be an effortful, non-automatic task [68].

Additional characteristics of the situation model are worth noting. As summarized in Zwann and Radvansky (1998), situation models have “dimensions” that represent features of a language’s content, such as time, causation, intentionality, and protagonist perspective [72]. Although relationships among these dimensions (both theoretically and as represented by the strength of the links in the CI model network), and the degree to which they are all balanced within a situation model, can all vary, in all cases the construction of a “multidimensional” situation model adds cognitive demands [73, 74]. For example, the affective components of these dimensions (for, e.g., the protagonist or

the intent dimension),<sup>6</sup> and the affective features of stored memory in the form of background knowledge and inferences, both suggest a role of cortical areas such as the vmPFC and the extended amygdala complex in language comprehension [41]. Data from clinical research further suggests that areas of the brain implicated in emotional processing (such as the vmPFC) [75] and cognitive processes implicated in emotional processing (such as theory of mind) [76] are recruited during situation-model construction.

Language “genre” is another likely aspect of situation-model building [57, 77]. For the purposes of this work, genre refers to the context in which language is being used: common examples are narrative, exposition, and procedure [77]. Genre likely influences how a text is comprehended, and what the goals of the comprehension are; consequently, it likely influences language comprehension at every stage along the situation-model building process. Some researchers have suggested that the right hemisphere plays a role in “priming” or “filtering” network activation based on genre [78]; consequently, language genre is another aspect of situation-model building that may influence patterns of activity within and among recruited cortical areas.

Regardless of the specific theory or model used to describe situation models, researchers generally agree that the ultimate goal of language comprehension is to use language as a set of instructions on how to construct a mental representation of the described situation [58, 64, 72]. Consequently, language comprehension is less a process of creating mental representations of the specific language sample itself and more a

---

<sup>6</sup> For the protagonist dimension, affective components could represent the emotions of the protagonist; in some cases, the protagonist is the comprehender himself or herself. Intent dimensions would represent the goals or purpose of the language, the protagonist, or the other actors.

process of using the language to create a global workspace–esque mental representation of the comprehended language’s content.

To summarize, language comprehension recruits a complex anatomy, likely including the ELN, and a complex cognitive mechanisms, the situation model, in order to allow people to extract meaning from language. This conceptual and biological framework is crucial to accurately understand not just the functional but also the practical consequences of language use, particularly in contexts where language comprehension is necessary for successful social interactions, such as the law.

### **C. Language Comprehension within the Law**

Language –based discourse dominates modern legal systems, but a growing corpus of research now suggests that notoriously obtuse “legalese” is prohibitively difficult to comprehend. Almost all research has been done on Miranda warnings, arguably the canonical example of legal language, but the findings show almost universally that individuals confronted with Miranda warnings demonstrate not only poor comprehension (i.e., the ability to understand the meaning of the Miranda warnings’ language) but also poor reasoning (i.e., the ability to use understanding to make decisions) when presented with language derived from specific legal rules. [79-85]. Importantly, these findings revealed considerable variability in populations that are either at-risk or overrepresented within the legal system, including young adults with specific language impairments [86], adults with intellectual disabilities[87], and adult psychiatric patients [88].

Even though TBI is increasingly viewed as a risk factor for undesirable outcomes within the legal system, [6-9], legal-language comprehension has not been investigated in

adults with TBI. Given the deficits that individuals with TBI are known to demonstrate, the complex nature of language comprehension, and the fundamental importance of successful comprehension within (at least the United State's) procedural and substantive rights [89], studies that explore the relationship between TBI, cognition, language, and the law will address a pressing need both within the scientific literature and legal data-driven policy. Additionally, even though Miranda warnings are a canonical example of legal language, they represent only one instance of language that an individual within the US legal system would likely encounter. Stimuli based on other examples of legal language would provide a broader set of experimental findings on the comprehensibility of legal languages.

In conclusion, this review of research in the areas of language comprehension and TBI suggest the following: even though a cognitive and anatomical framework for language comprehension has been proposed, and even though language deficits post-TBI are well classified, the way in which language comprehension and TBI interact within the context of legal language is unclear. Other than numerous studies of Miranda warnings, the field lacks an integrated study of legal-language comprehension in adults with TBI that examines both the cognitive and the anatomical bases of language comprehension using stimuli designed to capture additional examples of legal language. Not only will these considerations expand the field's (and the law's) understanding of how adults with TBI comprehend legal language, it will also produce results that are representative of an integrated endeavor between scientific and legal discipline.



## **II) SUMMARY & RATIONALE FOR STUDY**

Language comprehension is a complex cognitive phenomenon that likely arises both from an Extended Language Network of anatomical structures and from a cognitive architecture that allows for the creation of situation models. Individuals with TBI demonstrate deficits in these cognitive mechanisms, and the diffuse damage often observed after TBI suggests that injury to the structure of the ELN, and the disruption of cognitive mechanisms that rely on healthy whole-brain anatomy, could in part explain the behavioral deficits. Despite the growing acceptance that TBI is a risk factor for negative outcomes within the legal system, however, and despite considerable evidence to suggest that legal language is an especially challenging category of language, there are no studies investigating the interactions among TBI, language comprehension, and language specific to legal contexts. Describing the cognitive and anatomical mechanisms that underlie the comprehension of legal language in adults with TBI is important for two main reasons. First, language comprehension is a crucial component of meaningful participation within the legal system, a participation that could risk ethical or legal consequences if impaired by language-comprehension difficulties [89, 90]. Second, TBI is likely a risk factor within the legal system [7-9], and a better understanding of the interaction between TBI and legal-language comprehension could identify findings with direct translational value.

To address these gaps in knowledge about legal-language comprehension in adults with TBI, the overall aim of this study was to identify cognitive and neural mechanisms that underlie the comprehension of language derived from common legal contexts. Participants completed validated neuropsychological tests, in particular

working-memory and processing-speed tests from the Wechsler Adult Intelligence Scale [91], as well as two experimental tests of legal-language comprehension: one, a forced multiple-choice test modeled on Pearson's Clinical Evaluation of Language Fundamentals [92]; and the other, a Wason selection test of logical reasoning [93, 94].

Specific aims were as follows:

- **AIM ONE:** To compare comprehension of legal language between individuals with moderate-to-severe TBI and uninjured comparison individuals
- **AIM TWO:** To compare comprehension and reasoning of legal-language rules between individuals with moderate-to-severe TBI and uninjured comparison individuals.
- **AIM THREE:** To compare behavioral outcomes from Aims One and Two to functional and anatomical neuroimaging measures

## References

- [1] S. Fazel, K. Seewald, Severe mental illness in 33,588 prisoners worldwide: systematic review and meta-regression analysis, *Br J Psychiatry*, 200 (2012) 364-373.
- [2] S. Fazel, J. Danesh, Serious mental disorder in 23 000 prisoners: a systematic review of 62 surveys, *The Lancet*, 359 (2002) 545-550.
- [3] P. Snow, M. Powell, Youth (in)justice: Oral language competence in early life and risk for engagement in antisocial behaviour in adolescence, *Trends & issues in crime and criminal justice*, 435 (2012) 1-7.
- [4] P.C. Snow, M.B. Powell, D.D. Sanger, Oral Language Competence, *Young Speakers, and the Law, Language, Speech, and Hearing Services in Schools*, 43 (2012) 496-506.
- [5] P.C. Snow, M.B. Powell, Oral language competence in incarcerated young offenders: links with offending severity, *Int J Speech Lang Pathol*, 13 (2011) 480-489.
- [6] W.H. Williams, G. Cordan, A.J. Mewse, J. Tonks, C.N. Burgess, Self-reported traumatic brain injury in male young offenders: a risk factor for re-offending, poor mental health and violence?, *Neuropsychol Rehabil*, 20 (2010) 801-812.
- [7] S. Fazel, P. Lichtenstein, M. Grann, N. Langstrom, Risk of violent crime in individuals with epilepsy and traumatic brain injury: a 35-year Swedish population study, *PLoS Med*, 8 (2011) e1001150.
- [8] T.J. Farrer, D.W. Hedges, Prevalence of traumatic brain injury in incarcerated groups compared to the general population: a meta-analysis, *Prog Neuropsychopharmacol Biol Psychiatry*, 35 (2011) 390-394.
- [9] T.J. Farrer, R.B. Frost, D.W. Hedges, Prevalence of traumatic brain injury in juvenile offenders: a meta-analysis, *Child Neuropsychol*, 19 (2013) 225-234.

- [10] E. Durand, L. Watier, A. Lecu, M. Fix, J.J. Weiss, M. Chevignard, P. Pradat-Diehl, Traumatic brain injury among female offenders in a prison population: results of the FleuryTBI study, *Brain Behav*, 7 (2017) e00535.
- [11] C.f.D. Control, *Traumatic Brain Injury and Concussion: Basic Information*, 2016.
- [12] G. Teasdale, J. B., Assessment of coma and impaired consciousness: a practical scale, *Lancet*, 2 (1974) 81-84.
- [13] J.F. Malec, A.W. Brown, C.L. Leibson, J.T. Flaada, J.N. Mandrekar, N.N. Diehl, P.K. Perkins, The mayo classification system for traumatic brain injury severity, *J Neurotrauma*, 24 (2007) 1417-1424.
- [14] T. Babikian, R. Asarnow, Neurocognitive outcomes and recovery after pediatric TBI: meta-analytic review of the literature, *Neuropsychology*, 23 (2009) 283-296.
- [15] M.W. Greve, B.J. Zink, Pathophysiology of Traumatic Brain Injury, *Mount Sinai Journal of Medicine*, 76 (2009) 97-104.
- [16] C. Werner, K. Engelhard, Pathophysiology of traumatic brain injury, *Br J Anaesth*, 99 (2007) 4-9.
- [17] E.D. Bigler, Systems Biology, Neuroimaging, Neuropsychology, Neuroconnectivity and Traumatic Brain Injury, *Front Syst Neurosci*, 10 (2016) 55.
- [18] J.P. Hayes, E.D. Bigler, M. Verfaellie, Traumatic Brain Injury as a Disorder of Brain Connectivity, *J Int Neuropsychol Soc*, 22 (2016) 120-137.
- [19] J. Sandry, J. DeLuca, N. Chiaravalloti, Working memory capacity links cognitive reserve with long-term memory in moderate to severe TBI: a translational approach, *J Neurol*, 262 (2015) 59-64.

- [20] J.L. Mathias, P. Wheaton, Contribution of brain or biological reserve and cognitive or neural reserve to outcome after TBI: A meta-analysis (prior to 2015), *Neurosci Biobehav Rev*, 55 (2015) 573-593.
- [21] A.R. Dymowski, J.A. Owens, J.L. Ponsford, C. Willmott, Speed of processing and strategic control of attention after traumatic brain injury, *Journal of Clinical and Experimental Neuropsychology*, 37 (2015) 1024-1035.
- [22] K.L. Felmingham, I.J. Baguley, A.M. Green, Effects of diffuse axonal injury on speed of information processing following severe traumatic brain injury, *Neuropsychology*, 18 (2004) 564-571.
- [23] K.A. Frencham, A.M. Fox, M.T. Maybery, Neuropsychological studies of mild traumatic brain injury: a meta-analytic review of research since 1995, *J Clin Exp Neuropsychol*, 27 (2005) 334-351.
- [24] J.L. Mathias, P. Wheaton, Changes in Attention and Information-Processing Speed Following Severe Traumatic Brain Injury: A Meta-Analytic Review, *Neuropsychology*, 21 (2007) 212-233.
- [25] T.L. Costa, A.L.C. Zaninotto, G.G. Benute, M.C.S. De Lucia, W.S. Paiva, J. Wagemus, P.S. Boggio, Perceptual organization deficits in traumatic brain injury patients, *Neuropsychologia*, 78 (2015) 145-152.
- [26] D.T. Stuss, Traumatic brain injury: relation to executive dysfunction and the frontal lobes, *Curr Opin Neurol*, 24 (2011) 584-589.
- [27] L.J. Byom, L. Turkstra, Effects of social cognitive demand on Theory of Mind in conversations of adults with traumatic brain injury, *Int J Lang Commun Disord*, 47 (2012) 310-321.

- [28] K.C. Russell, P.M. Areth, J.M. Scanlon, L. Kessler, J.H. Ricker, Hemispheric and executive influences on low-level language processing after traumatic brain injury, *Brain Inj*, 26 (2012) 984-995.
- [29] S. McDonald, Exploring the Process of Inference Generation in Sarcasm: A Review of Normal and Clinical Studies, *Brain and Language*, 68 (1999).
- [30] S. Srinivasan, C.N. Carlo, C.F. Stevens, Predicting visual acuity from the structure of visual cortex, *Proc Natl Acad Sci U S A*, 112 (2015) 7815-7820.
- [31] A.U. Turken, N.F. Dronkers, The neural architecture of the language comprehension network: converging evidence from lesion and connectivity analyses, *Front Syst Neurosci*, 5 (2011) 1.
- [32] C.J. Price, A review and synthesis of the first 20 years of PET and fMRI studies of heard speech, spoken language and reading, *Neuroimage*, 62 (2012) 816-847.
- [33] E. Fedorenko, The role of domain-general cognitive control in language comprehension, *Front Psychol*, 5 (2014) 335.
- [34] E. Fonteneau, M. Bozic, W.D. Marslen-Wilson, Brain Network Connectivity During Language Comprehension: Interactive Linguistic and Perceptual Subsystems, *Cereb Cortex*, 25 (2015) 3962-3976.
- [35] N. Geschwind, Language and the brain, *Sci. Am.*, 226 (1972) 76-83.
- [36] N. Geschwind, The organization of language and the brain, *Science*, 170 (1970) 940-944.
- [37] N.F. Dronkers, S. Pinker, A. Damasio, Language and the aphasias, in: E.R. Kandel, J. Schwartz, T. Jessel (Eds.) *Principles in Neural Science*, McGraw-Hill, New York, 2000, pp. 1169-1187.

- [38] A.D. Friederici, Pathways to language fiber tracts in the human brain, *Trends Cogn Sci*, 13 (2009) 175-181.
- [39] M. Catani, T.d. Schotten, A diffusion tensor imaging tractography atlas for virtual in vivo dissections. , *Cortex*, 44 (2008) 1105-1132.
- [40] E.C. Ferstl, J. Neumann, C. Bogler, D.Y. von Cramon, The extended language network: a meta-analysis of neuroimaging studies on text comprehension, *Hum Brain Mapp*, 29 (2008) 581-593.
- [41] E.C. Ferstl, M. Rinck, D.Y. von Cramon, Emotional and Temporal Aspects of Situation Model Processing during Text Comprehension: An Event-Related fMRI Study, *Journal of Cognitive Neuroscience*, 17 (2005) 724-739.
- [42] E.C. Ferstl, D.Y. von Cramon, What Does the Frontomedian Cortex Contribute to Language Processing: Coherence or Theory of Mind?, *NeuroImage*, 17 (2002) 1599-1612.
- [43] E.C. Ferstl, T. Guthke, D.Y. von Cramon, Text comprehension after brain injury: Left prefrontal lesions affect inference processes, *Neuropsychology*, 16 (2002) 292-308.
- [44] D.A. Abrams, S. Ryali, T. Chen, E. Balaban, D.J. Levitin, V. Menon, Multivariate activation and connectivity patterns discriminate speech intelligibility in Wernicke's, Broca's, and Geschwind's areas, *Cereb Cortex*, 23 (2013) 1703-1714.
- [45] C.J. Price, The anatomy of language: a review of 100 fMRI studies published in 2009, *Ann N Y Acad Sci*, 1191 (2010) 62-88.
- [46] C.R. Cox, M.S. Seidenberg, T.T. Rogers, Connecting functional brain imaging and Parallel Distributed Processing, *Language, Cognition, and Neuroscience*, 30 (2015) 380-394.

- [47] J.R. Binder, J.A. Frost, T.A. Hammeke, P.S.F. Bellgowan, S.M. Rao, R.W. Cox, Conceptual Processing during the Conscious Resting State: A Functional MRI Study, *Journal of Cognitive Neuroscience*, 11 (1999) 80-93.
- [48] J.R. Binder, J.A. Frost, T.A. Hameke, R.W. Cox, S.M. Rao, T. Prieto, Human Brain Language Areas Identified by Functional Magnetic Resonance Imaging, *The Journal of Neuroscience*, 17 (1997) 353-362.
- [49] M. Kutas, K.D. Federmeier, Thirty Years and Counting: Finding Meaning in the N400 Component of the Event-Related Brain Potential (ERP), *Annual Review of Psychology*, 62 (2011) 621-647.
- [50] J.A. Mossbridge, M. Grabowecy, K.A. Paller, S. Suzuki, Neural activity tied to reading predicts individual differences in extended-text comprehension, *Front Hum Neurosci*, 7 (2013) 655.
- [51] S. Rueschemeyer, T. Gardner, C. Stoner, The Social N400 effect: how the presence of other listeners affects language comprehension, *Psychon Bull Rev* 22 (2015) 128-134.
- [52] B. Forgacs, M.D. Bardolph, B.D. Amsel, K.A. DeLong, M. Kutas, Metaphors are physical and abstract: ERPs to metaphorically modified nouns resemble ERPs to abstract language, *Front Hum Neurosci*, 9 (2015) 28.
- [53] A. Perez, K. Cain, M.C. Castellanos, T. Bajo, Inferential revision in narrative texts: An ERP study, *Mem Cognit*, 43 (2015) 1105-1135.
- [54] E.F. Lau, C. Phillips, D. Poeppel, A cortical network for semantics: (de)constructing the N400, *Nat Rev Neurosci*, 9 (2008) 920-933.
- [55] G.R. Kuperberg, M. Paczynski, T. Ditman, Establishing Causal Coherence across Sentences: An ERP Study, *Journal of Cognitive Neuroscience*, 23 (2011) 1230-1246.



- [56] M.S. Nieuwland, The Truth Before and After: Brain Potentials Reveal Automatic Activation of Event Knowledge during Sentence Comprehension, *J Cogn Neurosci*, 27 (2015) 2215-2228.
- [57] D.S. McNamara, J. Magliano, Toward a Comprehensive Model of Comprehension, *Psychology of Learning and Motivation*, Elsevier 2009, pp. 297-384.
- [58] M.A. Gernsbacher, Two decades of structure building, *Discourse Processes*, 23 (1997) 265-403.
- [59] T. Linderholm, S. Virtue, Y. Tzeng, P. Van Den Broek, Fluctuations in the Availability of Information during Reading: Capturing Cognitive Processes Using the Landscape Model, *Discourse Processes*, 37 (2004) 165-186
- [60] R.A. Zwaan, M.C. Langston, A.C. Graesser, Construction of Situation Models in Narrative Comprehension: An Event-Indexing Model, *Psychological Science*, 6 (1995) 292-297.
- [61] T. Trabasso, P. Van Den Broek, Causal thinking and the representation of narrative events, *Journal of Memory and Language*, 24 (1985) 612-630.
- [62] W. Kintsch, T.A. van Dijk, Toward a Model of Text Comprehension and Production, *Psychological Review*, 85 (1978) 363-394.
- [63] T.A. van Dijk, W. Kintsch, *Strategies for Discourse Comprehension*, Academic Press, Inc., New York, NY, 1983.
- [64] W. Kintsch, *Comprehension: a paradigm for cognition*, New York: Cambridge University Press, Cambridge, U.K., 1998.
- [65] W. Kintsch, The Role of Knowledge in Discourse Comprehension: A Construction-Integration Model, *Psychological Review*, 95 (1988) 163-182.

- [66] J.A. Stegemann, N.R. Buenfeld, A Glossary of Basic Neural Network Terminology for Regression Problems, *Neural Computing & Applications*, 8 (1999) 290-296.
- [67] A.C. Graesser, M. Singer, T. Trabasso, Constructing Inferences During Narrative Text Comprehension, *Psychological Review*, 101 (1994) 371-395.
- [68] G. McKoon, R. Ratcliff, Inference During Reading, *Psychological Review*, 99 (1992) 440-466.
- [69] G. McKoon, R. Ratcliff, Inferences About Predictable Events, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 12 (1986) 82-91.
- [70] D.S. McNamara, E. Kintsch, N.B. Songer, W. Kintsch, Are Good Texts Always Better? Interactions of Text Coherence, Background Knowledge, and Levels of Understanding in Learning from Text, *Cognition and Instruction*, 14 (1996) 1-43.
- [71] Y. Ozuru, K. Dempsey, D.S. McNamara, Prior knowledge, reading skill, and text cohesion in the comprehension of science texts, *Learning and Instruction*, 19 (2009) 228-242.
- [72] R.A. Zwaan, G.A. Radvansky, Situation Models in Language Comprehension and Memory, *Psychological Bulletin*, 123 (1998) 162-185.
- [73] J.P. Magliano, H.A. Taylor, H.-J.J. Kim, When goals collide: Monitoring the goals of multiple characters, *Memory & Cognition*, 33 (2005) 1357-1367.
- [74] J.P. Magliano, G.A. Radvansky, Goal coordination in narrative comprehension, *Psychonomic Bulletin & Review*, 8 (2001) 372-376.
- [75] D.I. Burin, L. Acion, J. Kurczek, M.C. Duff, D. Tranel, R.E. Jorge, The role of ventromedial prefrontal cortex in text comprehension inferences: semantic coherence or socio-emotional perspective?, *Brain Lang*, 129 (2014) 58-64.

- [76] C.A. Honan, S. McDonald, A. Gowland, A. Fisher, R.K. Randall, Deficits in comprehension of speech acts after TBI: The role of theory of mind and executive function, *Brain & Language*, 150 (2015) 69-79.
- [77] E. Armstrong, A. Ferguson, Language, meaning, context, and functional communication, *Aphasiology*, 24 (2010) 480-496.
- [78] C. Powers, R. Bencic, W.S. Horton, M. Beeman, Hemispheric inference priming during comprehension of conversations and narratives, *Neuropsychologia*, 50 (2012) 2577-2583.
- [79] H. Zelle, C.L. Romaine, N.E. Goldstein, Juveniles' Miranda comprehension: Understanding, appreciation, and totality of circumstances factors, *Law Hum Behav*, 39 (2015) 281-293.
- [80] R. Rogers, C.E. Fiduccia, E.Y. Drogin, J.A. Steadham, J.W. Clark III, R.J. Cramer, General Knowledge and Misknowledge of Miranda Rights: Are Effective Miranda Advisements Still Necessary? , *Psychology, Public Policy, and Law*, 19 (2013).
- [81] R. Rogers, H.L. Blackwood, C.E. Fiduccia, J.A. Steadham, E.Y. Drogin, J.E. Rogstad, Juvenile Miranda Warnings: Perfunctory Rituals or Procedural Safeguards?, *Criminal Justice and Behavior*, 39 (2012) 229-249.
- [82] R. Rogers, N.D. Gillard, C.N. Wooley, C.E. Fiduccia, Decrements in Miranda abilities: an investigation of situational effects via a mock-crime paradigm, *Law Hum Behav*, 35 (2011) 392-401.
- [83] R. Rogers, J.E. Rogstad, N.D. Gillard, E.Y. Drogin, H.L. Blackwood, D.W. Shuman, "Everyone knows their Miranda rights": Implicit assumptions and countervailing evidence, *Psychology, Public Policy, and Law*, 16 (2010) 300-318.

- [84] R. Rogers, L.L. Hazelwood, K.W. Sewell, D.W. Shuman, H.L. Blackwood, The comprehensibility and content of juvenile Miranda warnings, *Psychology, Public Policy, and Law*, 14 (2008) 63-87.
- [85] R. Rogers, K.S. Harrison, L.L. Hazelwood, K.W. Sewell, Knowing and Intelligent: A Study of Miranda Warnings in Mentally Disordered Defendants, *Law and Human Behavior*, 31 (2007) 401-418.
- [86] G.C. Rost, K.K. McGregor, Miranda Rights Comprehension in Young Adults With Specific Language Impairment, *American Journal of Speech-Language Pathology*, 21 (2012) 101-108.
- [87] M.J. O'Connell, W. Garmoe, N.E. Goldstein, Miranda comprehension in adults with mental retardation and the effects of feedback style on suggestibility, *Law Hum Behav*, 29 (2005) 359-369.
- [88] V.G. Cooper, P.A. Zapf, Psychiatric Patients' Comprehension of *Miranda* Rights, *Law and Human Behavior*, 32 (2008) 390-405.
- [89] J.A. Wszalek, Ethical and Legal Concerns Associated With the Comprehension of Legal Language and Concepts, *AJOB Neuroscience*, 8 (2017) 26-26.
- [90] J.A. Wszalek, L.S. Turkstra, Language impairments in youths with traumatic brain injury: implications for participation in criminal proceedings, *J Head Trauma Rehabil*, 30 (2015) 86-93.
- [91] D. Wechsler, *Wechsler Adult Intelligence Scale*, 4th Edition ed., Pearson, San Antonio, TX, 2008.
- [92] W. Semel, E.H. Wiig, W.A. Secord, *Clinical Evaluation of Language Fundamentals-Metalinguistics*, 5th Edition ed., Pearson Assessments, San Antonio, TX, 2014.

[93] L. Cosmides, The logic of social exchange: Has natural selection shaped how humans reason? Studies with the Wason selection task, *Cognition*, 31 (1989) 187-276.

[94] D. Wason, Reasoning, in: B.M. Foss (Ed.) *New horizons in psychology*, Penguin, Harmondsworth, England, 1966, pp. 135-151.

FIGURE ONE

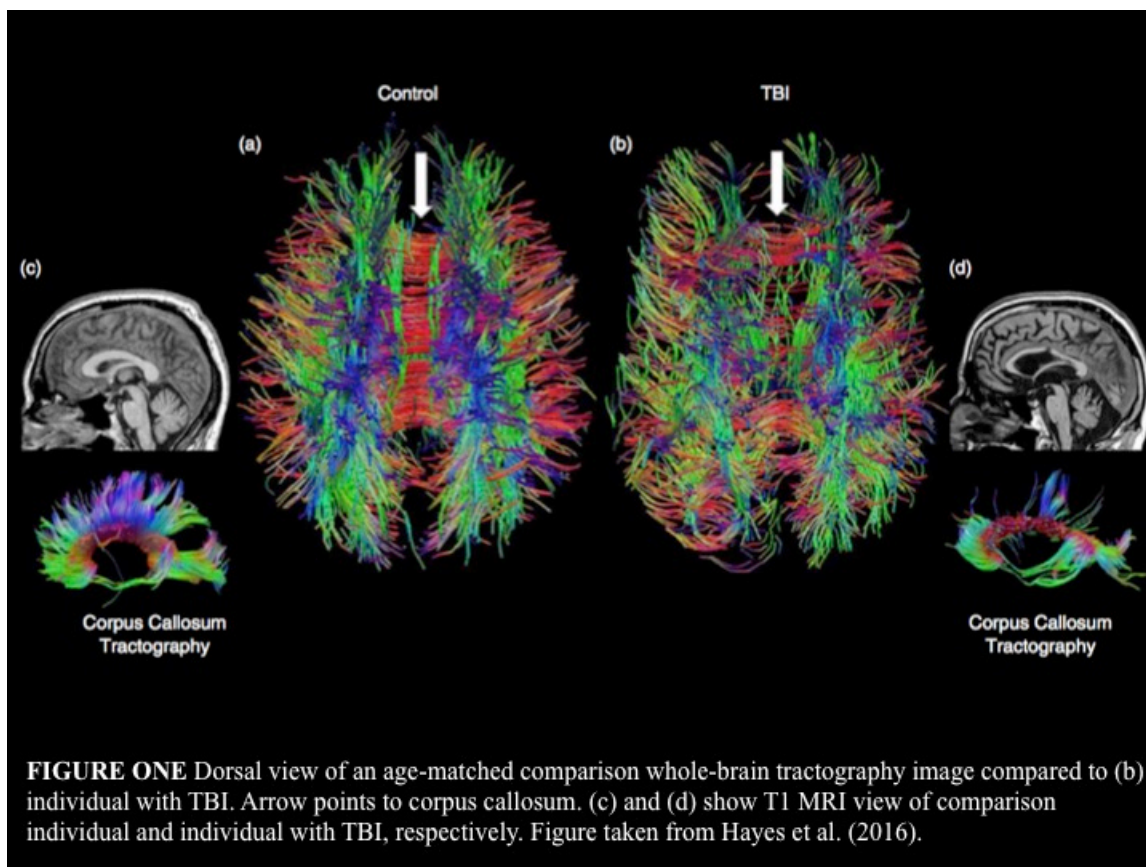
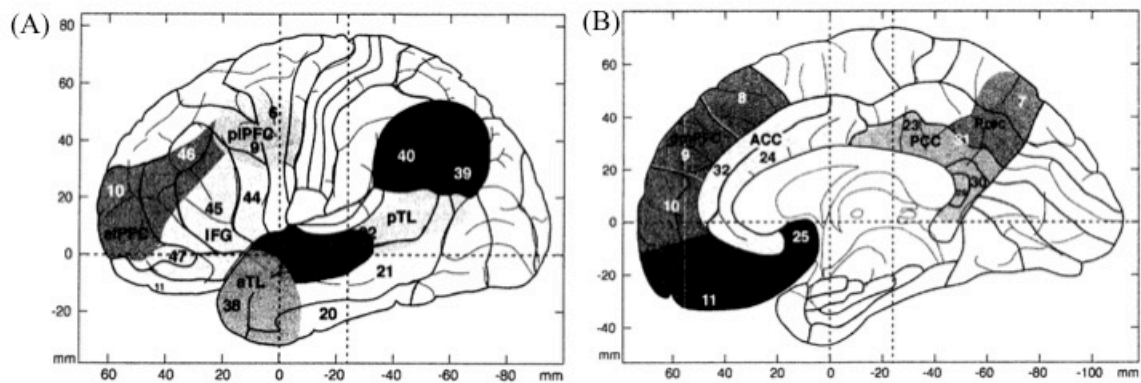
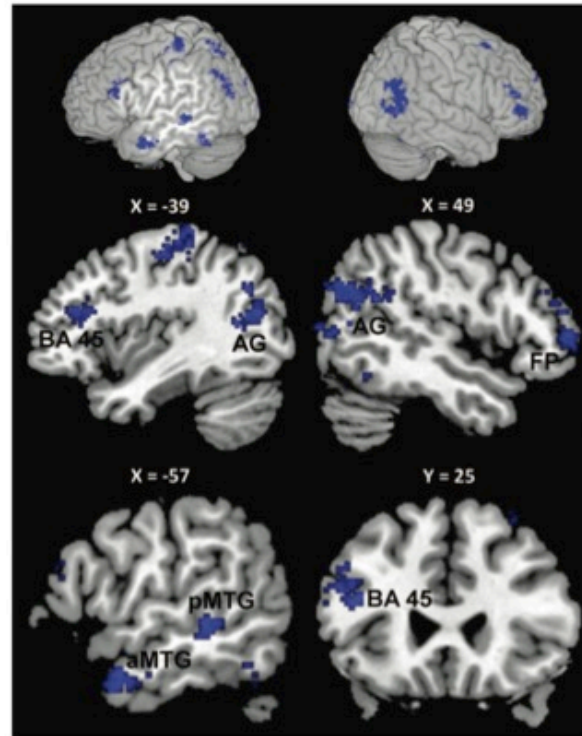


FIGURE TWO



**Figure Two** (A) Left lateral and (B) right medial Talairach standard stereotaxic views of the Extended Language Network (ELN). Shaded regions represent the regions within the ELN.

FIGURE 3



**Figure Three** Multivariate pattern analysis of Speech versus non-Speech (rSpeech). Regions in blue show areas that discriminate between [Speech – rSpeech] and [rSpeech – rest] conditions. AG = angular gyrus; FP = frontal pole; amTG = anterior middle temporal gyrus; pMTG = posterior middle temporal gyrus; BA 45 = pars triangularis of the inferior frontal gyrus . Image taken from Abrams et al. (2013).



**TABLE ONE**

<b>ROI</b>	<b>Functional connectivity</b>	<b>Structural connectivity</b>
MTG	STS/BA39 Anterior STG/BA22 BA47 BA46	STS/BA39 via the AF indirect, anterior STG/BA22 via the MdLF*, BA47 via the IOFF*
STS/BA39	MTG Anterior STG/BA22 BA47	MTG via the AF indirect, anterior STG/BA22 via the MdLF^
Anterior STG/BA22	MTG STS/BA39 BA47	MTG via the MdLF*, STS/BA39 via the MdLF^
BA47	MTG STS/BA39 Anterior STG/BA22	MTG via the IOFF*
BA46	MTG	

**Table One** Summary of the structural and functional connectivity findings for each region of interest in relation to the other ROIs. Table taken from Turken & Dronkers (2011).

## **CHAPTER 2**

### Manuscript 1

## **Comprehension of Legal Language in Adults with and without Traumatic Brain Injury**

Joseph A. Wszalek<sup>1,2,3</sup> & Lyn S. Turkstra<sup>1,3</sup>

1 Neuroscience Training Program, University of Wisconsin–Madison

2 Neuroscience and Public Policy Program, University of Wisconsin–Madison

3 Department of Communication Science and Disorders, University of Wisconsin–  
Madison

Corresponding Author:

Joseph A. Wszalek, J.D.

University of Wisconsin–Madison

Department of Communication Science and Disorders

1975 Willow Drive

Madison, WI 53705

Email: [josephwszalek@uwalumni.com](mailto:josephwszalek@uwalumni.com)

Phone: 608 – 293 – 0026

## Abstract

**Objective:** The purpose of this study was to characterize comprehension of legal language derived from plea colloquies in adults with and without TBI. We hypothesized that adults with TBI would demonstrate poorer comprehension accuracy and slower comprehension time than a comparison (CG) group of uninjured adults on an experimental language task.

**Methods:** Participants were 19 adults with moderate-to-severe TBI (11 females) and 21 CG adults (13 females) ages 24-64 years who had previously participated in a study of social communication. Participants completed a multiple-choice assessment of legal language comprehension, with stimuli presented either in their original legal form or manipulated to simplify syntax or include more-common words.

**Results:** Across manipulation categories, the TBI group was significantly less accurate ( $M = 0.71$ ,  $SD = 0.22$ ,  $F(1,43) < 0.01$ ) and slower ( $M = 44.84$  sec,  $SD = 20.22$ ,  $F(1,43) < 0.01$ ) than CG participants, with no effect of item manipulation. Working memory and reading fluency test scores correlated with task accuracy and speed in both groups.

**Conclusion:** Individuals with TBI underperformed their uninjured peers on both comprehensions accuracy and comprehension time, and these differences were attributable in part to differences in working memory and reading fluency. The lack of a benefit from simplifying legal language may have been due to the subtlety of item manipulations, relatively small sample size, or supportive testing environment. Additional studies are needed to better test the effects of linguistic manipulation and the relationship among cognitive mechanisms, TBI, and language comprehension.

**Keywords:** brain injuries, language comprehension, law, adult

## INTRODUCTION

It is difficult to overstate the importance of language comprehension in the human mental condition. The processing of information to extract meaning is essential for high-level cognitive functions such as learning, reasoning, problem solving, and decision making, and comprehension is a necessary impetus behind intentional behavior and action [1-3]. Furthermore, the ubiquity of written and spoken language within modern society makes language comprehension an exigent aspect of human cognition from both a practical and theoretical perspective.

An area of society dominated by language-based discourse is the law, and a growing corpus of research suggests that notoriously obtuse “legalese” often challenges the language-comprehension process. Arguably the canonical example of legal language, the Miranda warnings, are near-universally difficult to understand: individuals from many different populations display not only poor comprehension (the ability to understand the language and concepts presented within the Miranda warnings’ language) but also poor reasoning (the ability to use understanding to make decisions) when presented with language stimuli derived from the specific legal rules [4-8]. One particularly concerning finding from the Miranda-warning literature is the stark variability in comprehension among populations that are at-risk or overrepresented within penal legal systems [9-12]. These populations include: juveniles with and without a variety of cognitive or mental disorders and with and without criminal-offender status [13-17]; young adults with specific language impairments [18]; adult offenders with mental illnesses [6]; adults with intellectual disabilities [19]; and adult psychiatric patients [20]. For example, Zelle and colleagues (2015) found that nearly half of the

juvenile participants who were able to accurately define the “right to silence” nevertheless believed that a judge could force them to discuss any wrongdoing later in court [13]. Similarly, Rogers and colleagues (2007) found that individuals with diagnoses of mental illnesses who were recruited from competency-to-stand-trial wards had difficulty incorporating key information (such as free legal assistance) into their decision-making for their own circumstances; for example, the participants continued to refuse an attorney on the inaccurate belief that they would be responsible for legal fees [6]. Finally, O’Connell and colleagues (2005) showed that adults with mental retardation not only scored poorly on comprehension assessments but also showed tendency to change their responses based on friendly feedback [19]. Whether or not there is a causal relationship between language-comprehension abilities and the legal implications suggested by the studies is unclear, but the social and financial costs associated with legal adjudication, particularly criminal conviction, underscore the need for additional research to better understand the relationships between language comprehension and legal language as a discreet category of language [21].

Individuals with traumatic brain injury (TBI) are another population that may be at an elevated risk of poorer outcomes against the backdrop of complicated legal language. Like the populations just described, individuals with TBI can show impairments in the cognitive processes that drive language comprehension. Russel and colleagues [22] reported that individuals with moderate-to-severe TBI had slower processing speeds for individual words or paired words. Johnson and Turkstra [23] reported that individuals with moderate-to-severe TBI made more errors in inference making; poorer performance was likely attributable to working-memory demands and

executive-function demands of connected language [24-26]. Similarly, numerous groups have reported that individuals with TBI are less sensitive to sarcasm and other counterfactual or non-literal language [27-30], a type of language that requires the use of inferences to resolve verbal ambiguity [31]. Deficits in working memory, processing speed, and nonverbal reasoning likely underlie these gist-level language impairments, and are common sequelae of TBI [32]. Finally, individuals with TBI may show impairments in creating mental representations of language, or “situation models,” a cognitive ability that relies heavily on working-memory driven metacognition [33-35] in addition to “lower-level” language processing [1]. This concatenation of language deficits may also underlie the disruptions in social cognition often following TBI [29, 30, 36-39]; regardless, TBI-induced language impairments parallel impairments observed in populations that are known to be poorer comprehenders of legal language.

Also like other populations with cognitive impairments, individuals with TBI are generally over-represented within the legal system. Rates of TBI among incarcerated individuals can approach one hundred percent [10, 40-42], and legal interactions typically require effective social-communication skills [43], skills that are frequently impaired post-TBI [27, 39, 44, 45]. While it is important to stress that there is no causal link between TBI and negative outcomes within legal systems, the fact that individuals with TBI are over-represented within the legal system, that adjudication necessarily requires exposure to legal language, and that other, comparably impaired populations perform poorly on legal-language comprehension tasks all point to the need to better characterize the relationship between TBI, language comprehension, and legal language. Nevertheless, comprehension of legal language in populations with TBI has not been well examined,

and the diversity of language-based scenarios within the law engenders the need for a targeted, environmentally valid assessment of legal-language comprehension that recognizes the genre's heterogeneity.

One example of legal language that likely presents language and communication challenges for individuals with TBI is the plea colloquy [43]. Plea colloquies are a formal dialogue in which a judge engages a defendant in an official conversation to determine whether the defendant is capable of entering a plea to a crime. Because the defendant waives fundamental constitutional rights when he or she enters a plea, the judge must use the plea colloquy to determine that the defendant is mentally competent to make the pleas and that he or she does so knowingly, freely, and voluntarily [46-48]. Because plea colloquies necessarily concern complex legal ideas, they often contain low-frequency, abstract words; complicated verbiage such as nominalizations; and stilted, stylized grammar. For individuals with TBI, who may have language impairments at the word or sentence level, at the discourse level, or at the situation-model level, plea colloquies may be particularly difficult to understand.

To begin to investigate the relationships between TBI, language comprehension, and legal language, this study had three aims: first, to assess whether individuals with TBI were more likely to make comprehension errors during the comprehension of plea-colloquy language; second, to identify cognitive measures associated with language-comprehension behaviors; and third, to develop a set of environmentally valid linguistic stimuli based on frequent example of legal language. We hypothesized that there would be a significant effect of TBI on language-comprehension outcomes, and we anticipated that the results would not only contribute to the literature at this important intersection of



law, science, and policy, but would also provide a valuable source of empirical findings for data-driven policy and future investigation.

## **METHODS**

### **Participants**

Participants were adults with moderate-to-severe TBI (n=19, 11 females) and a healthy comparison group (CG) of adults without TBI (n=21, 13 females) matched group-wise for age,  $t(38) = -0.24$ ,  $p = 0.83$  and education,  $t(32) = -0.71$ ,  $p = 0.45$ . All participants were from the Midwest and were recruited as part of a larger study of social cognition in adults with and without TBI. Injury severity for the TBI group was defined using standard injury criteria [49]. Table 1 shows participant characteristics. Inclusion criteria were self-identification as a native English speaker and no self-reported history of a diagnosis of language or learning disability or neurological disorder affecting the brain (pre-injury for the TBI group). Exclusion criteria were failing a pure-tone audiometric screening test at 20 db HL at 500, 1000, 2000, and 4000 Hz; failing standard screening for far and near vision; testing within the aphasic range of the Western Aphasia Battery Bedside Screening[50]; and prior participation in a criminal plea hearing in a state court. The Social and Behavioral Sciences Institutional Review Board at the University of Wisconsin approved all procedures. All participants signed a written consent form before participating: all participants received compensation for their participation.

### **Legal-Language Stimuli**

#### **1. Plea Hearings**

Our first aim was to construct ecologically valid stimuli that accurately reflected plea-colloquy language from court proceedings. The first author attended 40 plea hearings from 11 state courts. These hearings were chosen based entirely on scheduling availability: neither author had any background knowledge about the defendants present in the hearings or specific details of the case. The first author attended these proceedings unannounced or informed the court staff beforehand that he was a law student performing courtroom observations as part of his degree program. Because the court rules prohibited video or audio recording, the first author recorded start and end times for the plea-colloquy portion of the hearings and took notes about verbal features of the dialogues, such as the pronunciation of proper nouns and non-verbal utterances.

## **2. Court Transcripts**

The first author obtained demographic and background information for the 40 observed defendants from a state database allowing members of the public to access and view the public records and information for cases in state courts. The defendants were diverse with respect to age, ethnicity, and sex (Table One), and the defendant population was representative of the state's overall population. We purchased official transcripts for each of the 40 proceedings from the court reporters. We then used CHAT/CLAN language-analysis software [51] to code language from the transcripts. We first segmented the transcripts into C-Units, defined as independent clauses with modifiers [52]. We used C-Units as the unit of analysis for two reasons. First, from a theoretical standpoint, because we were ultimately interested in assessing the comprehensibility of the plea-colloquy language, we wanted a unit of analysis based on linguistic meaning. Second, from a practical standpoint, we did not have audio recordings, so we could not

use prosodic elements as part of the segmentation process. C-Units were appropriate from both standpoints because they cannot be further divided without loss of essential meaning, and they can be determined entirely from grammar. The first author coded all transcripts, and then a trained undergraduate research assistant performed reliability coding on four transcripts (10%) to ensure that the C-Unit segmentation method was reliable (~95%).

We used the CHAT/CLAN software to obtain descriptive statistics for two portions of the transcript corpus: the entire plea hearing, which was the full transcript including the plea colloquy; and the plea colloquy, which was the isolated colloquy portion.

### **3. Pilot Stimuli**

To construct the experimental stimuli, we used the word corpus of the 40 plea colloquies. First, we used CHAT/CLAN to obtain a total list of all words that appeared in the 40 plea colloquies. We established the following rules for constructing the corpus: we ignored verb/noun morphology, although we included participial adjectives and gerunds as separate items; we excluded proper nouns and numbers; and we counted only the specific parts of speech in which each word occurred (e.g., “face” occurred as a verb, but not as a noun). Our final corpus contained approximately 900 words.

We then constructed experimental stimuli using the State of Wisconsin Plea Questionnaire/Waiver of Rights Form (“PQF”)(CR-227, Wisconsin Statutes § 971.08). Effectively, the PQF is the written version of the verbal plea colloquy: after a defendant completes the form, the judge reads the form and uses the form as the basis for the plea colloquy. The PQF contains approximately 40 items that ask the defendant about personal history, constitutional rights, understandings of the proceeding, and the

voluntariness of the plea. We excluded 14 items relating to personal history or the physical PQF in order to make a universally applicable set of stimuli. As a hypothetical charge, we selected *disorderly conduct*, which was the most common charge within the 40 observed plea colloquies. For the remaining 26 items, we performed four manipulations: two that manipulated semantic content and two that manipulated syntactic structure. For the first semantic manipulation, we manipulated word abstraction (ABS) using concreteness ratings in Brysbaert et al.'s data (2014) to replace words in the 26 PFQ items with more concrete synonyms from our plea-colloquy word corpus (e.g., “disorderly conduct” became “disorderly behavior.”). The second semantic manipulation was for word frequency (FRQ), again using Brysbaert et al.'s data to replace words in the 26 PQF items with more frequently occurring synonyms from our plea-colloquy word corpus. The more-frequent synonyms included synonyms that were also more concrete (e.g., “entering this plea” became “making this plea.”). For the first syntactic manipulation, we manipulated verb-level syntax (SYN-V). While keeping vocabulary consistent, we simplified verb voice (e.g., from active to passive) and/or verb tense and aspect (e.g. present perfect to simple past). For the second syntactic manipulation, we manipulated clause-level syntax (SYN-C). Again keeping vocabulary consistent, we simplified overall item syntax by separating compound sentences, replacing nominalizations with verbs (e.g., “exclusion” to “exclude”), or replacing noun phrases with subordinate clauses (e.g., “by entering this plea” to “when I enter this plea”). For each item in all four manipulations, we substituted every component that had legal importance or necessity unless it was impossible to do so without negating sentence

meaning. The resulting item set contained 208 manipulated stimuli: ABS  $n = 36$ , FRQ  $n = 82$ , SYN-V  $n = 23$ , and SYN-C  $n = 67$ .

Next, we obtained pilot data on the manipulated stimuli. Individuals who had no legal training or expertise were asked to rate each item on a scale of 1-5 for overall abstractness (ABS and FRQ items) or grammatical difficulty (SYN-V and SYN-C items). Pilot ratings indicated that FRQ and SYN-C items were less abstract and less grammatically difficult, respectively. We compiled a final stimuli set ( $n=52$ ) by selecting one FRQ option and one SYN-C option for each of the 26 PQF items. The selection criterion was scores within a range of  $\pm 1$ , or, if that was not possible, pilot scores with the least variability.

The final stimulus set consisted of three versions of each of the 26 PQF items: (1) the original item without any manipulation to word choice or syntax (unmodified, UNM); (2) the item modified for word frequency (frequency manipulation, FREQ); and (3) the item modified for clause-level syntax (syntax manipulation, SYNC). Following McKoon and Ratcliff's discussion on the interaction between syntax and meaning, [53] we predicted that FREQ stimuli would facilitate comprehension through simplified meaning, while SYNC stimuli would facilitate comprehension through simplified meaning and simplified syntax.

#### **4. Experimental Task**

We used the final stimuli set to construct a forced multiple-choice assessment modeled on the Pearson's Clinical Evaluation of Language Fundamental's (5<sup>th</sup> Edition) Figurative Language assessment [54]. For each item, we created four possible answers: (1) the correct interpretation of the item; (2) the opposite interpretation of the item; (3) an

alternative but incorrect interpretation of the item; (4) a literal/nonsense interpretation of the item. Each item's three manipulations (UNM, FREQ, and SYNC) had answer choices that overlapped as much as possible; for example, an item explaining the loss of constitutional right used the same "alternative but incorrect" answer choice ("the laws of the United States no longer apply to me") for the UNM, FREQ, and SYNC manipulations. For each experimental item, the order of the four choices was randomized.

### **5. Procedure**

We automated the task using PsyScopeX software [55] on a MacBook Pro laptop computer. See Figure One for an image of the experimental setup as viewed by the participants during the task. To ensure participants' comprehension of instructions, the examiner read the instructions aloud as the participants viewed them on the screen, and then asked the participant whether they had any questions before beginning the task. Participants received as much time as they needed to complete the task.

#### **Additional Measures**

We administered the Wechsler Adult Intelligence Scale-Revised Digit Span (WAIS-DIGIT) task [56] to obtain a standardized working-memory assessment for each participant. We also administered the Woodcock-Johnson Sentence Reading Fluency (WJ) Task to obtain a standardized reading-level assessment for each participant [57]. To compare the present study with previous publications, participants completed a series of tasks recommended by the Common Data Elements Committee for TBI research ("Common Data Elements") [58]: the California Verbal Learning Test (CVLT) [59], Wechsler Adult Intelligence Scales tests for Processing Speed Index (WAIS-PSI) [56], and Trailmaking Tasks A and B [60]. Results for TBI and HC groups are included in

Table 3. Paired-samples t-tests revealed a significant between-groups difference on all neuropsychological measures ( $p < 0.01$ ; except Trailmaking Task B  $p < 0.05$ ) and no significant sex-based differences on any measure except for the WJ total score measure (WJ\_TOTAL,  $t(27) = -2.23$ ,  $p = 0.03$ ).

### **Data Analysis**

Our first set of hypotheses tested the relations among language comprehension, TBI, and type of item manipulation. First, we hypothesized a main effect of group, with individuals with TBI obtaining both lower comprehension-accuracy scores and slower reaction times than CG individuals. Second, we hypothesized a main effect of item manipulation type, with comprehension accuracy being lowest for UNM items, higher for FREQ items, and highest for SYNC items; and with reaction times being longest for UNM items, shorter for FREQ items, and shortest for SYNC items [53]. Third, we hypothesized that there would be an interaction of group and manipulation type, with the item-manipulation effect being greater for individuals with TBI. These three hypotheses were analyzed using a linear mixed-effects model regressing comprehension accuracy on group, manipulation type, and the interaction term.

Our second set of hypotheses tested the relations among language comprehension, TBI, and two cognitive functions: working memory and processing speed. First, we hypothesized a main effect of group on overall comprehension accuracy and task completion time, with individuals with TBI obtaining lower comprehension scores and longer completion times than CG individuals. We hypothesized that scores on working memory and processing speed tests would be correlated with comprehension accuracy and reaction times. That is, we predicted that participants with lower test scores would

have lower accuracy scores and longer reaction times. Third, we hypothesized that the relationship between test scores and task performance would differ by group, with larger effects of working memory and processing for the TBI group than for the CG group. To control for participants' reading abilities, we included WJ reading fluency scores as a covariate. These hypotheses were tested using general linear models to regress comprehension accuracy and task-completion time on group, working memory and processing speed, and the interaction term, with reading fluency as a covariate.

Statistical analyses were conducted in R 3.1.2 (<http://www.R-project.org/>) [61]. The criterion alpha level was .05. Mixed-effects models used contrasts to test the predicted pattern of means and residual between-group variance [62]

## RESULTS

Participant demographic characteristics are shown in Table 1. There was no significant between-group difference on any variable. Injury characteristics of TBI group participants are shown in Table 2.

Results of additional measures are shown in Table 3. There were statistically significant between-group differences on every measure, with the CG group having higher scores on the WAIS-DIGIT subtest,  $t(36) = -4.27$ ,  $p < 0.01$ ; the WAIS\_PSI,  $t(37) = -4.14$ ,  $p < 0.01$ ; the WJ (total score),  $t(30) = -3.79$ ,  $p < 0.01$ ; both Part A,  $t(23) = -3.49$ ,  $p < 0.01$ , and Part B,  $t(26) = -2.17$ ,  $p < 0.05$ , of the Trailmaking test; and all three components of the CVLT (CVLT-5:  $t(31) = -5.51$ ,  $p < 0.01$ ; CVLT-S:  $t(31) = -6.06$ ,  $p < 0.01$ ; CVLT-L:  $t(30) = -6.21$ ,  $p < 0.01$ ).

### Effects of Item Manipulation and Group



Comprehension accuracy and reaction times are shown in Table 4. Analysis of accuracy revealed a significant main effect of group, with higher scores in the CG group across item types,  $F(1,43) = 8.85, p < 0.01, R^2 = 0.39$ ; but no effect of manipulation,  $F(1,23) = 0.50, p = 0.48$ ; or group X manipulation interaction,  $F(1,23) = 2.87, p = 0.10$  (Figure 2). Similarly, analysis of reaction time revealed a significant main effect of group, with faster reaction times in the CG group across item types,  $F(1,41) = 8.77, p < 0.01$ ; but no main effect of manipulation,  $F(1,23) = 0.23, p = 0.63$ ; or group X manipulation interaction,  $F(1,76) = 1.33, p = 0.36$  (Figure 3).

### **Effects of Working Memory and Processing Speed**

There was a significant effect of WAIS-DIGIT scores on overall task accuracy,  $t(35) = 2.32, p < 0.05, \eta^2_p = 0.13$ ; but no main effect of group,  $t(35) = 1.14, p = 0.26$ ; or reading fluency,  $t(35) = 0.737, p = 0.47$ ; and no significant interaction between group and working memory,  $t(35) = -1.54, p = 0.13$  (Figure 4). Analysis of task-completion time with WAIS-DIGIT as a measure of working memory found a significant effect of reading fluency,  $t(35) = -4.62, p < 0.01, \eta^2_p = 0.38$ ; no significant effect of group,  $t(35) = -1.12, p = 0.27$ ; or working-memory score,  $t(35) = 0.96, p = 0.35$ ; and no significant interaction of group X working-memory score,  $t(35) = -1.21, p = 0.24$  (Figure 5). Adding processing speed as a covariate did not alter the significance of the effect of working memory on overall task accuracy,  $t(34) = 2.10, p < 0.05, \eta^2_p = 0.11$ ; or of the effect of reading fluency on task-completion time,  $t(34) = -3.73, p < 0.01, \eta^2_p = 0.29$  (Figures 6 and 7).

Analysis of overall task accuracy with WAIS-PSI revealed a significant effect of group,  $t(35) = 2.15, p < 0.05, \eta^2_p = 0.11$ ; and a trend toward a significant group X test interaction,  $t(35) = -1.87, p = 0.07, \eta^2_p = 0.06$ ; but no significant effect of processing

speed,  $t(35) = 1.32, p=0.19$ ; or reading fluency,  $t(35) = -0.27, p=0.84$  (Figure 8). Effects of WAIS-PSI on task completion time revealed a significant main effect of reading fluency,  $t(35) = -2.84, p < 0.01, \eta^2_p = 0.06$ . There were no significant effects of group,  $t(35) = -1.08, p = .29$ ; or processing speed,  $t(35) = 0.30, p = 0.77$ ; or group X processing speed interaction,  $t(35) = 0.81, p = 0.43$  (Figure 9). Adding working memory as a covariate eliminated the significant effect of group on overall accuracy (Figure 10) and did not change the effect of reading fluency on overall completion time (Figure 11).

### **Error Patterns**

Table 5 shows error types by group. Error patterns were summarized by calculating the number of errors in each error category: opposite meaning, literal meaning, or alternate legal interpretation. Paired-samples t-tests showed that the TBI group made significantly more errors than the CG group overall,  $t(34) = 23.13, p < 0.01$ ; and significantly more opposite-type errors,  $t(20) = 3.01, p < 0.01$ , and alternate legal-type errors,  $t(29) = 2.72, p < 0.05$ , than the CG group. The two groups were not significantly different on number of literal-type errors, or on the proportion of each error type.

### **Correlations with Scores on Additional Measures**

As an exploratory analysis among our language-comprehension measures and additional measures of working memory and processing speed, we conducted Pearson correlations among comprehension task dependent variables and scores on Common Data Elements tests. Results are shown in Table 6.. For the TBI group, there was a significant correlation between scores on Trailmaking Subtest A and total comprehension accuracy. For the CG group, CVLT-S and CVLT-L scores were significantly correlated with total comprehension accuracy.

## DISCUSSION

The overall aim of this study was to characterize comprehension of legal language in individuals with moderate-to-severe TBI. To accomplish this aim, we tested comprehension accuracy and time in an experimental task modeled on a formal legal-language sample in adults with TBI and compared their performance to that of a demographically matched comparison group. We also asked if performance in two cognitive domains, working memory and processing speed, would partly explain poorer comprehension of legal language, particularly among adults with TBI.

Individuals with TBI demonstrated lower comprehension accuracy than their uninjured peers, supporting our first hypothesis. These results suggest that individuals with TBI are at an increased risk of misunderstanding language within legal contexts, which could lead individuals with TBI towards less desirable legal outcomes, whether in the form of adjudications, convictions, or restricted participation in legal proceedings. Furthermore, these results parallel earlier data on legal-language comprehension in other populations with cognitive deficits and/or disabilities [6-8, 13, 19, 20], and add to mounting evidence against the assumption that lay persons generally have a working understanding of important legal concepts, such as those explained within the CR-227 Plea Colloquy form [4, 8].

The results of our working-memory and processing-speed analyses may in part explain the performance differences between the TBI group and their uninjured peers. While individuals with TBI were on average poorer and slower comprehenders than comparison peers, the results of our analyses did not support our hypotheses. When we controlled for working memory, processing speed, and reading fluency, there were no

significant between-groups differences or interactions between group and any of the cognitive measures: effectively, then, differences between the two groups were explained by working memory in the case of total comprehension accuracy, and reading fluency in the case of total completion time. While we did not anticipate these results, we believe that they align with both the literature on language comprehension post-TBI and also the current understanding of language comprehension processes in typical adults. TBI often causes diffuse damage throughout the brain that can disrupt distributed cognitive functions [63, 64]. Perhaps unsurprisingly, language comprehension, which likely recruits a broad array of cortical areas and axonal pathways, is one such distributed function [65, 66]. Studies of typical adults have shown that in addition to being highly distributed, language comprehension is also working-memory intensive, particularly at the level of manipulating situation models [35, 67, 68], and our results suggest that individuals with TBI do not have the working memory necessary to accurately and quickly comprehend legal language.

A potential role of working memory, processing speed, and reading fluency may also inform the nature of the behavioral deficits observed in our participants with TBI. While some higher-order cognitive functions are qualitatively different between individuals with and without TBI (e.g., social cognition, the disruption of which is a hallmark of TBI [27, 31, 36, 39, 69, 70]), differences in language comprehension between the groups here appear to be quantitative. That is, participants with TBI had lower working memory and reading fluency scores, and these two mechanisms accounted for the group differences in comprehension accuracy and time. Taken together, our findings strongly suggest a crucial role of working memory and reading fluency in

explaining the comprehension deficits seen in individuals with TBI. The absence of an effect of processing speed on comprehension accuracy or time could suggest independent mechanisms for working memory and processing speed within language comprehension. At least within the context of our untimed experimental setup, overall processing speed did not appear to affect the participants' ability to construct and manipulate situation models, or the speed with which they were able to do so.

For our second hypothesis, we predicted an effect of item manipulation type, with comprehension accuracy being lowest for items in their original form, higher for items with simplified vocabulary, and highest for items with simplified syntax; with response times in the reverse order (i.e., longest for items in their original form). Our findings did not support this hypothesis. There were no statistically significant differences in accuracy across the three types of item manipulations. The lack of significant manipulation effects could reflect several factors. First, it is possible that there were too few items in our task to obtain the power necessary to identify the effects of the manipulations. We modeled random effects at the item level following the practices recommended by Judd et al. [71, 72], but the small set of legal sentences on which our language stimuli were based might have limited our ability to detect small-to-medium effects [73]. Given the large effect sizes typically seen in TBI, however, this was unlikely [74, 75]. Second, the manipulations types may have been too subtle to affect comprehension. We constructed our word corpus from judges' courtroom language, and given the complex nature of the original plea colloquy form language, it is possible that neither word frequency nor clause-level syntax alone was sufficient to improve comprehension. This explanation is consistent with the finding of high error rates among adults with TBI across all three

manipulation conditions, and the lack a ceiling effect in the uninjured group. Finally, it is possible that our experimental condition, which allowed participants as much time as needed to thoroughly read every stimulus (in fact, our instructions explicitly advised the participants to read the sentences carefully), avoided the trade-off between accuracy and speed that has been noted in individuals with TBI on timed tasks [76]. Under timed conditions that more closely mimic the pressure of courtroom settings, or under conditions in which the sentences are heard rather than read, the effect of manipulation might be more pronounced: for example, an individual might not have time to think about the meaning of a low-frequency word, or might struggle to parse unsimplified syntax.

Our examination of error patterns showed that individuals with TBI made more opposite-type errors and alternative legal-type errors than their uninjured peers, and that the relative distribution of error types was similar in both groups, with more opposite- and alternative legal-type errors and fewer literal interpretation errors. These results suggest that individuals with TBI, like their uninjured peers, were able to overcome word-level processing demands to recognize that the literal choice, which was often a nonsensical interpretation, was incorrect. In order to make this determination, however, individuals with TBI must have created a situation model to interpret the non-literal meaning of the sentence. While TBI is known to cause deficits at the word-level, inference-level, and gist-level of language comprehension [22, 31, 39], the untimed experimental condition may have allowed individuals with TBI sufficient opportunity to clear any word-level hurdles that might have otherwise impaired their comprehension and reach the point of gist-level comprehension, allowing them to avoid the most obvious error category. That individuals with TBI made more errors in the two remaining

categories, opposite and alternate-legal interpretations, but made these errors at equivalent rates to individuals in the uninjured group suggests that individuals with TBI were less likely to correctly resolve competition among the three “sensible” options, choosing incorrect options more frequently than their peers. To use language-comprehension terminology, our results suggest that individuals with TBI were as able as their peers to construct situation models, but less able to identify the correct situation model, thereby making more comprehension errors. Because manipulating situation models is a metacognitively intense cognitive process, individuals with TBI may not have had sufficient working memory to parse apart a correct situation model even though they were able to construct them. However, multiple explanations could explain a comprehension failure at the situation-model level (e.g., unfamiliar concepts that are difficult to envision, unknown vocabulary that is impossible to define), and subsequent experiments will need to tease apart a causal mechanism for the error patterns we observed. Nevertheless, our findings suggest that, at least within the contexts of our experimental design, TBI affects comprehension at the level of the situation model.

Finally, study-task measures were correlated with scores on some standardized cognitive tests. Scores on Trailmaking test (task A) were significantly correlated with comprehension accuracy for the TBI group, while CVLT tests scores were significantly correlated with comprehension accuracy for the comparison group. These findings could be additional evidence of a potential group effect not attributable to working memory or reading fluency. The Trailmaking test is a neuropsychological test of scanning, visual search, speed of processing, mental flexibility, and executive function [60], and is also a measure of fluid intelligence [77]. Because working memory is a component of both

executive function and fluid intelligence models (e.g. the “executive control” and “storage capacity” models [78]), our results support a role of working memory in legal-language comprehension. None of the cognitive tests scores, however, were correlated with comprehension time. Because our predictive models suggest that reading fluency explains the variance among the two groups on comprehension time when including processing speed, it is possible that the operationalized cognitive mechanisms (fluid intelligence and verbal memory) do not independently account for variance in the comprehension times.

### **Limitations and Future Directions**

A study limitation was the relatively small, homogenous, and educated sample of participants. The small sample size may have limited our ability to detect statistical effects at the level of individual items, and it may have limited our ability to detect effects that were trending toward significance.

Another limitation is the relatively subtle nature of the differences among the three categories of language manipulations. As mentioned earlier, we relied on a language corpus generated by highly educated, highly specialized legal professionals speaking in a technical legal context, and the basis of our stimuli was an equally technical legal document. It is possible that our ability to make meaningful simplifications, either semantically or syntactically, within this already-advanced linguistic framework was limited. More extreme language modifications that are not bound by the strict *a priori* guidelines we set may be able to create manipulations that are more divergent. For example, using a word corpus that was standardized across the general public, or at a basic reading-level difficulty, as opposed to a word corpus derived from highly educated



legal professionals, could allow for word substitutions that were better able to simplify meaning.

Our results suggest that working memory and reading fluency in part explain the comprehension differences between individuals with and without TBI, and that working memory and speed-of-processing may independently affect language comprehension. Future studies could investigate these findings directly by introducing time constraints or placing additional experimental demands on working memory. Future studies could also test hypotheses based on constructs measured by standardized cognitive tests. Our findings indicate that the TBI and CG groups are dissimilar when correlating test scores with comprehension accuracy, and further studies would be valuable in clarifying these relationships.

Finally, we cannot emphasize enough that even though we designed this study to be as ecologically valid as possible, the actual context in which individuals would be comprehending this legal language is much less supportive than it was here. In addition to the communication and social-behavior demands of actual courtroom proceedings (which our study did not attempt to replicate but which are considerable), these proceedings are almost certain to introduce working-memory and speed-of-processing introduced by these proceedings would challenge comprehension by an individual, with or without TBI, as he or she attempts to recruit the cognitive resources necessary to comprehend language. For example, our observations of plea-colloquy durations suggest that individuals with TBI would have one-fourth the comprehension time needed to comprehend the items on the CR-227 form; this additional environmental pressure is all but guaranteed to contribute to poorer comprehension.

Additionally, and perhaps most importantly, our study design tested comprehension in a forced multiple-choice format. In an actual plea colloquy, the individuals would likely have been asked simply to indicate yes or no when asked if they understood a particular question or statement. We recognize that there would be other legal dynamics at play (e.g., the role of the attorney to educate the individual beforehand), but the fact remains that a simple yes/no question assumes that (1) the individual has the working-memory-driven (and possibly processing-speed-driven) language comprehension necessary to construct a situation model; and (2) the individual has the metacognition necessary to monitor that comprehension and judge whether or not it is complete enough to meet situational criteria. Our findings here suggest that individuals with TBI, as well as uninjured individuals, may not be able to parse possible comprehensions to that degree of accuracy: what our participants indicated as the correct comprehension of the plea-colloquy items was not always the correct comprehension, suggesting that even though they thought they understood the item, they did not. Our study limitations are important, but do not detract from the main finding of comprehension errors by adults with TBI. If anything, the study likely underrepresents the cognitive demands of comprehending plea-colloquy legal language, for individuals with or without TBI. Knowing that individuals with TBI show poorer, slower comprehension even under relatively ideal conditions highlights the difficulties that individuals with TBI, as well as other individuals with similar cognitive deficits, can face in real-world legal settings.

## **CONCLUSION**

Findings from our study revealed practical differences between adults with and without TBI in comprehension of legal language derived from plea colloquies. These findings provide an informative first step in beginning to explore relationships among TBI, cognition, language comprehension, and legal language, and point to the need to further test the effects of working memory, reading fluency, and processing speed on language comprehension within the context of legal language.

## REFERENCES

- [1] D.S. McNamara, J. Magliano, *Toward a Comprehensive Model of Comprehension*, *Psychology of Learning and Motivation*, Elsevier 2009, pp. 297-384.
- [2] T. Trabasso, J. Bartolone, *Story Understanding and Counterfactual Reasoning*, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 29 (2003) 904-923.
- [3] K. Millis, M. Larson, *Applying the Construction-Integration Framework to Aesthetic Responses to Representational Artworks*, *Discourse Processes*, 45 (2008) 263-287.
- [4] R. Rogers, J.E. Rogstad, N.D. Gillard, E.Y. Drogin, H.L. Blackwood, D.W. Shuman, "Everyone knows their Miranda rights": Implicit assumptions and countervailing evidence, *Psychology, Public Policy, and Law*, 16 (2010) 300-318.
- [5] R. Rogers, L.L. Hazelwood, K.W. Sewell, D.W. Shuman, H.L. Blackwood, *The comprehensibility and content of juvenile Miranda warnings*, *Psychology, Public Policy, and Law*, 14 (2008) 63-87.
- [6] R. Rogers, K.S. Harrison, L.L. Hazelwood, K.W. Sewell, *Knowing and Intelligent: A Study of Miranda Warnings in Mentally Disordered Defendants*, *Law and Human Behavior*, 31 (2007) 401-418.
- [7] R. Rogers, C.E. Fiduccia, E.Y. Drogin, J.A. Steadham, J.W. Clark III, R.J. Cramer, *General Knowledge and Misknowledge of Miranda Rights: Are Effective Miranda Advisements Still Necessary?*, *Psychology, Public Policy, and Law*, 19 (2013).

- [8] R. Rogers, H.L. Blackwood, C.E. Fiduccia, J.A. Steadham, E.Y. Drogin, J.E. Rogstad, Juvenile Miranda Warnings: Perfunctory Rituals or Procedural Safeguards?, *Criminal Justice and Behavior*, 39 (2012) 229-249.
- [9] S. Fazel, K. Seewald, Severe mental illness in 33,588 prisoners worldwide: systematic review and meta-regression analysis, *Br J Psychiatry*, 200 (2012) 364-373.
- [10] S. Fazel, P. Lichtenstein, M. Grann, N. Langstrom, Risk of violent crime in individuals with epilepsy and traumatic brain injury: a 35-year Swedish population study, *PLoS Med*, 8 (2011) e1001150.
- [11] S. Fazel, J. Danesh, Serious mental disorder in 23 000 prisoners: a systematic review of 62 surveys, *The Lancet*, 359 (2002) 545-550.
- [12] P.C. Snow, M.B. Powell, Oral language competence in incarcerated young offenders: links with offending severity, *Int J Speech Lang Pathol*, 13 (2011) 480-489.
- [13] H. Zelle, C.L. Romaine, N.E. Goldstein, Juveniles' Miranda comprehension: Understanding, appreciation, and totality of circumstances factors, *Law Hum Behav*, 39 (2015) 281-293.
- [14] L.H. Colwell, K.R. Cruise, L.S. Guy, W.K. McKoy, K. Fernandez, H.H. Ross, The Influence of Psychosocial Maturity on Male Juvenile Offenders' Comprehension and Understanding of the *Miranda* Warning, *The Journal of the American Academy of Psychiatry and the Law*, 33 (2005) 444-454.
- [15] K. McLachlan, R. Roesch, K.S. Douglas, Examining the role of interrogative suggestibility in Miranda rights comprehension in adolescents, *Law Hum Behav*, 35 (2011) 165-177.

- [16] J.L. Woolard, H.M.D. Cleary, S.A.S. Harvell, R. Chen, Examining Adolescents' and their Parents' Conceptual and Practical Knowledge of Police Interrogation: A Family Dyad Approach, *Journal of Youth and Adolescence*, 37 (2008) 685-698.
- [17] T. Grisso, L. Steinberg, J. Woolard, E. Cauffman, E. Scott, S. Graham, F. Lexcen, N.D. Reppucci, R. Schwartz, Juveniles' Competence to Stand Trial: A Comparison of Adolescents' and Adults' Capacities as Trial Defendants, *Law and Human Behavior*, 27 (2003) 333-363.
- [18] G.C. Rost, K.K. McGregor, Miranda Rights Comprehension in Yough Adults With Specific Language Impairment, *American Journal of Speech-Language Pathology*, 21 (2012) 101-108.
- [19] M.J. O'Connell, W. Garmoe, N.E. Goldstein, Miranda comprehension in adults with mental retardation and the effects of feedback style on suggestibility, *Law Hum Behav*, 29 (2005) 359-369.
- [20] V.G. Cooper, P.A. Zapf, Psychiatric Patients' Comprehension of *Miranda* Rights, *Law and Human Behavior*, 32 (2008) 390-405.
- [21] J.A. Wszalek, Ethical and Legal Concerns Associated With the Comprehension of Legal Language and Concepts, *AJOB Neuroscience*, 8 (2017) 26-26.
- [22] K.C. Russell, P.M. Arenth, J.M. Scanlon, L. Kessler, J.H. Ricker, Hemispheric and executive influences on low-level language processing after traumatic brain injury, *Brain Inj*, 26 (2012) 984-995.
- [23] J.E. Johnson, L.S. Turkstra, Inference in conversation of adults with traumatic brain injury, *Brain Inj*, 26 (2012) 1118-1126.

- [24] E.C. Ferstl, T. Guthke, D.Y. von Cramon, Text comprehension after brain injury: Left prefrontal lesions affect inference processes, *Neuropsychology*, 16 (2002) 292-308.
- [25] C. Moran, G. Gillon, Inference comprehension of adolescents with traumatic brain injury: A working memory hypothesis, *Brain Injury*, 19 (2005) 743-751.
- [26] S.E. Key-DeLyria, L.J. Altmann, Executive Function and Ambiguous Sentence Comprehension, *Am J Speech Lang Pathol*, 25 (2016) 252-267.
- [27] R. Angeleri, F.M. Bosco, M. Zettin, K. Sacco, L. Colle, B.G. Bara, Communication impairment in traumatic brain injury: A complete pragmatic assessment *Brain & Language*, 107 (2008).
- [28] J.V. Baldo, N.A. Kacirik, A. Moncrief, F. Beghin, N.F. Dronkers, You may now kiss the bride: Interpretation of social situations by individuals with right or left hemisphere injury, *Neuropsychologia*, 80 (2016) 133-141.
- [29] C.A. Honan, S. McDonald, A. Gowland, A. Fisher, R.K. Randall, Deficits in comprehension of speech acts after TBI: The role of theory of mind and executive function, *Brain & Language*, 150 (2015) 69-79.
- [30] L.S. Turkstra, Conversation-based assessment of social cognition in adults with traumatic brain injury, *Brain Injury*, 22 (2008) 397-409.
- [31] S. McDonald, Exploring the Process of Inference Generation in Sarcasm: A Review of Normal and Clinical Studies, *Brain and Language*, 68 (1999).
- [32] J. Sandry, J. DeLuca, N. Chiaravalloti, Working memory capacity links cognitive reserve with long-term memory in moderate to severe TBI: a translational approach, *J Neurol*, 262 (2015) 59-64.

- [33] P. Kendeou, E.R. Smith, E.J. O'Brien, Updating during reading comprehension: why causality matters, *J Exp Psychol Learn Mem Cogn*, 39 (2013) 854-865.
- [34] P. Kendeou, Validation and Comprehension: An Integrated Overview, *Discourse Processes*, 51 (2014 ) 189-200.
- [35] D.J. Hacker, Self-regulated comprehension during normal reading, in: D.J. Hacker, J. Dunlonsky, A.C. Graesser (Eds.) *Metacognition in Educational Theory and Practice*, Lawrence Erlbaum Associates, Mahwah, NJ, 1998, pp. 165-191.
- [36] S. McDonald, S. Flanagan, Social Perception Deficits After Traumatic Brain Injury: Interaction Between Emotion Recognition, Mentalizing Ability and Social Communication, *Neuropsychology*, 18 (2004) 572-579.
- [37] J.L. Nichols, J. Kosciulek, Social Interactions of Individuals with Traumatic Brain Injury, *Journal of Rehabilitation*, 80 (2014) 21-29.
- [38] H. Rosenberg, M. Dethier, R.P. Kessels, R.F. Westbrook, S. McDonald, Emotion perception after moderate-severe traumatic brain injury: The valence effect and the role of working memory, processing speed, and nonverbal reasoning, *Neuropsychology*, 29 (2015) 509-521.
- [39] L.J. Byom, L. Turkstra, Effects of social cognitive demand on Theory of Mind in conversations of adults with traumatic brain injury, *Int J Lang Commun Disord*, 47 (2012) 310-321.
- [40] T.J. Farrer, D.W. Hedges, Prevalence of traumatic brain injury in incarcerated groups compared to the general population: a meta-analysis, *Prog Neuropsychopharmacol Biol Psychiatry*, 35 (2011) 390-394.



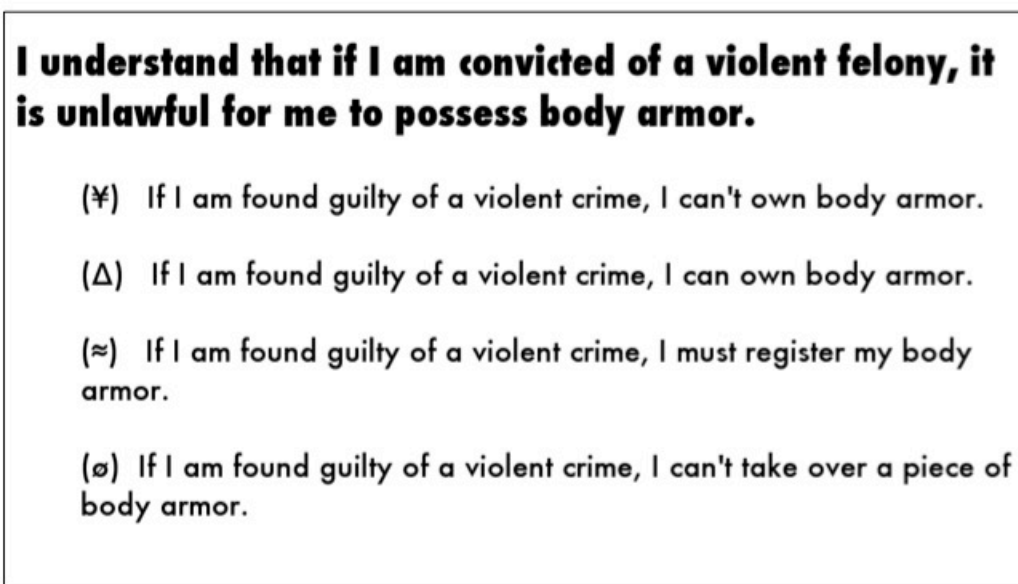
- [41] T.J. Farrer, R.B. Frost, D.W. Hedges, Prevalence of traumatic brain injury in juvenile offenders: a meta-analysis, *Child Neuropsychol*, 19 (2013) 225-234.
- [42] W.H. Williams, G. Cordan, A.J. Mewse, J. Tonks, C.N. Burgess, Self-reported traumatic brain injury in male young offenders: a risk factor for re-offending, poor mental health and violence?, *Neuropsychol Rehabil*, 20 (2010) 801-812.
- [43] J.A. Wszalek, L.S. Turkstra, Language impairments in youths with traumatic brain injury: implications for participation in criminal proceedings, *J Head Trauma Rehabil*, 30 (2015) 86-93.
- [44] P. Meulenbroek, L.S. Turkstra, Job stability in skilled work and communication ability after moderate-severe traumatic brain injury *Disability and Rehabilitation*, 38 (2016) 452-461.
- [45] J. Shorland, J.M. Douglas, Understanding the role of communication in maintaining and forming friendships following traumatic brain injury, *Brain Injury*, 24 (2010) 569-580.
- [46] *Godinez v. Moran*, 509 U.S. 389 US Supreme Court, 1993.
- [47] *Brady v. U.S.*, 397 U.S. 742, US Supreme Court, 1970.
- [48] *Miranda v. Arizona*, 384 U.S. 436, US Supreme Court, 1966.
- [49] J.F. Malec, A.W. Brown, C.L. Leibson, J.T. Flaada, J.N. Mandrekar, N.N. Diehl, P.K. Perkins, The mayo classification system for traumatic brain injury severity, *J Neurotrauma*, 24 (2007) 1417-1424.
- [50] A. Kertesz, *Western Aphasia Battery - Revised (WAB-R): Examiner's Manual*, Pearson PsyCorp2006.

- [51] B. MacWhinney, J. Wagner, Transcribing, searching and data sharing: the CLAN software and the TalkBank data repository, *Gesprachforschung*, 11 (2010) 154-173.
- [52] D. Hughes, L. McGillivray, M. Schmidek, *Guide to narrative language: Procedures for assessment*, Thinking Publication, Eau Claire, WI, 1997.
- [53] G. McKoon, R. Ratcliff, Interactions of meaning and syntax: Implications for models of sentence comprehension, *Journal of Memory and Language*, 56 (2007) 270-290.
- [54] W. Semel, E.H. Wiig, W.A. Secord, *Clinical Evaluation of Language Fundamentals-Metalinguistics*, 5th Edition ed., Pearson Assessments, San Antonio, TX, 2014.
- [55] J.D. Cohen, B. MacWhinney, M. Flatt, J. Provost, PsyScope: A new graphic interactive environment for designing psychology experiments, *Behavioral Research Methods, Instruments, and Computers*, 25 (1993) 257-271.
- [56] D. Wechsler, *Wechsler Adult Intelligence Scale*, 4th Edition ed., Pearson, San Antonio, TX, 2008.
- [57] F.A. Schrank, N. Mather, K.S. McGrew, *Woodcock-Johnson IV Tests of Achievement*, Riverside, Rolling Meadows, IL, 2014.
- [58] E.A. Wilde, G.G. Whiteneck, J. Bogner, T. Bushnik, D.X. Cifu, S.S. Dikmen, N. von Steinbuechel, Recommendations for the use of common outcome measures in traumatic brain injury research, *Arch Phys Med Rehabil*, 91 (2010) 1650-1660.
- [59] D.C. Delis, J.H. Kramer, E. Kaplan, B.A. Ober, *California Verbal Learning Test-Adult Verison (CVLT-II)*, Second Edition ed., The Psychological Corporation, Austin, TX, 2000.

- [60] T.N. Tombaugh, Trail Making Test A and B: normative data stratified by age and education, *Arch Clin Neuropsychol*, 19 (2004) 203-214. .
- [61] R.C. Team, R: A Language and Environment for Statistical Computing, R Foundation for Statistical Computing, Vienna, Austria, 2014.
- [62] R.P. Abelson, D.A. Prentice, Contrast Tests of Interaction Hypotheses, *Psychological Methods*, 2 (1997) 315-328.
- [63] E.D. Bigler, Systems Biology, Neuroimaging, Neuropsychology, Neuroconnectivity and Traumatic Brain Injury, *Front Syst Neurosci*, 10 (2016) 55.
- [64] J.P. Hayes, E.D. Bigler, M. Verfaellie, Traumatic Brain Injury as a Disorder of Brain Connectivity, *J Int Neuropsychol Soc*, 22 (2016) 120-137.
- [65] A.U. Turken, N.F. Dronkers, The neural architecture of the language comprehension network: converging evidence from lesion and connectivity analyses, *Front Syst Neurosci*, 5 (2011) 1.
- [66] C.J. Price, A review and synthesis of the first 20 years of PET and fMRI studies of heard speech, spoken language and reading, *Neuroimage*, 62 (2012) 816-847.
- [67] L. Baker, How do we know when we don't understand? Standards for evaluating text comprehension, *Metacognition, cognition, and human performance*, 1 (1985) 155-205.
- [68] L. Baker, A.L. Brown, *Metacognitive Processes and Reading*, 1984, pp. 779-812.
- [69] S. McDonald, R. Tate, L. Togher, C. Bornhofen, E. Long, P. Gertler, R. Bowen, Social skills treatment for people with severe, chronic acquired brain injuries: a multicenter trial, *Arch Phys Med Rehabil*, 89 (2008) 1648-1659.

- [70] L. Togher, S. McDonald, C. Code, Communication disorders after traumatic brain injury, in: L. Togher, S. McDonald, C. Code (Eds.) Communication disorders following traumatic brain injury, Hove: Psychology Press 1999, pp. 1-18.
- [71] C.M. Judd, J. Westfall, D.A. Kenny, Treating Stimuli as a Random Factor in Social Psychology: A New and Comprehensive Solution to a Pervasive but Largely Ignored Problem, *Journal of Personality and Social Psychology*, 103 (2012) 54-69.
- [72] D.J. Barr, R. Levy, C. Scheepers, H.J. Tily, Random effects structure for confirmatory hypothesis testing: Keep it maximal, *J Mem Lang*, 68 (2013).
- [73] J. Westfall, D.A. Kenny, C.M. Judd, Statistical power and optimal design in experiments in which samples of participants respond to samples of stimuli, *J Exp Psychol Gen*, 143 (2014) 2020-2045.
- [74] J.L. Mathias, P. Wheaton, Contribution of brain or biological reserve and cognitive or neural reserve to outcome after TBI: A meta-analysis (prior to 2015), *Neurosci Biobehav Rev*, 55 (2015) 573-593.
- [75] J.L. Mathias, P. Wheaton, Changes in Attention and Information-Processing Speed Following Severe Traumatic Brain Injury: A Meta-Analytic Review, *Neuropsychology*, 21 (2007) 212-233.
- [76] M. Battistone, D. Woltz, E. Clark, Processing speed deficits associated with traumatic brain injury: processing inefficiency or cautiousness?, *Appl Neuropsychol*, 15 (2008) 69-78.
- [77] T.A. Salthouse, What cognitive abilities are involved in trail-making performance?, *Intelligence*, 39 (2011) 222-232.

[78] A. Chuderski, M. Taraday, E. Nęcka, T. Smoleń, Storage capacity explains fluid intelligence but executive control does not, *Intelligence*, 40 (2012) 278-295.



**Figure 1** Image of experimental stimulus within the PsyScope software. Q, R, U, and P keys were labeled with stickers showing the symbols ¥, Δ, ≈, and ø; these symbols corresponded to the four options in the forced multiple-choice question. Participants were asked to press the key corresponding to the option they thought best matched the bolded sentence at the top of the screen.

	<b>TBI (=19)</b>	<b>CG (=21)</b>
Age, y, mean (SD)	42.27 (12.56)	43.29 (14.50)
Age, range	24.75 – 64.50	19.17 – 64.67
Female, n (%)	11 (58%)	13 (62%)
Highest Level of Education		
High School / GED	2	2
Some College/Associates/Tech	7	3
Bachelor's Degree	6	13
Post-Graduate	3	3

**Table 1** Participant Demographics.

	<b>TBI (=19)</b>
Time post injury, years, mean (SD)	16.53 (14.15)
Mechanism of Injury, n, (%) <sup>a</sup>	
Moving Vehicle Accident	10 (53%)
Fall	4 (21%)
Assault	1 (5%)
Sports-related	2 (11%)
Other	1 (5%)

**Table 2** Injury Characteristics of TBI Participants

<sup>a</sup> Information on injury mechanism unavailable for 1 participant



	<b>TBI (=19)</b>	<b>CG (=21)</b>
WAIS-DIGIT		
Raw	14.53 (3.49)	19.52 (4.17)**
Scaled	8.42 (2.22)	11.90 (3.13)**
WJ		
Total	66.00 (25.73)	89.81 (15.05)**
Grade Estimate	8.89 (4.69)	12.21 (1.57)**
Common Data Elements Committee Tasks		
WAIS-PSI	91.89 (19.93)	114.62 (16.48)**
Trailmaking A	-0.61 (1.87)	0.92 (0.60)**
Trailmaking B	-1.63 (4.49)	0.72 (1.95)*
CVLT – 5 Trials	43.53 (11.75)	60.10 (7.42)**
CVLT – Short Delay	-0.97 (1.09)	0.68 (0.63)**
CVLT – Long Delay	-1.16 (1.21)	0.72 (1.95)**

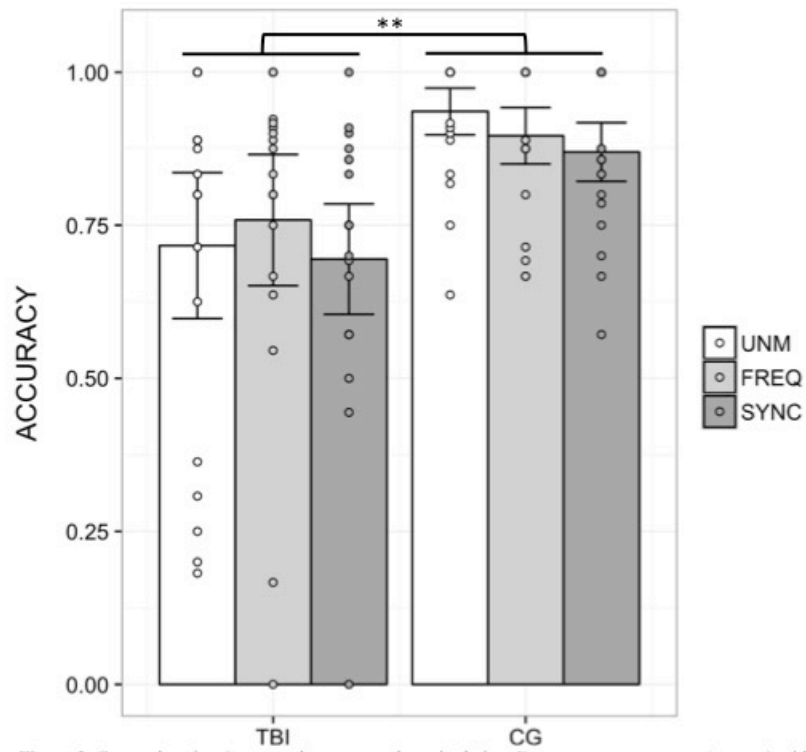
**Table 3** Scores on Wechsler Adult Intelligence Scale-Revised Digit Span (WAIS-DIGIT), Woodcock-Johnson Sentence Reading Fluency Task (WJ), and Common Data Elements Committee for TBI research tasks. Data are mean (SD).

\*  $p < 0.05$

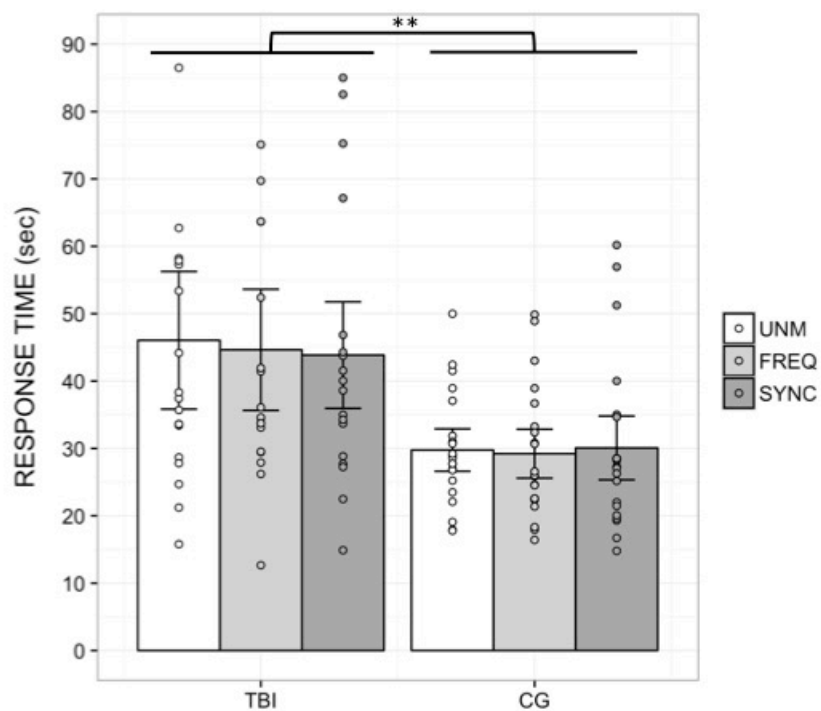
\*\*  $p < 0.01$

	Total Accuracy	Total RT (min)	UNM Accuracy	UNM RT	FREQ Accuracy	FREQ RT	SYNC Accuracy	SYNC RT	Average RT
<b>TBI (n=19)</b>									
<b>mean</b>	0.71	19.24	0.77	46.51	0.74	45.05	0.67	43.62	44.84
<b>sd</b>	0.22	9.96	0.51	25.90	0.27	22.08	0.24	19.37	20.22
<b>CG (=21)</b>									
<b>mean</b>	0.90	12.96	0.94	29.76	0.90	29.22	0.87	30.08	26.69
<b>sd</b>	0.08	3.89	0.10	8.36	0.12	9.65	0.13	12.58	9.19

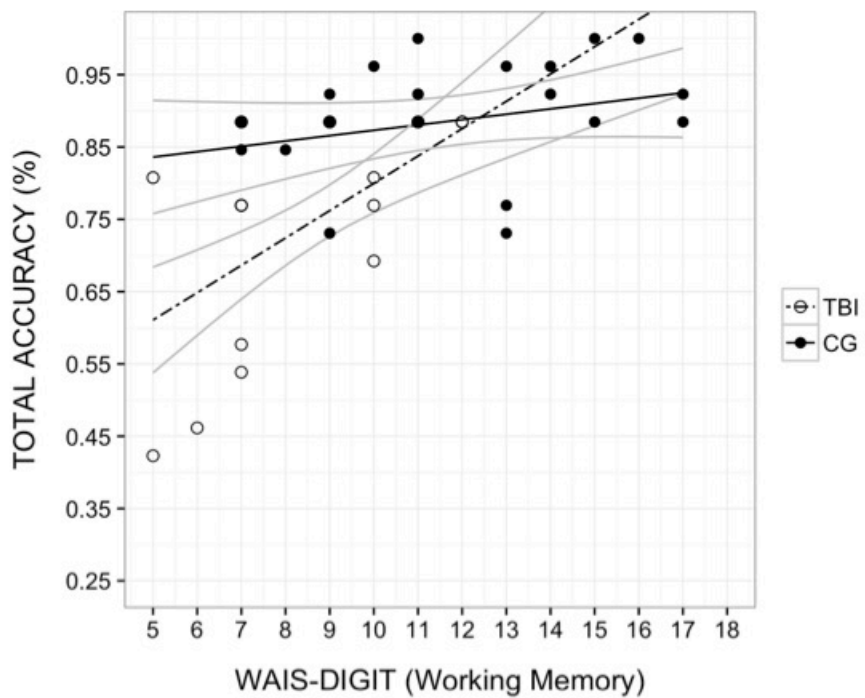
**Table 4** Overall Accuracy (percentage correct) and response Time (sec, unless otherwise noted) by group and condition. RT = response time; UNM = unmodified modification; FREQ = frequency modification; SYNC = syntax modification



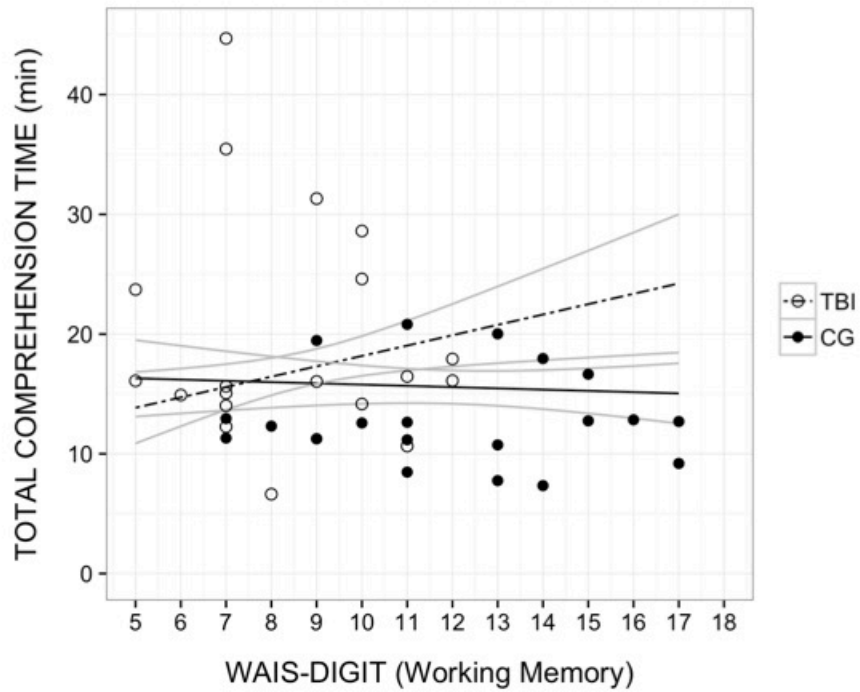
**Figure 2** Comprehension Accuracy by group and manipulation. Bars are mean accuracy (percent) with 95% confidence intervals. A LMEM regressing accuracy on group and item type,  $R^2c=0.39$ , showed a main effect of group,  $F(1,43)=8.85$ ,  $p<0.01$ , but no main effect of manipulation,  $F(1,23)=0.50$ ,  $p=0.48$  or the interaction term,  $F(1,23)=2.87$   $p=0.10$ .  
 \*\* =  $p < 0.01$



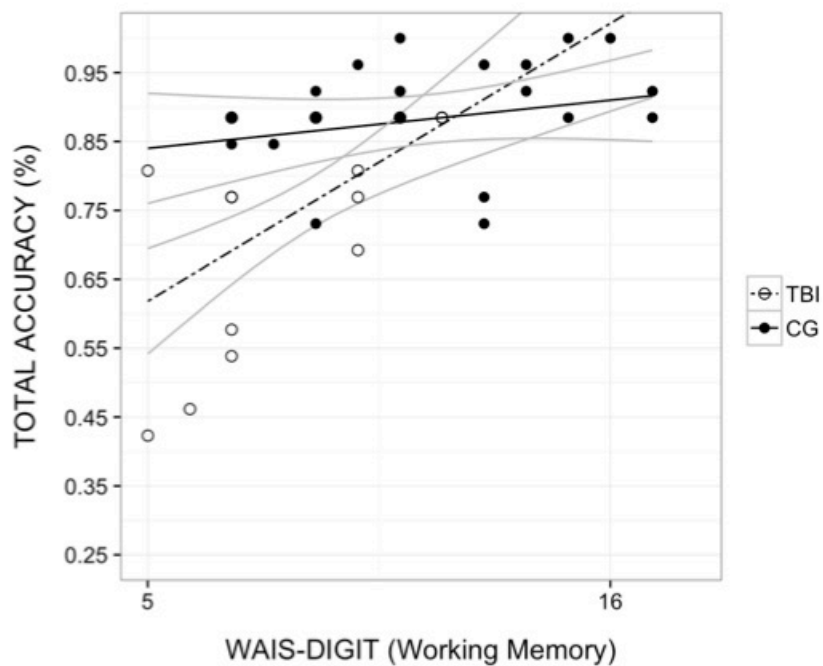
**Figure 3** Response time by group and manipulation. Bars are response time (sec) with 95% confidence intervals. A LMEM regressing accuracy on group and item type,  $R^2c = 0.62$ , showed a main effect of group,  $F(1,41) = 8.77$ ,  $p < 0.01$ , but no main effect of manipulation,  $F(1,23) = 0.23$ ,  $p = 0.63$  or the interaction term,  $F(1,76) = 1.33$ ,  $p = 0.36$ .  
 \*\* =  $p < 0.01$



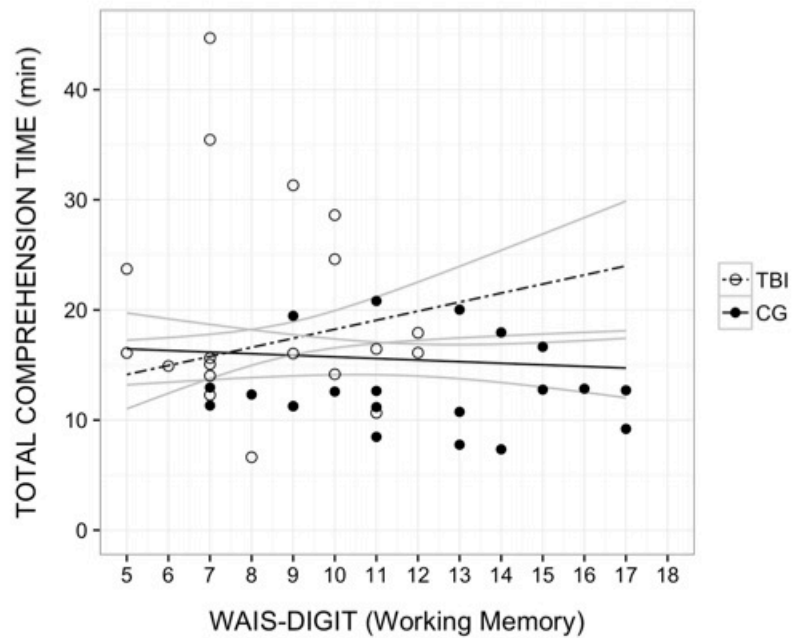
**Figure 4** Overall accuracy by group and working memory (WAIS-DIGIT) controlling for reading fluency. A linear model regressing accuracy on group and working memory with reading fluency as a covariate showed a significant effect of working memory,  $t(35) = 2.32$ ,  $p < 0.05$ ,  $\eta^2_p = 0.13$ , but no main effect of group,  $t(35) = 1.14$ ,  $p = 0.26$ , reading fluency,  $t(35) = 0.737$ ,  $p = 0.47$  or the interaction between group and working memory,  $t(35) = -1.54$ ,  $p = 0.13$



**Figure 5** Overall comprehension time by group and working memory (WAIS-DIGIT) controlling for reading fluency. A linear model regressing total comprehension time on group and working memory with reading fluency as a covariate showed a significant effect of reading fluency,  $t(35) = -4.62$ ,  $p < 0.01$ ,  $\eta^2_p = 0.38$ ; there was no significant effect of group,  $t(35) = -1.12$ ,  $p = 0.27$ , working memory,  $t(35) = 0.96$ ,  $p = 0.35$ , or the interaction term,  $t(35) = -1.21$ ,  $p = 0.24$ .

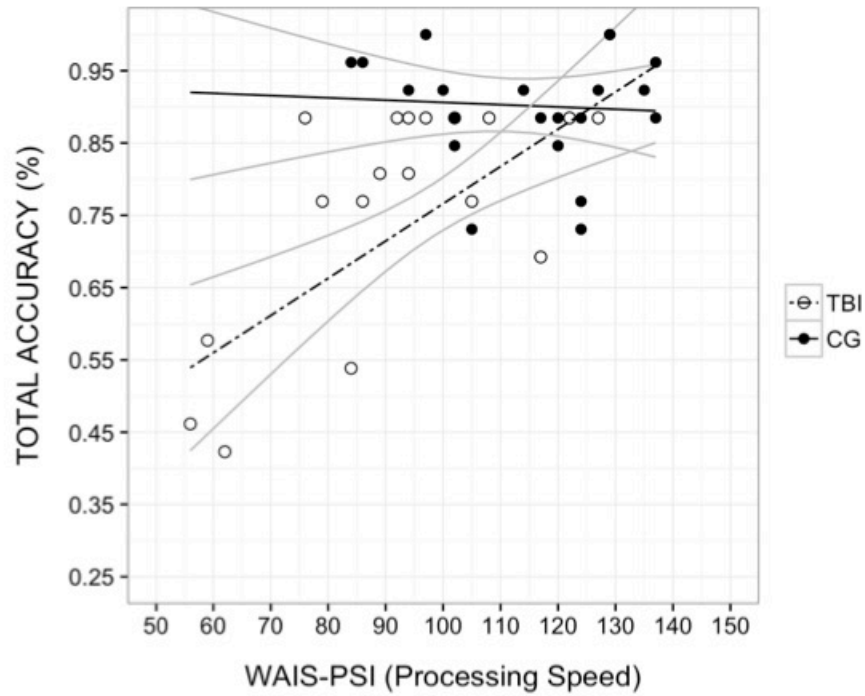


**Figure 6** Overall accuracy by group and working memory (WAIS-DIGIT) controlling for reading fluency and processing speed. A linear model regressing accuracy on group and working memory with reading fluency and processing speed as covariates showed a significant effect of working memory,  $t(34) = 2.10$ ,  $p < 0.05$ ,  $\eta^2_p = 0.11$ , but no main effect of group,  $t(34) = 1.81$ ,  $p = 0.08$ , reading fluency,  $t(34) = 0.31$ ,  $p = 0.76$ , processing speed,  $t(34) = 0.38$ ,  $p = 0.70$ , or the interaction between group and working memory,  $t(34) = -1.52$ ,  $p = 0.14$ .

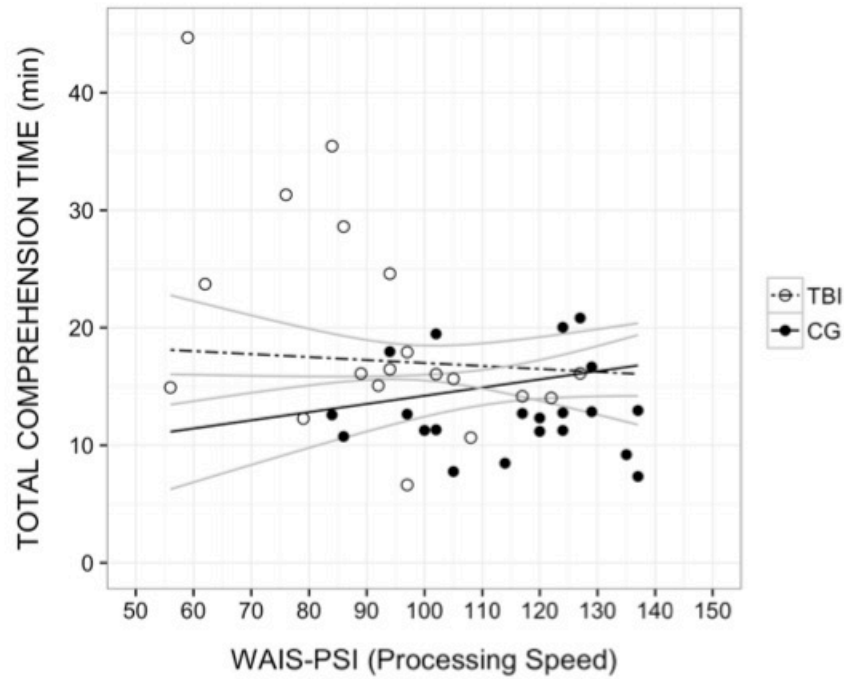


**Figure 7** Overall comprehension time by group and working memory (WAIS-DIGIT) controlling for reading fluency and processing speed. A linear model regressing total comprehension time on group and working memory with reading fluency and processing speed as covariates showed a significant effect of reading fluency,  $t(34) = -3.73$ ,  $p < 0.01$ ,  $\eta^2_p = 0.29$ . There was no significant effect of group,  $t(34) = 0.85$ ,  $p = 0.40$ , working memory,  $t(34) = 0.81$ ,  $p = 0.42$ , processing speed,  $t(34) = 0.36$ ,  $p = 0.72$ , or the working memory/group interaction term,  $t(34) = -1.19$ ,  $p = 0.24$ .

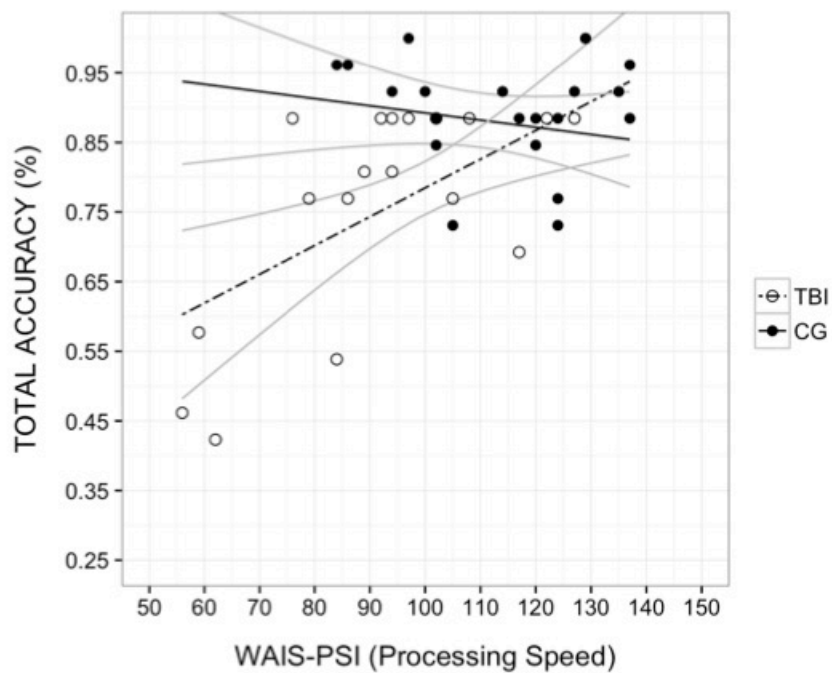




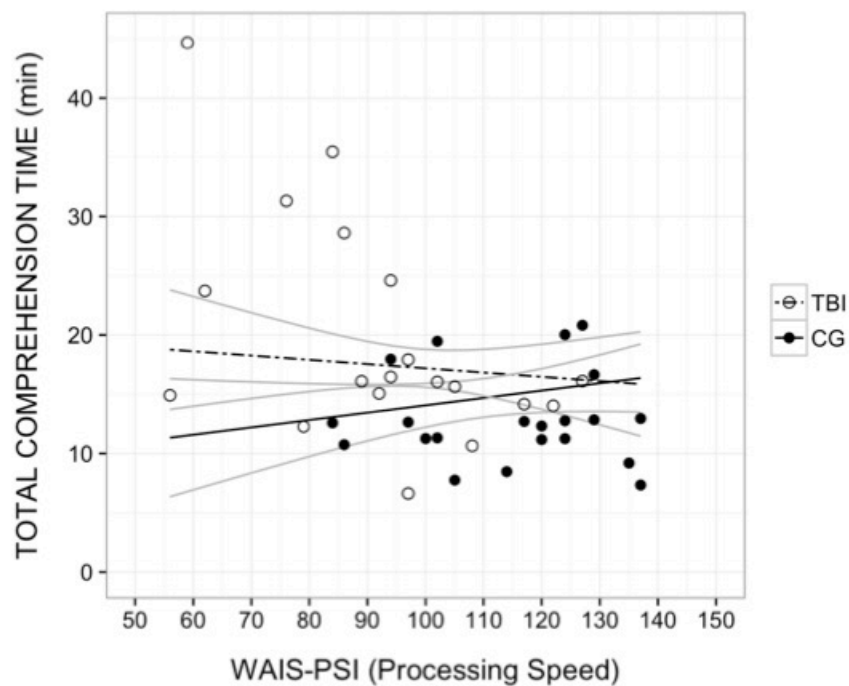
**FIGURE 8** Overall accuracy by group and processing speed (WAIS-PSI) controlling for reading fluency. A linear model regressing accuracy on group and processing speed with reading fluency as a covariate showed a significant effect of group,  $t(35) = 2.15$ ,  $p < 0.05$ ,  $\eta^2_p = 0.11$ , and a trend toward significance for the interaction term,  $t(35) = -1.87$ ,  $p = 0.07$ ,  $\eta^2_p = 0.06$ , but no main effect of processing speed,  $t(35) = 1.32$ ,  $p = 0.19$ , or reading fluency,  $t(35) = -0.27$ ,  $p = 0.84$ .



**FIGURE 9** Overall comprehension time by group and processing speed (WAIS-PSI) controlling for reading fluency. A linear model regressing total comprehension time on group and processing speed with reading fluency as a covariate showed a significant main effect of reading fluency,  $t(35) = -2.84$ ,  $p < 0.01$ ,  $\eta^2_p = 0.19$ . There were no significant effects of group,  $t(35) = -1.08$ ,  $p = .29$ , processing speed,  $t(35) = 0.30$ ,  $p = 0.77$ , or the group/processing speed interaction,  $t(35) = 0.81$ ,  $p = 0.43$ .



**FIGURE 10** Overall accuracy by group and processing speed (WAIS-PSI) controlling for reading fluency and working memory. A linear model regressing accuracy on group and processing speed with reading fluency and working memory as covariates showed no significant effect of group,  $t(34) = 2.01$ ,  $p = 0.053$ , processing speed,  $t(34) = 0.82$ ,  $p = 0.42$ , working memory,  $t(34) = 1.47$ ,  $p = 0.15$ , or the interaction of processing speed and group,  $t(34) = -1.81$ ,  $p = 0.80$ , although group and the processing speed/group terms were trending towards significance



**FIGURE 11** Overall comprehension time by group and processing speed (WAIS-PSI) controlling for reading fluency and working memory. A linear model regressing total comprehension time on group and processing speed with reading fluency and working memory as covariates showed a significant effect of reading fluency,  $t(34) = -2.77$ ,  $p < 0.01$ ,  $\eta^2_p = 0.18$ . None of the other terms was significant: group  $t(34) = -0.99$ ,  $p = 0.33$ , working memory,  $t(34) = 0.36$ ,  $p = 0.72$ ; or the group/processing speed interaction term,  $t(34) = 0.82$ ,  $p = 0.42$ .

	<b>TBI</b>	<b>CG</b>
Error Type		
Opposite	47** (37)	12 (21)
Alternative Legal	48* (38)	24 (43)
Literal	32 (25)	20 (36)
Total Errors	127**	56

**Table 5** Error Types by Group. Data are frequencies with percent total per type in parentheses

\*  $p < 0.05$

\*\*  $p < 0.01$

	TRAIL-A	TRAIL-B	CVLT – 5 trials	CVLT-Short Delay	CVLT-Long Delay
<b>TBI (n=19)</b>					
Overall Accuracy	0.58**	0.40	.29	0.36	0.19
Completion Time	-0.42	-0.13	0.04	0.21	0.08
<b>CG (=21)</b>					
Overall Accuracy	-0.09	0.06	0.33	0.56**	0.52*
Completion Time	-0.16	0.06	0.13	-0.07	0.16

**Table 6** Correlations among Overall Accuracy and Task Completion Time and Common Data Elements Committee for TBI Research Tasks. TRAIL = Trailmaking task; CVLT = California Verbal Learning Test.

\* Correlation is significant at 0.05 (one-tailed)

\*\* Correlation is significant at 0.01 (one-tailed)

## **CHAPTER 3**

### Manuscript 2

**Comprehension of Social-Legal Exchange Rules in Adults with and without  
Traumatic Brain Injury**

Joseph A. Wszalek<sup>1,2,3</sup> & Lyn S. Turkstra<sup>1,3</sup>

1 Neuroscience Training Program, University of Wisconsin–Madison

2 Neuroscience and Public Policy Program, University of Wisconsin–Madison

3 Department of Communication Science and Disorders, University of Wisconsin–  
Madison

Corresponding Author:

Joseph A. Wszalek, J.D.

University of Wisconsin–Madison

Department of Communication Science and Disorders

1975 Willow Drive

Madison, WI 53705

Email: [josephwszalek@uwalumni.com](mailto:josephwszalek@uwalumni.com)

Phone: 608 – 293 – 0026



## Abstract

**Objective:** The purpose of this study was to characterize comprehension of social-exchange and legal rules in adults with and without TBI. We hypothesized that adults with TBI would demonstrate poorer comprehension and longer response times than a comparison group (CG) of uninjured individuals on an experimental task of logical reasoning.

**Methods:** Participants were 20 adults with moderate-to-severe TBI (11 females) and 21 CG adults (13 females) ages 24-64 years who completed a Wason Selection Task to test comprehension of three categories of social rules.

**Results:** Individuals with TBI performed with significantly lower accuracy ( $M = 0.67$ ,  $SD = 0.28$ ,  $F(1,39) < 0.01$ ) and longer response times ( $M = 5.02$  sec,  $SD = 2.81$ ,  $F(1,39) < 0.01$ ) across all three rule categories, but these effects disappeared when controlling for processing speed and working memory. There was no effect of category on accuracy. Legal rules were associated with longer response times ( $b = 0.12$ ,  $F(1,39) < 0.01$ ), with the TBI group showing an additional increase ( $b = 0.16$ ,  $F(1,78) < 0.05$ ). For both accuracy and response time there was a significant effect of processing speed but not working memory.

**Conclusion:** We reported a significant effect of rule category, and an interaction between group and rule category, on social-reasoning response time. We further reported a significant effect of processing speed on both social-reasoning accuracy and social-reasoning response time. These findings suggest that individuals with TBI underperform uninjured individuals on both reasoning accuracy and reasoning time, and that these differences may be attributable to differences in processing speed. The findings also

suggest that, while accuracy of legal rules is not different than accuracy in other categories, individuals require additional time to respond to them. Additional research is needed to further test the relationships among TBI, social-exchange reasoning with legal rules, and cognitive mechanisms.

**Keywords:** brain injuries, adult, social exchange, social reasoning, legal rules

## INTRODUCTION

The existence of social rules is arguably one of the clearest defining features of modern-day society. From statutes proscribing antisocial conduct to behavioral norms dictating everyday interactions, humans exist in a social world bound by explicit and implicit norms. Because violating social rules can trigger consequences ranging from the loss of a friend's gratitude to the loss of one's own life, the ability to recognize and respect social rules is critically important for effective social behavior.

Many of these social rules fall within the category of social exchanges or social contracts. Social exchanges are behavioral transactions in which one party provides a benefit to the second (e.g., using polite language to request a favor) conditioned on receiving a benefit in return (e.g., receiving the requested favor) [1]. Cognitive processing of social exchanges appears to be rooted in humans' social evolution: social pressure to seek mutually beneficial outcomes, and to avoid individuals who did not seek such outcomes, may have furthered the development of social context-specific reasoning mechanisms for "practical" problems such as social exchange [2-7]. Consequently, researchers have argued in that humans recruit a dedicated cognitive network during social-exchange reasoning; while no comprehensive neural architecture for social reasoning has yet been formalized, it appears that the task is highly distributed throughout both cortical and subcortical regions.

Studies of social-contract reasoning have used a test of logical reasoning called the Wason selection task[3]. The Wason task presents social contracts as conditional rules in the form *If P, then Q* (e.g., "If you borrow a car, then you have to fill up the gas tank"). Examinees see four cards showing information about either the P clause ("Tom

borrowed a car”) or the Q clause (“Harry did not fill up the gas tank”) on the card’s visible side, while information about the other clause is on the card’s concealed side. The four cards correspond to the four possible logical categories of the conditional rule (P, not P, Q, not Q), and the goal of the task is to determine which card(s) must be turned over in order to determine whether or not the “If P, then Q” rule is broken. The logically correct answers, and the answers that operationally demonstrate that the participant is able to reason through the rule, are the “P” card and the “not Q” card: these options represent the protasis (“if the benefit”) and the unsatisfied apodosis of the rule (“not the cost”), and therefore are conditions that may indicate a violation of the rule’s logic. Typical adults perform well on the Wason selection task for social exchanges but considerably poorer on comparable theoretical reasoning tasks (“If there is a bird, then there will be an apple”), which supports the presence of a social-reasoning architecture as described earlier [1, 4, 8]. The Wason selection task can also describe other categories of context-specific reasoning, such as precautionary rules. Precautionary rules follow the formula P = hazard or risk, Q = precautionary action (e.g., “If you go sunbathing, you should wear sunscreen.”). Researchers have speculated that, as was the case for social exchanges, evolutionary pressure selected for context-specific reasoning to respond to hazardous situations [1, 4], and there is generally a concordance between scores on precautionary-reasoning and social-exchange tasks [1, 4, 8].

The ability to follow social norms and rules is critically important in the legal system. Legal rules are arguably a subset of social-exchange rules: both generally follow the same “If benefit, then cost” formula, and both generally reflect the normative, evolutionary adaptation of mutual collaboration and abhorrence of rule “breakers;”

indeed, previous experiments have included clear legal rules as part of their social-exchange stimulus sets [4]. The degree to which legal rules and social-exchange rules can be conflated, however, is unclear. Legal rules often comprise both explicit rules, such as laws themselves (e.g., “if you drive faster than the speed limit, you will get a speeding ticket”), and implicit rules that govern social interactions in non-legal contexts (e.g., “if you talk disrespectfully to a judge, then he may hold you in contempt of court”) [9]. Additionally, the “cost/benefit” calculus of legal rules may be more difficult to contextually parse. For example, the benefit of following a particular rule may simply be participation in a certain legal scenario (e.g., “If you sign this contract, you get the benefits of the contract”), or compliance with the legal rule itself to avoid a cost (e.g., “If you drive the speed limit, then you won’t get a ticket for speeding”), or the promotion of normative social goals (e.g., “If you vote in an election, then you promote democratic government”), or some combination thereof. Furthermore, legal rules are often arbitrary in nature and culturally specific, such that the cost/benefit relationship of the legal rule may not necessarily reflect any predefined or innate natural relationship (for example, it may be difficult for a given individual to feel that a democratic government has mutual benefits).

Finally, legal rules often contain partly implicit and partly explicit benefits. For example, there are explicit benefits associated with obeying the speed limit (i.e., not receiving a speeding ticket), but there are also implicit benefits (e.g., respecting and promoting the rule of law), some of which may be difficult to identify or conceptualize. Consequently, the ability to reason through a legal rule may be more difficult than reasoning through non-legal rules, in part because the individual may not be able to rely

simply on the formulaic “receive benefit, pay cost” relationship that characterizes non-legal social exchanges. Because severe punishment can result from inaccurate reasoning or understanding of these social-legal rules [9-11], a better understanding of the relationship between legal rules and the parallel mechanisms of social exchanges and precautionary rules would be valuable in better understanding how individuals reason through legal rules.

Problems with social convention are one of the hallmarks of traumatic brain injury (TBI) [12]. Individuals with TBI often perform or display inappropriate communicative behaviors, such as failing to use appropriately polite language when making a request or using humor in unsuitable contexts [13-17]. These social errors may lead to undesirable outcomes: individuals with TBI struggle to maintain employment [18], make and maintain friendships [19], and maintain a desirable quality of life [20]. Individuals with TBI also are disproportionately represented within incarcerated populations [21-24], which raises questions about whether their social communication behaviors could influence interactions within judicial systems. Although there is no evidence to support a causal association between TBI and illegal activity, poor understanding of social rules, and legal rules, could have negative consequences for individuals with TBI once they enter the legal system [9].

Comprehension of Wason-type social exchanges has not been studied in individuals with TBI; previous studies on other clinical populations, however, suggest there is a relationship between social cognition deficits and social-exchange understanding. Ermer and Kiehl showed that individuals with psychopathy were selectively impaired not only in social-exchange rules but also in precautionary rules

even when controlling for IQ and executive functions [8]. These findings suggest that domain-general reasoning abilities are insufficient to comprehend social-exchange rules [5]. Similarly, preliminary work by Sullivan et al. suggests that domain-general reasoning abilities may not be necessary to understand social contracts [25], lending further credence to the hypothesis that social-exchange reasoning recruits a dedicated cognitive and anatomical framework. The framework comprises areas in the dorsal-lateral prefrontal cortex (typically associated with goal formation and inference making) [6], medial orbitofrontal and ventromedial prefrontal cortex (typically associated with emotion- or value-laden cognition) [4, 6], angular gyrus [4], and basal ganglia, particularly the striatum [7]. Because TBI often results in distributed disruption of white-matter pathways, including those that connect prefrontal cortical areas to other areas of the cortex [26-28], it may be the case that the disruptions in social behavior observed in people with TBI include difficulties in social-rule reasoning due to diffuse neural damage. Relatedly, TBI is often associated with deficits in working memory and processing speed [29-32]

To better understand the relationships among TBI, social-rule reasoning, and legal rules, this study had two aims. The first aim was to characterize Wason-task social reasoning in participants with TBI. This comparison would provide information about social-rule reasoning in adults with TBI, and also allow us to compare findings in individuals with TBI to Ermer and Kiehl's (2010) findings in individuals with psychopathy. While both psychopathy and TBI are endemic in incarcerated populations [21, 33], the importance of distinguishing between TBI and other mental or cognitive disorders (even those that might be comorbid) is increasingly pressing from a research

and policy perspective [34]. . The second aim was to expand the Wason social-rule stimuli to include legal rules. This would allow us to investigate potential differences between reasoning behavior for social rules in “general” social rules vs. a legal subset of social rules. We hypothesized that individuals with TBI would perform poorer on measures of social reasoning than uninjured individuals, and we hypothesized that all participants would perform poorer on legal rules than on other types of social rules. We expected that the findings would improve overall understanding of the social-behavior deficits in individuals with TBI, and provide a valuable source of data for actors within legal systems who are interested in improving outcomes for individuals with TBI that may depend on social reasoning.

## **METHODS**

### **Participants**

Participants were adults with moderate-to-severe TBI (n=20, 11 females) and an uninjured comparison (CG) group of adults without TBI (n=21, 13 females) matched group-wise for age,  $t(38) = -0.29, p = 0.77$ ; and education,  $t(34) = -0.94, p = 0.35$ . All participants were from the Midwest and were recruited as part of a larger study of social cognition in adults with and without TBI. Injury severity for the TBI group was defined using standard injury criteria [35]. Table 1 shows participant characteristics. Inclusion criteria were self-identification as a native English speaker and no self-reported history of a diagnosis of language or learning disability or neurological disorder affecting the brain (pre-injury for the TBI group). Exclusion criteria were failing a pure-tone audiometric screening test at 20 db HL at 500, 1000, 2000, and 4000 Hz; failing standard screening for far and near vision; testing within the aphasic range of the Western Aphasia Battery



Bedside Screening Test [36]; and prior participation in a criminal plea hearing in a state court. The Social and Behavioral Sciences Institutional Review Board at the University of Wisconsin approved all procedures. All participants signed a written consent form prior to participating in the study, and all participants received compensation for their participation.

### **Wason Selection Task**

Participants completed 60 Wason stimuli: 20 precautionary rules, 20 social exchange rules, and 20 legal rules. Ten precautionary rules and ten social exchange rules were adapted from Ermer and Kiehl (2010) [8]; the remaining precautionary and social exchange rules were modeled on this set and included similar rules based on workplace, recreational, domestic, and social circumstances. The legal rules were based on state or federal laws in 13 legal categories, including property law, family law, and personal injury law. We included a range of legal contexts to create a generalizable stimulus set and include legal scenarios that reflected social exchanges. Stimuli were matched for story length and readability. Table 2 shows descriptive statistics for stimuli, and Figure 1 shows an example of the stimuli as observed by the participants during the task.

### **Additional Measures**

We administered the Wechsler Adult Intelligence Scale-Revised Digit Span (WAIS-Digit) task [37] to obtain a standardized working-memory assessment for each participant; and the Woodcock-Johnson Sentence Reading Fluency Task to obtain a standardized reading-level assessment [38]. To compare the present study with previous publications, participants completed a series of tasks recommended by the Common Data Elements Committee for TBI research [39]: the California Verbal Learning Test (CVLT)

[40], Wechsler Adult Intelligence Scales tests for Processing Speed Index (WAIS-PSI) [37], and Trailmaking Tasks A and B [41]. Results for TBI and CG groups are shown in Table 3. Paired samples t-tests revealed significant between-groups differences on all neuropsychological measures ( $p$ 's  $< 0.01$  except for Trailmaking Task B,  $p < 0.05$ ), and no significant sex-based difference on any measure except for the WJ total score,  $t(29) = -2.49$ ,  $p < 0.05$ , and the WJ grade-estimate measure,  $t(25) = -2.11$ ,  $p < 0.05$ .

### **Procedure**

We automated the task using PsyScopeX software [42] on a MacBook Pro laptop computer. See Figure One for an image of the experimental setup as viewed by the participants during the task. To ensure participants' comprehension of instructions, the examiner read the instructions aloud as the participants viewed them on the screen, and then asked the participant whether they had any questions before beginning the task. Participants received as much time as they needed to complete the task.

### **Data Analysis**

Our first set of hypotheses tested the relationship among rule comprehension accuracy and response time, TBI, and rule category. First, we hypothesized that there would be a main effect of group, with lower comprehension-accuracy scores and longer response times in the TBI group than CG participants. Second, we hypothesized that there would be a main effect of rule category on comprehension accuracy, with accuracy of precautionary rules being the highest, accuracy of social rules being lower, and accuracy of legal rules being the lowest: following the trends reported by Ermer and Kiehl (2010) [8], we hypothesized that legal rules would function as a "subclass" of social rules more difficult than either precautionary or social rules. Similarly, we

hypothesized that there would be a main effect of rule category on response time, with response times being shortest for precautionary rules, longer for social rules, and longest for legal rules. Third, we hypothesized an interaction between group and rule category, with the effect of rule category being greater for individuals with TBI on both comprehension accuracy and response time measures. These hypotheses were analyzed using a linear mixed-effects model regressing either comprehension accuracy or response time on group, rule category, and the interaction term.

Our second set of hypothesis tested relationships among rule comprehension, TBI, and two cognitive mechanisms: working memory, operationalized as scores from the WAIS-DIGIT assessment; and processing speed, operationalized by scores from the WAIS-PSI assessment. First, we hypothesized that, when controlling for group, there would be a main effect of working memory on both accuracy and response time, with higher WAIS-DIGIT scores associated with higher accuracy and lower response times. Second, we hypothesized that, when controlling for group, there would be a main effect of processing speed, with higher WAIS-PSI scores associated with higher accuracy and lower response times. To test these hypotheses, we reran the linear mixed-effects models but included working memory and processing speed as covariates.

Statistical analyses were conducted in R 3.1.2 (<http://www.R-project.org/>) [43]. The criterion alpha level was set at 0.05 for statistical significance, and we reported trends for p values of .05-.10. Mixed-effects models used contrasts to test the predicted pattern of means and residual between-group variance [44]

## **RESULTS**

Demographic characteristics of the participants are shown in Table 1. There was no significant between-group difference on any of the variables. Injury characteristics of the TBI group are shown in Table 3.

Results of the additional measures are shown in Table 4. There were statistically significant differences on every measure, with the CG group having higher scores on the WAIS-DIGIT,  $t(36) = -4.27$ ,  $p < 0.01$ ; WAIS\_PSI,  $t(37) = -4.14$ ,  $p < 0.01$ ; WJ [total score],  $t(30) = -3.79$ ,  $p < 0.01$ ; the Trailmaking tasks A,  $t(23) = -3.49$ ,  $p < 0.01$ , and B,  $t(23) = -2.15$ ,  $p < 0.05$ ; and all three components of the CVLT: CVLT-5,  $t(32) = 5.51$ ,  $p < 0.01$ ; CVLT-S,  $t(31) = -6.01$ ,  $p < 0.01$ ; and CVLT-L:  $t(30) = -6.21$ ,  $p < 0.01$ .

### **Linear – Mixed Effects Models**

Comprehension accuracy and response times are shown in Table 5. Analysis of comprehension accuracy revealed a significant main effect of group,  $F(1,39) = 9.03$ ,  $p < 0.01$ ; a trend toward a main effect of manipulation,  $F(1, 78) = 2.76$ ,  $p = 0.10$ ; and no significant interaction of group and manipulation,  $F(1,77) = 1.01$ ,  $p = 0.92$ . Orthogonal contrast for rule category was not significant,  $F(1,78) = 0.82$ ,  $p = 0.37$ . Overall model fit was  $R^2_m = 0.17$  (Figure 2).

Analysis of response time revealed significant main effects of group,  $F(1,39) = 7.32$ ,  $p < 0.01$ ; and rule category,  $F(1,78) = 9.82$ ,  $p < 0.01$ ; and a significant interaction of group and rule category,  $F(1,78) = 4.45$ ,  $p < 0.05$ . Orthogonal contrast for rule category was not significant,  $F(1,78) = 0.02$ ,  $p = 0.88$ . Overall model fit was  $R^2_m = 0.15$  (Figure 3).

Analysis of comprehension accuracy when controlling for working memory and processing speed revealed a main effect of processing speed,  $F(1,37) = 4.62$ ,  $p < 0.05$ , with shorter response times associated with larger WAIS-DIGIT scores; but no

significant effect of group,  $F(1,37) = 2.25$ ,  $p = 0.14$ ; rule type,  $F(1,78) = 2.76$ ,  $p = 0.10$ ; or working memory,  $F(1,37) = 0.25$ ,  $p = 0.62$ ; or group-by-rule category interaction term,  $F(1,78) = 0.01$ ,  $p = 0.92$ . Orthogonal contrast for rule category was not significant,  $F(1,78) = 0.82$ ,  $p = 0.37$ . Overall model fit was  $R^2_m = 0.25$  (Figure 4).

Analysis of response time when controlling for working memory and processing speed revealed a significant effect of rule category,  $F(1,78) = 9.82$ ,  $p < 0.01$ ; and processing speed,  $F(1,78) = 4.45$ ,  $p < 0.04$ ; and a significant group-by-rule category interaction,  $F(1,37) = 6.06$ ,  $p < 0.02$ . There was no significant effect of group,  $F(1,37) = 0.89$ ,  $p = 0.35$ ; or working memory,  $F(1,37) = 0.03$ ,  $p = 0.87$ . Orthogonal contrast for rule category was not significant,  $F(1,78) = 0.02$ ,  $p = 0.88$ . Overall model fit was  $R^2_m = 0.27$  (Figure 5).

### **Correlations**

As an exploratory analysis, we conducted Pearson correlations between the comprehension-task dependent variables and the WJ reading measures and Common Data Elements test scores. Results are shown in Table 6. Total accuracy and comprehension time were correlated with scores on the WJ (total score), Trailmaking, and CVLT. For individuals with TBI, both WJ total scores ( $r = 0.45$ ,  $p < 0.05$ ) and Trailmaking subtask A scores ( $r = 0.45$ ,  $p < 0.05$ ) were significantly correlated with average accuracy across the three rule categories. There were significant correlations between response time and both WJ total scores ( $r = -0.65$ ,  $p < 0.01$ ) and Trailmaking subtask A scores ( $r = -0.55$ ,  $p < 0.01$ ). For CG individuals, there were no significant correlations between task accuracy scores and scores on any test; and response time was significantly correlated only with WJ total scores ( $r = -0.45$ ,  $p < 0.05$ ).

## DISCUSSION

The overall aim of this study was to characterize comprehension of social-exchange rules in adult individuals with moderate-to-severe TBI. To do so, we measured comprehension accuracy and response time in an experimental task based on the Wason selection task, and compared participants with TBI to a demographically matched comparison group. The results, together with results from standardized cognitive assessments, further allowed us to test the hypothesis that two cognitive mechanisms, working memory and processing speed, played a role in comprehension of social-exchange rules.

We found a significant effect of group on rule-comprehension accuracy, a finding that supported our first hypothesis. Across rule categories, individuals with TBI demonstrated poorer comprehension than their CG peers. We did not, however, find either a significant effect of rule category or a significant group-by-category interaction, which did not support our hypothesis. When controlling for working memory and processing speed, however, we found only a significant effect of processing speed, a finding that partially supported our hypothesis. Taken together, our findings on Wason-task accuracy suggest that the difference in comprehension accuracy between individuals with TBI and CG can be attributed to slower processing speed in the TBI group, a common cognitive sequela of TBI [45, 46].

Analysis of response times revealed significant effects of both group and rule category, and a group-by-category interaction. Individuals with TBI had longer response times than CG individuals overall, and increased their response times from precautionary to social to legal rules. CG participants had longer response times only for legal rules vs.

the other two rule types. This pattern supported our hypothesis that legal rules would take longer to comprehend than the other types of rules. When controlling for processing speed and working memory, however, we found a significant effect of rule category and processing speed, and a significant group-by-category interaction, but no significant effect of group. That is, our findings on the Wason-task suggest that individuals regardless of injury take additional time to respond to legal rules and that individuals with TBI do so to a greater degree than uninjured individuals. Our findings further suggest that the difference in response time for rules in part reflects differences in overall processing speed, as was the case for comprehension accuracy.

Our results from individuals with TBI can be compared to those from psychopathic individuals described by Ermer and Kiehl [8]. Ermer and Kiehl reported that psychopathic individuals demonstrated impaired reasoning on precautionary and social rules, data that our findings parallel; however, Ermer and Kiehl's data could not be explained by scores on cognitive tests or by behavioral traits, results the authors interpreted as pointing towards a deficit in specialized reasoning mechanisms dedicated to precautionary and social logic [8]. This interpretation would suggest a dedicated "social reasoning" circuit that is selectively impaired or diminished in psychopathic individuals, a conclusion that aligns with that of Cosmides and Tooby [1, 3, 6, 7], as well as others [1, 3, 6, 7], who postulated that this sort of logical reasoning is facilitated by a dedicated neurocognitive architecture.

For individuals with TBI, unlike those with psychopathy, our results suggest that processing speed accounts for the impaired reasoning in social-exchange logic. Consequently, we draw two conclusions from our results. First, we conclude that

impaired social reasoning in individuals with TBI might not reflect disruptions of specific “social reasoning” neuroarchitecture: rather, individuals with TBI are impaired in social reasoning due to deficits in a domain-general cognitive mechanism, a deficit possibly attributed to the diffuse axonal damage that often characterizes moderate-to-severe TBI [26, 27, 47, 48]. Indeed, processing speed is well-characterized as a deficit following TBI [29, 30, 45, 49, 50], and post-TBI difficulties on complex cognitive tasks have been attributed to processing-speed deficits [45, 49]. Second, we conclude that (for the case of social-reasoning accuracy and response times) the difference between individuals with TBI and psychopathic individuals is likely qualitative, while the difference between individuals with TBI and uninjured individuals is quantitative. That is, our results suggest that individuals with TBI are not selectively impaired on tasks of social reasoning and are instead impaired as a result of general cognitive disruption.

### **Limitations and Future Directions**

We enrolled a relatively small, relatively homogenous, and relatively educated sample of participants. The small sample size may have limited our ability to detect additional statistical effects even though effect sizes for moderate-to-severe TBI research tend to be large.

Next, while we attributed participants’ relatively good performance on the legal rules to a corresponding increase in response time, we are unable to say what specific features of the legal rule might be responsible for that increase, i.e., stimuli were designed to reflect different constructs rather than differences in processing demands. Although the legal rules were as readable as rules in the other two categories, the methods we used to assess readability may not have been sensitive enough to capture linguistic features that



can slow comprehension (e.g., lower-frequency words such as “zoning,” “patent,” or “lease”). Legal language, even at the relatively easy level of our experimental vignettes, can be difficult for untrained individuals to understand [51]. It is also possible that the slower response times were related to the fact that legal language is stereotypically difficult, which could have affected the participants’ attitudes or conscious thought processes even though nothing in our experimental design flagged or warned of the presence of legal rules. Regardless, we are unable to propose a causal explanation for this finding, and future studies may need to use additional legal-rule stimuli explicitly constructed to assess these testable questions.

Though our statistical analyses suggest that the differences between the TBI and comparison group might be attributed to processing speed, our correlation analyses suggest that two other cognitive mechanisms, reading fluency and fluid intelligence [52], may also be implicated, and that possible effects of these variables may differ between TBI and comparison groups. Because social reasoning should (at least theoretically) be independent of language mode, however, it should not be necessary to distinguish between written and spoken social reasoning. Furthermore, working memory is a recognized component of fluid intelligence [53], so it may be redundant to attempt to parse cognitive mechanisms.

Finally, our experimental stimuli might represent legal rules that are more simplistic and reductionistic than most actual legal rules, which tend to be much more nuanced than the “If X, then Y” framework necessary for the Wason selection task. Nevertheless, our findings suggest that even under controlled, optimized conditions, individuals with TBI still underperform uninjured individuals. Further studies could add

additional real-life variables, such as time constraints or competing stimuli, to more closely examine relations among TBI, cognition, and social-reasoning in legal contexts.

## **CONCLUSION**

Findings from our study revealed differences between adults with and without TBI on a task of social-exchange reasoning involving legal rules, and showed that these differences were attributable in part due to speed of information processing. These findings have scientific and practical implications. From a scientific perspective, the results inform our understanding of social and communication impairments in adults with TBI, and the role of cognitive functions in social reasoning on verbal tasks. From a practical perspective, the results suggest that individuals with or without TBI may require more time to reason through legal rules than other types of rules, and that an individual's speed of processing plays a critical role in legal-rule comprehension accuracy and response time. Thus, the results both inform our understanding of TBI effects on communication in legal contexts, and also compel us to consider the cognitive strengths and limitations of any adult who is presented with legal language.

**REFERENCES**

- [1] L. Cosmides, J. Tooby, Neurocognitive Adaptations Designed for Social Exchange, in: D.M. Buss (Ed.) *Evolutionary Psychology Handbook*, Wiley, New York, 2005, pp. 584-687.
- [2] L. Cosmides, J. Tooby, Evolutionary Psychology and the Generation of Culture, Part II-Case Study: A Computational Theory of Social Exchange, *Ethology and Sociobiology*, 10 (1989) 51-97.
- [3] L. Cosmides, The logic of social exchange: Has natural selection shaped how humans reason? Studies with the Wason selection task, *Cognition*, 31 (1989) 187-276.
- [4] L. Fiddick, M.V. Spampinato, J. Grafman, Social contracts and precautions activate different neurological systems: An fMRI investigation of deontic reasoning, *Neuroimage*, 28 (2005) 778-786.
- [5] T.R.H. Cutmore, G.S. Halford, Y. Wang, B.J. Ramm, T. Spokes, D.H.K. Shum, Neural Correlates of Deductive Reasoning: An ERP study with the Wason Selection Task, *International Journal of Psychophysiology*, 98 (2015) 381-388.
- [6] A.K. Barbey, J. Grafman, An integrative cognitive neuroscience theory of social reasoning and moral judgment, *WIREs Cognitive Science*, 2 (2010) 55-67.
- [7] T. Xiang, T. Lohrenz, P.R. Montague, Computational substrates of norms and their violations during social exchange, *J Neurosci*, 33 (2013) 1099-1108a.
- [8] E. Ermer, K.A. Kiehl, Psychopaths are impaired in social exchange and precautionary reasoning, *Psychol Sci*, 21 (2010) 1399-1405.

- [9] J.A. Wszalek, L.S. Turkstra, Language impairments in youths with traumatic brain injury: implications for participation in criminal proceedings, *J Head Trauma Rehabil*, 30 (2015) 86-93.
- [10] J.A. Wszalek, Soziale Kompetenz: A Comparative Examination of the Social-Cognitive Processes that Underlie Legal Definitions of Mental Competency in the United States, German, and Japan, *Fordham International Law Journal*, 29 (2015) 102-132.
- [11] J.A. Wszalek, Ethical and Legal Concerns Associated with the Comprehension of Legal Language and Concepts, *American Journal of Bioethics-Neuroscience*, In Press (2017).
- [12] L. Togher, S. McDonald, C. Code, Communication disorders after traumatic brain injury, in: L. Togher, S. McDonald, C. Code (Eds.) *Communication disorders following traumatic brain injury*, Hove: Psychology Press 1999, pp. 1-18.
- [13] S. McDonald, S. Flanagan, Social Perception Deficits After Traumatic Brain Injury: Interaction Between Emotion Recognition, Mentalizing Ability and Social Communication, *Neuropsychology*, 18 (2004) 572-579.
- [14] S. McDonald, S. Darke, S. Kaye, M. Torok, Deficits in social perception in opioid maintenance patients, abstinent opioid users and non-opioid users, *Addiction*, 108 (2013) 566-574.
- [15] L.S. Turkstra, Conversation-based assessment of social cognition in adults with traumatic brain injury, *Brain Injury*, 22 (2008) 397-409.
- [16] D.B. Arciniegas, H.S. Wortzel, Emotional and Behavioral Dyscontrol After Traumatic Brain Injury, *Psychiatr Clin N Am*, 37 (2014) 31-53.

- [17] R. Angeleri, F.M. Bosco, M. Zettin, K. Sacco, L. Colle, B.G. Bara, Communication impairment in traumatic brain injury: A complete pragmatic assessment *Brain & Language*, 107 (2008).
- [18] P. Meulenbroek, L.S. Turkstra, Job stability in skilled work and communication ability after moderate-severe traumatic brain injury *Disability and Rehabilitation*, 38 (2016) 452-461.
- [19] J. Shorland, J.M. Douglas, Understanding the role of communication in maintaining and forming friendships following traumatic brain injury, *Brain Injury*, 24 (2010) 569-580.
- [20] Y. Goverover, N. Chiaravalloti, The impact of self-awareness and depression on subjective reports of memory, quality-of-life and satisfaction with life following TBI, *Brain Injury*, 28 (2014) 174-180.
- [21] S. Fazel, P. Lichtenstein, M. Grann, N. Langstrom, Risk of violent crime in individuals with epilepsy and traumatic brain injury: a 35-year Swedish population study, *PLoS Med*, 8 (2011) e1001150.
- [22] T.J. Farrer, D.W. Hedges, Prevalence of traumatic brain injury in incarcerated groups compared to the general population: a meta-analysis, *Prog Neuropsychopharmacol Biol Psychiatry*, 35 (2011) 390-394.
- [23] T.J. Farrer, R.B. Frost, D.W. Hedges, Prevalence of traumatic brain injury in juvenile offenders: a meta-analysis, *Child Neuropsychol*, 19 (2013) 225-234.
- [24] W.H. Williams, G. Cordan, A.J. Mewse, J. Tonks, C.N. Burgess, Self-reported traumatic brain injury in male young offenders: a risk factor for re-offending, poor mental health and violence?, *Neuropsychol Rehabil*, 20 (2010) 801-812.

- [25] R. Sullivan, M. Solomon, M. M. Y. J., J. Ragland, S. Ursu, Wason selection task performance in schizophrenia and autism, Human Behavior and Evolution Society, Fullerton, CA, 2009.
- [26] E.D. Bigler, Systems Biology, Neuroimaging, Neuropsychology, Neuroconnectivity and Traumatic Brain Injury, *Front Syst Neurosci*, 10 (2016) 55.
- [27] J.P. Hayes, E.D. Bigler, M. Verfaellie, Traumatic Brain Injury as a Disorder of Brain Connectivity, *J Int Neuropsychol Soc*, 22 (2016) 120-137.
- [28] A.U. Turken, N.F. Dronkers, The neural architecture of the language comprehension network: converging evidence from lesion and connectivity analyses, *Front Syst Neurosci*, 5 (2011) 1.
- [29] J.L. Mathias, P. Wheaton, Contribution of brain or biological reserve and cognitive or neural reserve to outcome after TBI: A meta-analysis (prior to 2015), *Neurosci Biobehav Rev*, 55 (2015) 573-593.
- [30] J.L. Mathias, P. Wheaton, Changes in Attention and Information-Processing Speed Following Severe Traumatic Brain Injury: A Meta-Analytic Review, *Neuropsychology*, 21 (2007) 212-233.
- [31] J. Sandry, J. DeLuca, N. Chiaravalloti, Working memory capacity links cognitive reserve with long-term memory in moderate to severe TBI: a translational approach, *J Neurol*, 262 (2015) 59-64.
- [32] J.A. Owens, G. Spitz, J.L. Ponsford, A.R. Dymowski, N. Ferris, C. Willmott, White matter integrity of the medial forebrain bundle and attention and working memory deficits following traumatic brain injury, *Brain Behav*, 7 (2017) e00608.

- [33] K.A. Kiehl, M.B. Hoffman, The Criminal Psychopath: History, Neuroscience, Treatment, and Economics, *Jurimetrics*, 51 (2011) 355-397.
- [34] G.J. McHugo, S. Krassenbaum, S. Donley, J.D. Corrigan, J. Bogner, R.E. Drake, The Prevalence of Traumatic Brain Injury Among People With Co-Occurring Mental Health and Substance Use Disorders, *J Head Trauma Rehabil*, 32 (2017) E65-E74.
- [35] J.F. Malec, A.W. Brown, C.L. Leibson, J.T. Flaada, J.N. Mandrekar, N.N. Diehl, P.K. Perkins, The mayo classification system for traumatic brain injury severity, *J Neurotrauma*, 24 (2007) 1417-1424.
- [36] A. Kertesz, *Western Aphasia Battery - Revised (WAB-R): Examiner's Manual*, Pearson PsyCorp2006.
- [37] D. Wechsler, *Wechsler Adult Intelligence Scale, 4th Edition ed.*, Pearson, San Antonio, TX, 2008.
- [38] F.A. Schrank, N. Mather, K.S. McGrew, *Woodcock-Johnson IV Tests of Achievement*, Riverside, Rolling Meadows, IL, 2014.
- [39] E.A. Wilde, G.G. Whiteneck, J. Bogner, T. Bushnik, D.X. Cifu, S.S. Dikmen, N. von Steinbuechel, Recommendations for the use of common outcome measures in traumatic brain injury research, *Arch Phys Med Rehabil*, 91 (2010) 1650-1660.
- [40] D.C. Delis, J.H. Kramer, E. Kaplan, B.A. Ober, *California Verbal Learning Test-Adult Verison (CVLT-II), Second Edition ed.*, The Psychological Corporation, Austin, TX, 2000.
- [41] T.N. Tombaugh, Trail Making Test A and B: normative data stratified by age and education, *Arch Clin Neuropsychol*, 19 (2004) 203-214. .

- [42] J.D. Cohen, B. MacWhinney, M. Flatt, J. Provost, PsyScope: A new graphic interactive environment for designing psychology experiments, *Behavioral Research Methods, Instruments, and Computers*, 25 (1993) 257-271.
- [43] R.C. Team, R: A Language and Environment for Statistical Computing, R Foundation for Statistical Computing, Vienna, Austria, 2014.
- [44] R.P. Abelson, D.A. Prentice, Contrast Tests of Interaction Hypotheses, *Psychological Methods*, 2 (1997) 315-328.
- [45] A.R. Dymowski, J.A. Owens, J.L. Ponsford, C. Willmott, Speed of processing and strategic control of attention after traumatic brain injury, *Journal of Clinical and Experimental Neuropsychology*, 37 (2015) 1024-1035.
- [46] M. Battistone, D. Woltz, E. Clark, Processing speed deficits associated with traumatic brain injury: processing inefficiency or cautiousness?, *Appl Neuropsychol*, 15 (2008) 69-78.
- [47] C. Werner, K. Engelhard, Pathophysiology of traumatic brain injury, *Br J Anaesth*, 99 (2007) 4-9.
- [48] M.W. Greve, B.J. Zink, Pathophysiology of Traumatic Brain Injury, *Mount Sinai Journal of Medicine*, 76 (2009) 97-104.
- [49] K.L. Felmingham, I.J. Baguley, A.M. Green, Effects of diffuse axonal injury on speed of information processing following severe traumatic brain injury, *Neuropsychology*, 18 (2004) 564-571.
- [50] K.A. Frencham, A.M. Fox, M.T. Maybery, Neuropsychological studies of mild traumatic brain injury: a meta-analytic review of research since 1995, *J Clin Exp Neuropsychol*, 27 (2005) 334-351.



[51] J.A. Wszalek, Ethical and Legal Concerns Associated With the Comprehension of Legal Language and Concepts, *AJOB Neuroscience*, 8 (2017) 26-26.

[52] T.A. Salthouse, What cognitive abilities are involved in trail-making performance?, *Intelligence*, 39 (2011) 222-232.

[53] A. Chuderski, M. Taraday, E. Nęcka, T. Smoleń, Storage capacity explains fluid intelligence but executive control does not, *Intelligence*, 40 (2012) 278-295.

"If you make a will, then you must sign the document"

**Toby didn't  
sign the  
document**

Could this person have broken the rule?

**NO** **YES**

**Figure 1** Example of Wason-task stimulus. Participants read vignettes for each rule, and then were asked to determine whether persons described on the images of cards could have broken the rule. The red and green prompts for no and yes were mapped to a red and green key (z and /, respectively), and participants pressed the key to make their decision.

	<b>TBI (=20)</b>	<b>CG (=21)</b>
Age, y, mean (SD)	42.08 (12.26)	43.29 (14.50)
Age, range	24.75 – 64.50	19.17 – 64.67
Female, n (%)	11 (55%)	13 (62%)
Highest Level of Education		
High School / GED	3	2
Some College/Associates/Tech	7	3
Bachelor's Degree	6	13
Post-Graduate	3	3

**Table 1** Participant Demographics.

Story Category	Story Length (number of words)	Story Flesch-Kinkaid Grade Estimate
PRE	44.10 (5.60)	8.66 (1.71)
SOC	41.90 (8.01)	8.72 (2.14)
LAW	42.55 (4.89)	9.15 (1.79)

**Table 2** Descriptive statistics of stimuli Set. Data are mean (SD)

	<b>TBI (=20)</b>
Time post injury, years, mean (SD)	16.81 (13.83)
Mechanism of Injury, n, (%) <sup>a</sup>	
Moving Vehicle Accident	11 (55%)
Fall	4 (25%)
Assault	1 (5%)
Sports-related	2 (10%)
Other	1 (5%)

**Table 3** Injury Characteristics of TBI Participants

<sup>a</sup> Information on injury mechanism unavailable for 1 participant

	<b>TBI (=20)</b>	<b>CG (=21)</b>
WAIS-DIGIT		
Raw	14.35 (3.48)	19.52 (4.17)**
Scaled	8.62 (2.23)	11.90 (3.13)**
WJ		
Total	64.70 (25.71)	89.81 (15.05)**
Grade Estimate	8.62 (4.59)	12.21 (1.57)**
Common Data Elements Committee Tasks		
WAIS-PSI	91.00 (19.81)	114.62 (16.48)**
Trailmaking A	-0.58 (1.82)	0.92 (0.60)**
Trailmaking B	-1.69 (4.37)	0.72 (1.95)*
CVLT – 5 Trials	42.75 (11.96)	60.10 (7.42)**
CVLT – Short Delay	-1.02 (1.08)	0.68 (0.63)**
CVLT – Long Delay	-1.23 (1.22)	0.72 (1.95)**

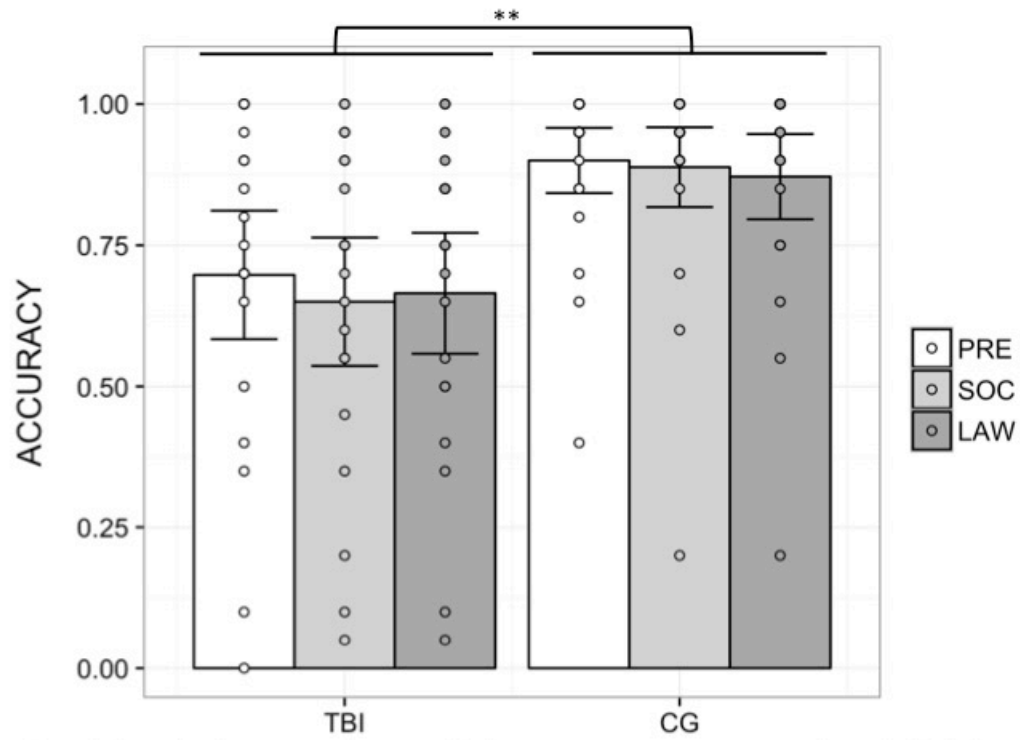
**Table 4** Scores on Wechsler Adult Intelligence Scale-Revised Digit Span (WAIS-DIGIT), Woodcock-Johnson Sentence Reading Fluency Task (WJ), and Common Data Elements tasks. Data are mean (SD).

\*  $p < 0.05$

\*\*  $p < 0.01$

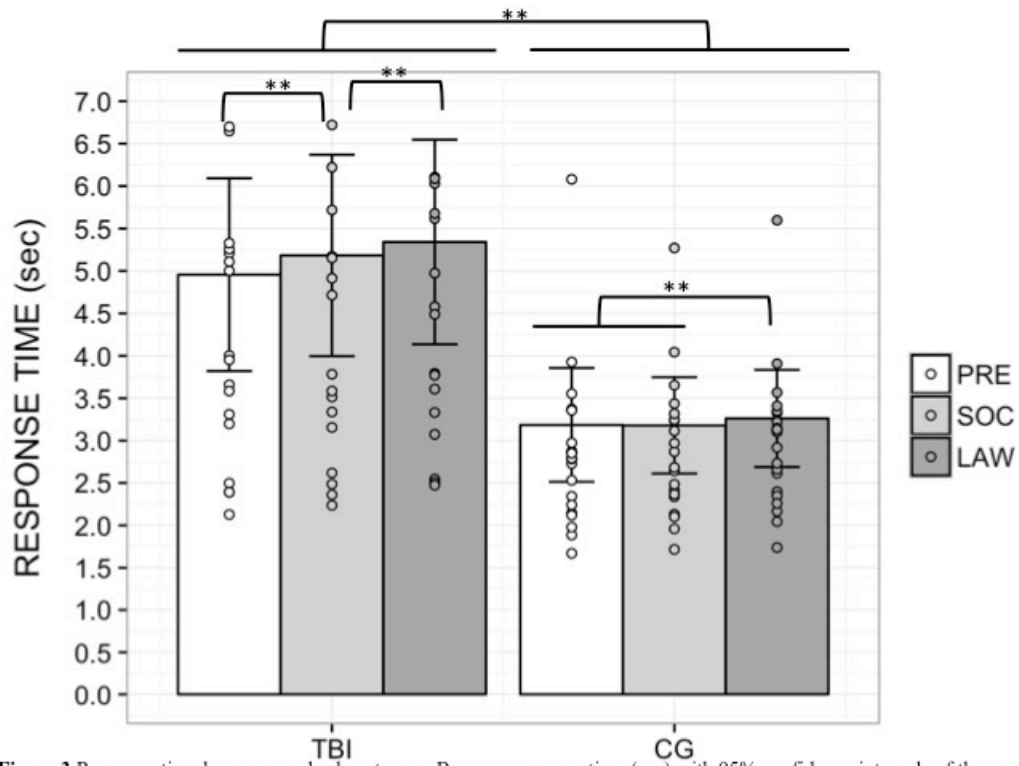
	PRE Accuracy	PRE RT	SOC Accuracy	SOC RT	LAW Accuracy	LAW RT	Average Accuracy	Average RT
<b>TBI (n=20)</b>								
<b>mean</b>	0.70	4.95	0.65	5.17	0.66	5.34	0.67	5.02
<b>sd</b>	.29	2.78	0.29	2.90	0.28	2.95	0.28	2.81
<b>CG (=21)</b>								
<b>mean</b>	0.90	3.18	0.89	3.18	0.87	3.26	0.89	3.21
<b>sd</b>	0.15	1.78	0.19	1.51	0.20	1.52	0.17	1.59

**Table 5** Comprehension accuracy (percentage correct) and response time (RT) (sec) for Wason task. PRE = Precautionary rules; SOC = social rules; LAW = legal rules.

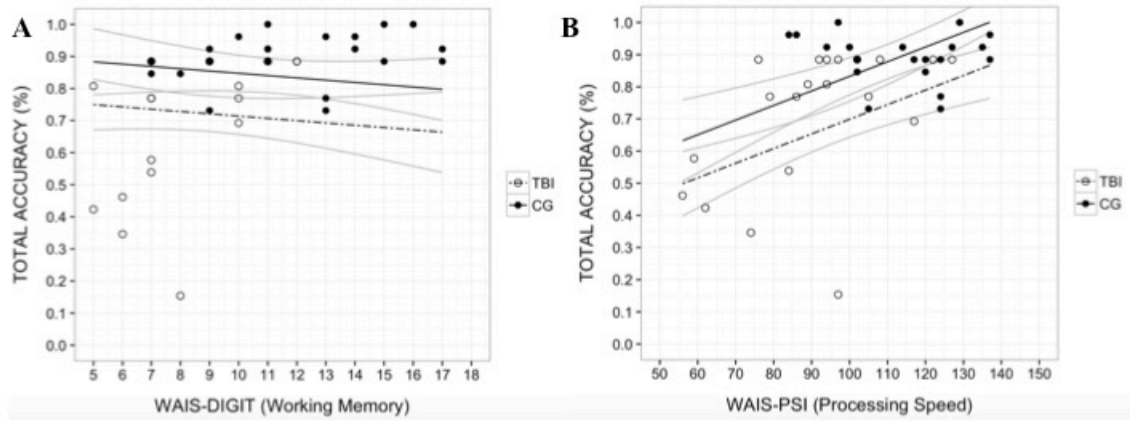


**Figure 2** Comprehension accuracy by group and rule category. Bars are mean accuracy (percent) with 95% confidence intervals of the mean. A LMEM regressing accuracy on group and rule category,  $R^2_c = 0.90$ , showed a main effect of group,  $F(1,39) = 9.03$ ,  $p < 0.01$  but no main effect of manipulation,  $F(1, 78) = 2.76$ ,  $p = 0.10$  or the interaction term,  $F(1,77) = 1.01$   $p = 0.92$ . \*\* =  $p < 0.01$ .

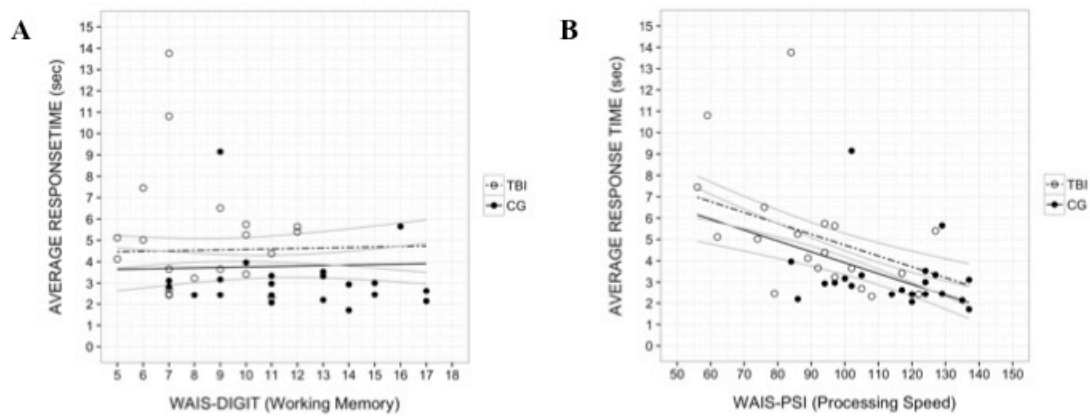




**Figure 3** Response time by group and rule category. Bars are response time (sec) with 95% confidence intervals of the mean. A LMEM regressing accuracy on group and rule category,  $R^2m = 0.15$ , showed a main effect of group,  $F(1,39) = 7.32$ ,  $p < 0.01$ , a main effect of rule category,  $F(1,78) = 9.82$ ,  $p < 0.01$ , and an interaction effect between group and rule category,  $F(1,78) = 4.45$ ,  $p < 0.05$ . \* =  $p < 0.05$ , \*\* =  $p < 0.01$ .



**Figure 4** Comprehension accuracy by group and rule category when controlling for working memory and processing speed. A LMEM regressing accuracy on group and rule category with working memory and processing speed as covariates,  $R^2_m = 0.25$ , showed a main effect of processing speed,  $F(1,37) = 4.63$ ,  $p < 0.05$ , but no effect of group,  $F(1,37) = 2.25$ ,  $p = 0.14$ ; rule type,  $F(1,78) = 2.76$ ,  $p = 0.10$ ; working memory,  $F(1,37) = 0.25$ ,  $p = 0.62$ ; or the group X rule category interaction term,  $F(1,78) = 0.01$ ,  $p = 0.92$ . Plots show working memory (**A**) and processing speed (**B**) plotted against average rule accuracy.



**Figure 5** response time by group and rule category when controlling for working memory and processing speed. A LMEM regressing response time on group and rule category with working memory and processing speed as covariates,  $R^2_m = 0.27$ , found a significant effect of rule category,  $F(1,78) = 9.82$ ,  $p < 0.01$ ; processing speed,  $F(1,78) = 4.45$ ,  $p < 0.04$ ; and the group X rule category interaction,  $F(1,37) = 6.06$ ,  $p < 0.02$ . There was no effect of group,  $F(1,37) = 0.89$ ,  $p = 0.35$  and of working memory,  $F(1,37) = 0.03$ ,  $p = 0.87$ . Plots show working memory (**A**) and processing speed (**B**) plotted against average response time.

	WJ Total	TRAIL-A	TRAIL-B	CVLT – 5 trials	CVLT-Short Delay	CVLT-Long Delay
<b>TBI (n=20)</b>						
Average Wason-Task Accuracy	0.45*	0.45*	0.11	0.36	0.19	0.17
Average response Time	-0.65**	-0.55*	< 0.00	-0.12	0.17	< 0.00
<b>CG (=21)</b>						
Average Wason-Task Accuracy	0.17	0.34	0.07	0.41	0.31	0.37
Average response Time	-0.38	-0.18	< 0.00	<-0.17	-0.25	-0.11

**Table 6** Correlations among Overall Accuracy and Task Completion Time and Common Data Elements Committee for TBI Research Tasks. WJ = Woodcock-Johnson Reading Fluency task; TRAIL = Trailmaking task; CVLT = California Verbal Learning Test.

\* Correlation is significant at 0.05 (one-tailed)

\*\* Correlation is significant at 0.01 (one-tailed)

# CHAPTER 4

## Manuscript 3

## **Structural and Functional Brain Correlates of Legal-Language and -Rule Comprehension**

Joseph A. Wszalek<sup>1,2,3</sup> & Lyn S. Turkstra<sup>1,3</sup>

1 Neuroscience Training Program, University of Wisconsin–Madison

2 Neuroscience and Public Policy Program, University of Wisconsin–Madison

3 Department of Communication Science and Disorders, University of Wisconsin–  
Madison

Corresponding Author:

Joseph A. Wszalek, J.D.

University of Wisconsin–Madison

Department of Communication Science and Disorders

1975 Willow Drive

Madison, WI 53705

Email: [josephwszalek@uwalumni.com](mailto:josephwszalek@uwalumni.com)

Phone: 608 – 293 – 0026

### Abstract

**Objective:** The purpose of this study was to characterize brain structural and functional correlates of comprehension of social-legal rules and legal language in adults with TBI. We hypothesized that structural and functional measures within the “Extended Language Network” (ELN) and structural measures using a whole-brain spatial approach would predict both comprehension accuracy and comprehension time.

**Methods:** Participants were 15 adults with moderate-to-severe TBI (9 females) who completed a Wason Selection Task to test comprehension of three categories of social rules, and a multiple-choice assessment of legal language comprehension with sentences presented either in their original legal form or manipulated to simplify syntax or vocabulary. Participants also underwent a diffusion-weighted MRI scan and a resting-state MRI scan.

**Results:** Both seed-based structural measures within the ELN and whole-brain structural measures were significantly correlated with both comprehension accuracy and comprehension speed. Functional measures had no significant correlation with either component of comprehension. Whole-brain analyses identified significant links between comprehension and integrity of longitudinal white-matter tracks connecting frontal, posterior, and temporal regions previously linked to language comprehension.

**Conclusion:** Results linked integrity of brain structures to comprehension behaviors both within the Extended Language Network and using a whole-brain approach. Whole-brain findings were within longitudinal white-matter tracks linking areas likely recruited during language comprehension. These findings suggest that the Extended Language Network plays a role in legal-language comprehension and social-legal rule comprehension, and

that damage to this network has important behavioral effects. Additional research is needed to further investigate the relationships among structural and functional connectivity, comprehension of legal language, and TBI.

**Keywords:** language comprehension, language network, structural connectivity, functional connectivity, adult, traumatic brain injury



## Introduction

Advances in neuroimaging techniques, particularly structural imaging, have allowed for rigorous investigation of changes in brain anatomy and function following moderate-to-severe TBI. Recent reviews of structural and functional neuroimaging studies in TBI by Bigler [1, 2] and Hayes et al. [1, 2] concluded that TBI is best characterized as a disorder of brain connectivity. The authors found that TBI was commonly associated with damage to inter-and intra-hemispheric white-matter tracts, notably the corpus callosum, fornix, superior and inferior longitudinal fasciculi, and cerebellar peduncles. Additionally, TBI was commonly associated with disruption to functional networks throughout the brain, notably dorsal and ventral attention networks, fronto-parietal networks, and the default mode network [1, 2]. Because the primary impact injury usually affects the anterior, ventral portions of the brain, functional and anatomical connections with hubs in the anterior temporal lobe and the prefrontal cortex are at particular risk of impairment [1, 2].

Structural and functional neuroimaging techniques also have allowed for a better understanding of the anatomical and functional networks underlying higher-order, distributed cognitive functions that can be impaired in adults with TBI. One such function is language comprehension, broadly and generally defined as the processing of linguistic information to extract meaning [3]. Language comprehension recruits association cortex from medial and superior temporal gyri, the ventral and posterior portions of the inferior frontal gyrus (IFG; pars orbitalis, triangularis, and opercularis); areas of the cortex corresponding to the Temporal-Parietal Junction (TPJ); and pre-motor areas in the precentral gyrus [4, 5]. In their meta-analysis of fMRI data, Ferstl and colleagues [6]

identified a set of bilateral regions of interest (ROIs) in the anterior middle temporal gyrus (amTG), TPJ, and IFG, and suggested that these regions comprised an “extended language network” (“ELN”) that is recruited during the cognitive processing used to extract meaning from language. More recent data from Abrams and colleagues’ [7] multivariate pattern analysis of fMRI data showed recruitment of these ROIs during language comprehension, supporting Ferstl’s assertion that language comprehension is distributed throughout grey-matter regions within the temporal poles, IFG, and temporal-parietal boundaries. In addition to grey matter, language comprehension recruits broad areas of cortical white matter. Analyses of connectivity and lesion data by Turken and colleagues [8] identified six main white-matter tracts connecting cortical regions that overlap with those identified in the ELN: the arcuate fasciculus (AF), inferior occipitofrontal fasciculus (IOFF), inferior longitudinal fasciculus (ILF), middle longitudinal fasciculus (MdLF), uncinate fasciculus (UF), and tapetum. These findings further suggest a distributed anatomical network for language comprehension within an extended language network.

It is well known that TBI can disrupt the neuroanatomical substrate of language comprehension. TBI decreases white-matter integrity in prefrontal areas of the cortex, including the superior longitudinal fasciculus and ILF [9-11] and the UF [10-12]; as well as throughout the corpus callosum [13-16]. In addition to, or possibly as a consequence of, disrupting white-matter integrity, TBI is also associated with a disruption in grey-matter activity within a number of functional networks: the default mode network [17-21], the thalamic network [22, 23], the executive control network [24-26], and the fronto-parietal salience network [26-29].

Communication impairments after TBI are also well documented [30-36], but the neural substrates of these impairments have not been determined, particularly in relation to language comprehension. To our knowledge, only one study linked lesion data to language comprehension data: Ferstl and colleagues [6] found that individuals with left-frontal or bifrontal lesions made more errors in inference-making, an important component of language comprehension, than uninjured individuals; however, participants in that study included both individuals with TBI and individuals with other forms of brain injury. Furthermore, inclusion criteria included frontal or temporal lesions or both, locations of injury not unique to TBI [37]. A second study by Le and colleagues [38] correlated brain-volume loss in the left hemisphere in individuals with TBI with poorer performance on a task of narrative production, but as noted this study did not address comprehension. Limitations of these studies and the overall lack of knowledge in this area suggest the need for further research. If language comprehension does indeed recruit the ELN, a distributed network of white- and grey-matter areas that span much of the neocortex, then any investigation of the relationship between TBI-induced brain injury and language comprehension should quantify injury not just by hemisphere or by region but also within the the ELN itself.

One area of language comprehension in which research is greatly needed is social language, in particular social-legal language. Moderate or severe TBI is increasingly viewed as a risk factor for participation in the criminal justice system [39-43], and one possible explanation for the high risk of legally proscribed behavior among individuals with TBI may be disruptions in communication abilities [44]. Post-TBI communication deficits have been linked to undesirable social outcomes in other areas of society, such as

loss of employment and personal relationships [45, 46], outcomes which themselves may be risk factors for involvement in legal systems. Characterizing the relationship between ELN injury and comprehension of socially relevant language in TBI would be invaluable in developing not only a clearer understanding of the risks likely related to TBI but also a more informed set of therapeutic or responsive measures designed to improve communication outcomes in individuals who have suffered brain injury.

To explore the neural basis of legal-language comprehension in adults with TBI, we compared integrity of structural and functional language networks to scores on legal-language comprehension tasks. We obtained language network data using resting state functional magnetic resonance imaging (rsfMRI) and diffusion tensor imaging (DTI), in 15 adults with chronic-stage moderate-to-severe TBI. We hypothesized that legal-language comprehension accuracy would correlate with both whole-brain and tract-specific DTI measures of white-matter integrity. We further hypothesized that comprehension accuracy would correlate with functional connectivity at the ELN coordinates identified by Ferstl and colleagues [6].

## **Method**

### Participants

Participants were adults with moderate-to-severe TBI (n=15, 9 females). All were from the Midwest and were recruited from among participants in a larger study of social cognition in adults with and without TBI. Injury severity was defined using standard injury criteria [47]. Table 1 shows participants' demographic and injury characteristics. Inclusion criteria were self-identification as a native English speaker and no self-reported history of a diagnosis of language or learning disability or neurological disorder affecting

the brain (pre-injury for the TBI group). Exclusion criteria were failing a pure-tone audiometric screening test at 20 db HL at 500, 1000, 2000, and 4000 Hz; failing standard screening for far and near vision; testing within the aphasic range of the Western Aphasia Battery Bedside Screening Test [48]; and prior participation in a criminal plea hearing in a state court. The Health Sciences Institutional Review Board and the Social and Behavioral Sciences Institutional Review Board at the University of Wisconsin approved all procedures.

### Behavioral Tasks

Participants performed two tasks measuring comprehension of legal language. For a measure of legal-rule comprehension, participants performed a Wason selection task consisting of 60 social-exchange rules [49]. The rules contained 20 precautionary rules, 20 social rules, and 20 legal rules (see Appendix). Ten precautionary rules and 10 social exchange rules were adapted from Ermer and Kiehl [50]; the remaining precautionary and social exchange rules were modeled on this set and included similar rules based on workplace, recreational, domestic, and social circumstances. The legal rules were based on state or federal laws in 13 legal categories, including property law, family law, and personal injury law. We included a range of legal contexts to create a generalizable stimulus set and include legal scenarios that reflected social exchanges. Stimuli were matched across rule types for story length and readability.

For a measure of legal-language comprehension, participants performed a task modeled on the standardized Figurative Language test from the Clinical Evaluation of Language Fundamentals (5<sup>th</sup> Edition) [51]. A set of 26 questions was created from the State of Wisconsin Plea Questionnaire/Waiver of Rights Form (CR-227, Wisconsin

Statutes § 971.08). For each plea-colloquy question, we used three manipulation categories: an unmodified category (the item as it appears on the CR-227 form); a frequency category, in which we increased word frequency; and a syntax category, in which we simplified clause-level syntax. Manipulation category was randomized for every participant. Items had four possible answers: (1) the correct interpretation of the item; (2) the opposite interpretation of the item; (3) an alternative but incorrect interpretation of the item; (4) a literal/nonsense interpretation of the item (see Appendix). For each experimental item, the order of the four choices was randomized.

Both tasks were automated using PsyScopeX software [52] on a MacBook Pro laptop computer. To ensure participants' comprehension of instructions, the examiner read the instructions aloud as the participants viewed them on the screen, and then asked the participant whether they had any questions before beginning the task. Participants received as much time as they needed to complete the task. Dependent variables for the two tasks were accuracy and completion time.

#### Neuroimaging Data Acquisition

Participants completed a single scanning session on a 3T whole-body MRI scanner (GE MR750 Scanner; GE Healthcare, USA) operated with a 32-channel RF head receiver coil. We acquired T1-weighted brain images using GE's three-dimensional (3D) brain volume imaging (BRAVO) coronal sequence with field of view (FOV) = 256mm<sup>2</sup>, voxel size = 1mm<sup>3</sup> and flip angle = 12°.

We acquired T2\*-weighted rsfMRI data for 10 minutes using an echo planar imaging (EPI sequence) with BOLD contrast (repetition time (TR) = 2000ms, echo time (TE) = 30ms, 31 slices acquired in ascending order; voxel size = 3.4 x 3.4 x 3.5mm, 64 x

62 matrix, and flip angle =  $77^\circ$ ), for a total of 300 slices per subject. During rsfMRI data acquisition, we instructed participants to keep their eyes closed and relax without falling asleep.

We acquired DTI images for approximately 12 minutes using TR = 9997 ms, TE = 50 ms, 70 slices acquired in descending order; voxel size =  $2 \times 2 \times 2$  mm, FOV = 256 mm<sup>2</sup>, and flip angle =  $90^\circ$ . We also acquired one T2-weighted image (b-value = 0s/mm<sup>2</sup>) and one 64-direction diffusion-weighted echo planar imaging scan (b-value = 1000s/mm<sup>2</sup>), and a reverse-phase encoded blip with opposite orientation to the DTI acquisition sequence (TR = 9997 ms, TE = 50 ms, 6 images acquired in ascending order, voxel size =  $2 \times 2 \times 2$  mm, FOV = 256 mm<sup>2</sup>, flip angle =  $90^\circ$ ).

### Preprocessing

We preprocessed all diffusion-weighted neuroimaging data using FSL 5.0.9 software (FMRIB Software Library, [www.fmrib.ox.ac.uk/fsl](http://www.fmrib.ox.ac.uk/fsl)) [53, 54]. All images were skull stripped using FSL's BET tool and visually inspected for accuracy [55]. We epi-corrected the DTI data with FSL's Topup tool; the reverse and forward phase-encoded blips were combined into a single image to estimate the susceptibility-induced off-resonance field, which was then applied to the full DTI series [56]. We then motion-corrected the DTI data using FSL's eddy tool [57].

We preprocessed all fMRI neuroimaging data using AFNI 17.0.02 (Analysis of Functional Neuroimages, [www. https://afni.nimh.nih.gov](http://www.https://afni.nimh.nih.gov)) [58]. Single-subject EPI images were motion corrected (0.2mm/TR), brain extracted, co-registered to the participant's T1-weighted anatomical scan, spatially smoothed (FWHM=4.0mm), and temporally filtered ( $0.01 > f > 0.1$  Hz). Nuisance regressors were fit for motion

parameters, white matter, and cerebrospinal fluid. Processed images were stored in Talaraich space.

### DTI Analysis #1: Probabilistic Tractography

In order to assess the relationship between language comprehension and white-matter integrity within the ELN, we used probabilistic tractography to determine the white-matter projections from each of the eight ELN nodes identified by Ferstl et al. [6]. We chose probabilistic tractography for three reasons. First, the standard-space coordinates for the ELN were convenient seeds for tractographic analysis. Second, although well-defined fiber pathways (e.g., the ILF and uncinate fasciculus) most likely populate the ELN, the lack of a clear anatomical description for the ELN as a whole made the use of deterministic methods problematic. Third, the heterogeneity in brain structure observed across our participants would necessitate substantial transformation to register images to standardized templates or atlases. In short, we could not assume that warping the images to and from templates would maintain accurate representations of each individual's anatomy.

We performed probabilistic tractography on the DTI data using FSL's FMRIB Diffusion Toolbox (FDT). We estimated fiber crossings using the Bayesian Estimation of Diffusion Parameters Obtained using the Sampling Techniques (BEDPOST) tool to model crossing fibers at each voxel (number of fibers = 2, number of samples = 5000) [59, 60]. Finally, we performed a two-step registration to generate forward and reverse warps among native diffusion, standard MNI, and structural space for each individual. The linear affine transformation was completed using FSL's FMRIB Linear Image Registration Tool (FLIRT) (degrees of freedom = 12, correlation ration), and the non-



linear transformation was completed using FSL's FMRIB Non-Linear Registration Tool (FNIRT) [61, 62]. We performed both linear and non-linear registration to ensure that the transformation of participants' anatomy was as rigorous as possible: linear transformation alone is often insufficient when the image is dissimilar to the target image, as is frequently the case for post-TBI anatomy [63].

#### Connectivity Seeds

Input seeds were created following the coordinates described by Ferstl et al. [6]. We then used FSL to create seed masks corresponding to each of the functional coordinates of the ELN. All seed masks were defined in FSL's T1 MNI template brain (2x2x2mm). At each of the eight coordinates, we used FSL to create a spherical mask (d = 5mm). We chose a 5mm diameter for two reasons: 1) so the masks would be large enough to capture white-matter tissue surrounding or underlying the gray-matter tissue identified in Ferstl and colleagues' functional connectivity analyses; and 2) to standardized size across the eight coordinates to account for the disparate sizes reported by Ferstl and colleagues in their analyses [6]. We then combined the eight separate masks to create a full mask. Using the same set of coordinates, we created a set of single-voxel seed masks (2x2x2mm), and combined them into a full mask. We decided to test single-voxel seeds in addition to the spherical seeds to bind the connectivity analyses as closely as possible to the ELN functional coordinates and control for any artifacts that could result from the larger seed size. Table 2 shows location information for the ELN seed coordinates.

#### Connectivity Analysis

We estimated connectivity distribution using FSL's PROBTRACKX tool (steps/sample = 2000, samples = 5000, step length = 0.5 mm, fiber threshold = 0.01, curvature threshold = 0.2, voxel sample size = 0.0mm). For each subject, we generated estimations for each of the eight separate ELN masks (ELN\_1 – ELN\_8) and for the full ELN mask (ELN\_Full), which calculated all eight masks simultaneously. In addition, we generated estimations for a network tractography, which iteratively sampled the seeds to estimate fibers that crossed at least two of the seeds within the full mask (ELN\_Network). Nine of these 10 estimations were repeated using the corresponding single-voxel masks (Voxel\_1 – Voxel\_8, and Voxel\_Full).

We applied a threshold of 0.25 to the connectivity results. We chose this threshold by warping the connectivity results into subject anatomical space and visually inspecting the extent to which thresholded results aligned with neuroanatomy and followed non-neural boundaries (Figure 1).

#### FA and MD Values

Finally, we used the probabilistic tractography results to obtain quantitative DTI measures. We applied the thresholded connectivity results to the Fractional Anisotropy (FA) and Mean Diffusivity (MD) scalars to extract mean values and standard deviation values for both measures. We examined both FA and MD because of their complementary utility [64]. FA values better correlate with white-matter integrity, with higher values indicating greater directionality, but are also more likely to be influenced by tissue heterogeneity and tissue crossings [65, 66]. Given that our analyses did not specify *a priori* white-matter pathways, that the ELN seeds necessarily included both gray and white matter, and that some regions of interests were located within anatomical

areas associated with high-densities of crossing fibers (e.g., TPJ, IFG), we also included MD values to improve the interpretability of our results. Finally, we used a general linear model to regress behavioral scores (accuracy and completion times for the Wason and plea-colloquy tasks) on the FA and MD values.

### DTI Analysis #2: Tract-Based Spatial Statistics

Although the probabilistic analysis allowed us to consider the relationship between language tasks and white-matter integrity in pathways originating within the ELN's functionally defined areas, we wanted to conduct an additional analysis that avoided *a priori* assumptions about relevant neuroanatomical regions and did not require aligning our clinical sample imaging data with standardized templates. Consequently, we performed a whole-brain analysis of the relationship between FA data and behavior using FSL's Tract-Based Spatial Statistics (TBSS) tool [67].

We first used the CAMINO software suite to fit a tensor model to the brain-extracted images from the first analysis [68, 69]. The images were then thresholded to remove outliers and resampled in isotropic voxel space to produce FA images (256x256x26, voxel size = 1x1x1mm<sup>2</sup>). We then used an in-house script to bootstrap a template from the neuroimaging dataset following the registration tools in the Diffusion Tensor Imaging ToolKit (DTI-TK) [70, 71]. Once the group template had been obtained, we generated a mean FA skeleton to represent the center of all tracts common to the group. Using the DTI-TK subject-to-group warps, we projected the individual FA images onto the TBSS skeleton and ran the resulting data into a voxelwise cross-subject GLM analysis using threshold-free clustering to regress behavior scores on FA values. Finally, results were thresholded at 0.95 and mapped onto standardized white-matter atlases in the

JHU White-Matter Tractography Atlas to assign anatomical structures to the regression results (Figure Two).

### Resting-State Analysis

We used a seed-based connectivity analysis to examine the relationship both between resting-state functional connectivity and language measures and also between resting-state functional connectivity and DTI measures. We again created seeds based on the eight ELN nodes identified by Ferstl et al. [6]. Seeds were defined and stored in standard Talarach space. We placed 5mm spheres at each seed to create masks, and then computed correlations between the masked area and the rest of the EPI signal. Finally, we used a Fisher's Z-transform to calculate z-scores for each of the computed r-series. We extracted Z-scores across the ELN masks to obtain quantified outputs of functional connectivity at every seed, and then used a GLM to regress behavioral scores on quantified functional connectivity. All steps of the resting-state analysis were performed using AFNI (Figure Three).

### Statistical Analysis

Our first set of hypotheses tested the relationships between behavioral measures and measures of structural connectivity within the ELN. We hypothesized a main effect of structural connectivity, operationalized as FA and MD values, as well as size (in voxels) of connectivity estimates, on plea colloquy and Wason task measures (accuracy and completion times). To test this hypothesis, we used a linear model to regress behavioral measures on FA, MD, and volume of the estimated connectivity plot at all eight ELN seeds as well as the entire network. We tested this relationship for both the 5mm seed connectivity estimates and the single-voxel estimates. Finally, we

hypothesized that whole-brain DTI measures would predict behavioral measures. To test this hypothesis, we used a linear model to regress behavioral scores on the TBSS FA dataset.

Our second set of hypotheses tested the relationship between functional connectivity in the ELN and behavioral measures. We hypothesized a main effect of functional connectivity, operationalized as Z-scores of functional connectivity at each ELN seed, on plea colloquy and Wason task accuracy and completion time. To test this hypothesis, we used a linear model to regress behavioral measures on Z-scores at all eight ELN seeds.

Statistical analyses were conducted in R 3.1.2 (<http://www.R-project.org/>) [72] with an alpha level set at 0.05. We reported trends toward significance for p values from .05-.10.

## Results

Demographic and injury characteristics are shown in Table 1. Results of behavioral measures are shown in Table 3.

### DTI Probabilistic Results – 5mm seeds

Within ELN\_1, MD values were significantly correlated with plea-colloquy completion time,  $t(11) = 2.74$ ,  $p < 0.05$ ,  $\eta^2_p = 0.41$ ; and with Wason response time,  $t(11) = 2.23$ ,  $p < 0.05$ ,  $\eta^2_p = 0.31$ .

Within ELN\_2, MD values predicted plea-colloquy completion time,  $t(11) = 2.77$ ,  $p < .05$ ,  $\eta^2_p = 0.41$ . There was a trend for FA values to be correlated with plea-colloquy completion time,  $t(11) = 1.83$ ,  $p = 0.09$ ,  $\eta^2_p = .23$ .

Within ELN\_3, FA values were significantly correlated with plea-colloquy completion time,  $t(11) = 3.03$ ,  $p < 0.05$ ,  $\eta^2_p = 0.46$ ; with a trend toward a significant correlation with plea-colloquy accuracy,  $t(11) = 2.20$ ,  $p = 0.05$ ,  $\eta^2_p = 0.31$ . MD values were significantly correlated with plea-colloquy completion time,  $t(11) = 4.09$ ,  $p < 0.01$ ,  $\eta^2_p = 0.60$ ; and Wason response time,  $t(11) = 3.84$ ,  $p < 0.01$ ,  $\eta^2_p = 0.57$ .

Within ELN\_4, the only finding was a trend toward a significant correlation of connectivity volume and plea-colloquy completion time,  $t(11) = 2.10$ ,  $p = 0.06$ ,  $\eta^2_p = 0.06$ .

Within ELN\_5, FA values trended toward a significant correlation with Wason accuracy,  $t(11) = 2.03$ ,  $p = 0.07$ ,  $\eta^2_p = 0.27$ ; and Wason response time,  $t(11) = -2.05$ ,  $p = 0.07$ ,  $\eta^2_p = 0.28$ . Volume significantly predicted Wason accuracy,  $t(11) = -2.71$ ,  $p < 0.05$ ,  $\eta^2_p = 0.40$ .

Within ELN\_6, FA values were significantly correlated with Wason accuracy,  $t(11) = 5.048$ ,  $p < 0.01$ ,  $\eta^2_p = 0.70$ ; and FA values trended toward a significant correlation with Wason response times,  $t(11) = -1.92$ ,  $p = 0.081$ ,  $\eta^2_p = 0.25$ . MD values were strongly significantly correlated with Wason accuracy,  $t(11) = 3.62$ ,  $p < 0.01$ ,  $\eta^2_p = 0.41$ . Connectivity volume was significantly correlated with Wason accuracy,  $t(11) = -2.35$ ,  $p < 0.05$ ,  $\eta^2_p = 0.33$ .

Within ELN\_7, FA values were strongly significantly correlated with plea-colloquy completion time,  $t(11) = -3.42$ ,  $p < 0.01$ ,  $\eta^2_p = 0.52$ , and Wason response time,  $t(11) = -3.08$ ,  $p < 0.05$ ,  $\eta^2_p = 0.46$ . MD values were significantly correlated with plea-colloquy time,  $t(11) = -2.98$ ,  $p < 0.01$ ,  $\eta^2_p = 0.44$ , and trended towards significance for Wason response time,  $t(11) = -1.86$ ,  $p = 0.09$ ,  $\eta^2_p = 0.24$ . Finally, connectivity volume

was significantly correlated with plea-colloquy completion time  $t(11) = 2.36$ ,  $p < 0.05$ ,  $\eta^2_p = 0.34$ , and trended towards significance for Wason response time,  $t(11) = 1.95$ ,  $p = 0.08$ ,  $\eta^2_p = 0.26$ .

Within ELN\_8, there was a trend for FA values to correlate with plea-colloquy completion time,  $t(11) = -2.12$ ,  $p = 0.06$ ,  $\eta^2_p = 0.29$ , and Wason response time,  $t(11) = -1.84$ ,  $p = 0.09$ ,  $\eta^2_p = 0.24$ . There also was a trend for volume to correlate with plea-colloquy completion time,  $t(11) = 2.01$ ,  $p = 0.07$ ,  $\eta^2_p = 0.27$ .

Within the ELN\_Full, the full eight seeds, the only significant finding was a significant effect of volume on plea-colloquy completion time,  $t(11) = -2.39$ ,  $p < 0.05$ ,  $\eta^2_p = 0.34$ . Finally, within ELN\_Network (the networked ELN seeds) there were no significance findings. However, FA values did trend towards significance for Wason response time,  $t(11) = -1.90$ ,  $p = 0.08$ ,  $\eta^2_p = 0.25$ .

#### DTI Probabilistic Results – single-voxel seeds

Within Voxel\_1 and Voxel\_2, there were no significant findings. Within Voxel\_3, there was a significant effect of MD on plea-colloquy completion time,  $t(11) = 2.63$ ,  $p < 0.05$ ,  $\eta^2_p = 0.39$ ; and a significant effect of volume on Wason accuracy,  $t(11) = -2.50$ ,  $p < 0.05$ ,  $\eta^2_p = 0.36$ . Within Voxel\_4, there were no significant findings. Within Voxel\_5, there was a significant effect of FA on plea-colloquy completion time,  $t(11) = -2.23$ ,  $p < 0.05$ ,  $\eta^2_p = 0.31$ ; and a trend toward a significant effect of FA on Wason response time,  $t(11) = -2.05$ ,  $p = 0.07$ ,  $\eta^2_p = 0.28$ . Within Voxel\_6, there were no significant findings. Within Voxel\_7, there was a significant effect of FA on plea-colloquy completion time,  $t(11) = -3.26$ ,  $p < 0.01$ ,  $\eta^2_p = 0.49$ ; and a significant effect of MD on plea-colloquy completion time,  $t(11) = -2.97$ ,  $p < 0.01$ ,  $\eta^2_p = 0.45$ . Within Voxel\_8, there were no

significant findings. Finally, within the full eight-voxel network (Voxel\_Full), there was a trend toward significant effects of FA on plea-colloquy completion time,  $t(11) = -1.97$ ,  $p = 0.07$ ,  $\eta^2_p = 0.26$ ; and of FA on Wason response time,  $t(11) = -2.06$ ,  $p = 0.06$ ,  $\eta^2_p = 0.29$ .

### DTI TBSS Results

For both plea-colloquy accuracy and Wason accuracy, we found a significant effect of voxels within the following anatomical structures: Anterior thalamic radiation (L+R); Corticospinal tract (L+R); Cingulum (L+R); forceps major and minor; inferior fronto-occipital fasciculus (L+R); inferior longitudinal fasciculus (L+R); superior longitudinal fasciculus (L+R); and uncinate fasciculus (L+R). For Wason response time, we found a significant effect of voxels only in the right anterior thalamic radiation. For plea-colloquy completion time, no voxels were significant at the 95% threshold.

### fMRI Results

For the plea colloquy and Wason tasks, there were no significant findings within any of the eight individual ELN seeds or for the averaged values across the full eight-seed connectivity estimation. Within ELN\_6, however, there was a trend towards a significant effect of Z-score on Wason accuracy,  $t(13) = 1.81$ ,  $p = 0.09$ .

## **Discussion**

The overall aim of this study was to characterize the relationship of structural and functional brain connectivity to comprehension of legal language and social-legal rules in adults with moderate-to-severe TBI. To do so, we collected diffusion-weighted and resting-state neuroimaging data, extracted quantitative measures from a predefined ELN



network, and compared those measures to performance on the behavioral tasks. We also used DTI measures to compare behavioral results with whole-brain structural connectivity.

We found that structural connectivity within certain ELN seeds predicted both comprehension accuracy and comprehension time, a finding that partially supported our hypothesis. However, our results also suggest that different aspects of language comprehension are associated with different nodes within the ELN and, by extension, different cortical areas. Plea-colloquy accuracy was associated only with connectivity in ELN\_3, the right-hemisphere TPJ. This finding is consistent with literature suggesting recruitment of right-hemisphere fronto-parietal regions, including the superior longitudinal fasciculus and the arcuate fasciculus, during language comprehension, particularly comprehension of written language [73, 74]. Given that areas in the left fronto-temporal cortex, corresponding to ELN\_1 and ELN\_4-6, are traditionally associated with semantic components of language comprehension [4, 5], the lack of a significant correlation between connectivity in these areas and comprehension accuracy was surprising, but underscores the likely distributed nature of language-comprehension within both injured and uninjured brains.

Plea-colloquy response time was associated with connectivity in several ELN regions: the left-hemisphere aTL/ITG (ELN\_1); right-hemisphere aTL (ELN\_2); right-hemisphere TPJ (ELN\_3); left-hemisphere IFG (ELN\_4); right-hemisphere pre-central sulcus (ELN\_7); and right-hemisphere pre-central gyrus (ELN\_8). This broad effect of white-matter integrity on comprehension time suggests a role of ELN integrity in cognitive mechanisms underlying comprehension time, such as attention or processing

speed. Indeed, regional white-matter measures in areas overlapping the ELN have been associated with processing speed in uninjured adults [75] and other clinical populations [76], and have been associated with poor attention in uninjured adults [77].

Wason task accuracy was significantly correlated with DTI structural-connectivity measures within the left-hemisphere IFG (ELN\_5 and ELN\_6). These areas are thought to be part of the “social-reasoning network” recruited for comprehension of Wason-type logic rules [78, 79], supporting the notion that these regions are engaged in social-rule comprehension. Finally, Wason response time was significantly correlated with DTI measures in the left-hemisphere aTG (ELN1\_1); the right-hemisphere TPJ (ELN\_3); the left-hemisphere IFG (ELN\_5 and ELN\_6); the right-hemisphere pre-central sulcus (ELN\_7); and right-hemisphere pre-central gyrus (ELN\_8). Not only do some of these areas again correspond to the anatomical architecture thought to be recruited during social-rule comprehension, but (as was the case for plea-colloquy completion time), the broader set of effects could point to the importance of ELN-wide white-matter integrity for the speed of processing written language. Finally, full ELN DTI measures were associated with plea colloquy comprehension time, while the networked ELN DTI measures were associated with Wason response time. Again, these results could suggest that white-matter integrity at the level of the entire ELN is important for the ease or speed with which an individual can comprehend legal language or rules.

For single-voxel ELN seeds, we also found effects of DTI measures on legal language and rules, and these findings also partially supported our hypothesis. Plea-colloquy completion time, Wason accuracy, and Wason response time were each correlated with a subset of DTI measures, and this pattern of effects followed those we

observed within the 5mm seeds. That certain behavioral measures can be predicted from structural measures at the single-voxel level underscores the role of the ELN in language comprehension. The fewer significant effects for single-voxel vs. network analyses, however, suggests that single-voxel structural connectivity may not be sufficient to assess the relationship between ELN integrity and behavior. The varying size of functionally active areas originally identified by Ferstl and colleagues [6] points away from characterizing the ELN as a network of discrete voxels; nevertheless, it may be the case that for some of the ELN nodes, voxels closer to the original coordinate hubs have a greater effect on language processing.

Our analysis of whole-brain FA projections through the TBSS model found a significant effect of FA on both language and social-rule comprehension measures, which partially supported our hypothesis. Importantly, the TBSS results were consistent with previous findings on the neural architecture of language comprehension. Turken and Dronkers [8] reported that the inferior fronto-occipital fasciculus and the inferior longitudinal fasciculus linked functional activity in Brodmann's Area 47 (roughly corresponding to the ELN nodes within the IFG) with functional activity in the middle temporal gyrus (roughly corresponding to the probabilistic connections we identified for ELN\_1 and ELN\_2). Our results suggest that these two longitudinal pathways are recruited during legal-language and legal-social rule comprehension, consistent with the belief that the inferior longitudinal fasciculi play major roles in semantic processing, particularly in linking activity all along the temporal lobe [80]. Similarly, Turken and Dronkers [8] reported that the arcuate fasciculus likely connects functional activity in the

temporal gyrus to broad areas of the cortex, including the inferior frontal gyrus. For our legal stimuli, it is likely that the arcuate fasciculus is recruited to perform a similar role.

Interestingly, we also identified white-matter pathways linking the cortex with subcortical structures (anterior thalamic radiation and the corticospinal tract). The thalamus is thought to play a role in comprehension of figurative language [81] and it is possible that the thalamus is similarly recruited to comprehend legal language and legal-social rules as well. However, our lack of significant findings within cortical white-matter tracks for the two behavioral measures of response time (plea-colloquy completion time and Wason response time) was surprising, particularly because we also found that DTI measures at numerous nodes within the ELN had a significant effect on both measures. It is possible that the FA scalar in the TBSS projections is alone is insufficient for a significant effect on these two speed-based components of comprehension; indeed, the effects we reported in our seed-based analyses were for both FA and MD, and the statistical models we used included both FA and MD. Regardless, our analysis suggests that whole-brain structural connectivity plays a role in legal-language comprehension and social-legal rule comprehension, and the anatomical regions implicated here are consistent with the neural architecture thought to underlie comprehension of language in general.

Finally, our analysis of rsfMRI connectivity revealed no correlation with legal-language or legal-rule comprehension scores, which did not support our hypothesis. While TBI is known to disrupt numerous functional networks, the degree to which TBI alters an individual's ability to "switch" between the default-mode network and task-positive network is still unclear [1, 2]. The degree to which functional connectivity within

these networks correlates with performance on behavioral tasks in the context of moderate-to-severe TBI is equally unclear [26]. It seems likely that language comprehension recruits task-positive networks such as the salience network or the frontoparietal network, which are known to be associated with cognitive functions such as mental representations, attention, and working memory [82-84], all of which are thought to underlie language comprehension. Our results suggest that functional activity within the ELN during the resting state does not play a significant role in comprehension, at least of the types of language tested here.

### **Limitations and Future Directions**

This study examined the relationship between structural and functional and neuroarchitecture and language comprehension in a population of adults with moderate-to-severe TBI. While a number of the findings supported a relationship between language comprehension and the ELN, our study had several limitations. First, our lack of a comparison group prevented us from making any causal claims about the effects of TBI on measures reported, or normative claims about the relationship between functional and structural measures within the ELN and behavioral outcomes. Because our aim was to describe a population with TBI, however, and because our ultimate aim is to identify functional and anatomical correlates of a behavior rather than functional and anatomical correlates of TBI itself, our lack of a comparison group does not detract from value of our findings. Nevertheless, future studies including a comparison group would allow for an expanded, generalizable understanding of the ELN's role in language comprehension.

Second, the ELN was originally defined by Ferstl et al. by testing comprehension during scan acquisition, whereas our study compared rsfMRI with behavior data collected outside the scanner. While our results suggest that the resting-state activity within the ELN correlates with language comprehension, depending on the location of the node and the aspect of language comprehension being assessed, studies using fMRI to assess functional correlates of legal language would be able to locate additional areas of functional activity that correlated with comprehension of legal-language stimuli such as those tested in this study.

### **Conclusion**

This study identified structural and functional correlates of language comprehension in adults with moderate-to-severe TBI. We found correlations among structural measures within the ELN and comprehension of legal language and legal rules. In addition to better characterizing anatomical correlates of language comprehension in adults with TBI, our results support continued investigation of the ELN as a cognitive and anatomical network recruited during the comprehension of language relevant to the law and legal contexts.

## References

- [1] E.D. Bigler, Systems Biology, Neuroimaging, Neuropsychology, Neuroconnectivity and Traumatic Brain Injury, *Front Syst Neurosci*, 10 (2016) 55.
- [2] J.P. Hayes, E.D. Bigler, M. Verfaellie, Traumatic Brain Injury as a Disorder of Brain Connectivity, *J Int Neuropsychol Soc*, 22 (2016) 120-137.
- [3] D.S. McNamara, J. Magliano, *Toward a Comprehensive Model of Comprehension, Psychology of Learning and Motivation*, Elsevier 2009, pp. 297-384.
- [4] C.J. Price, A review and synthesis of the first 20 years of PET and fMRI studies of heard speech, spoken language and reading, *Neuroimage*, 62 (2012) 816-847.
- [5] C.J. Price, The anatomy of language: a review of 100 fMRI studies published in 2009, *Ann N Y Acad Sci*, 1191 (2010) 62-88.
- [6] E.C. Ferstl, J. Neumann, C. Bogler, D.Y. von Cramon, The extended language network: a meta-analysis of neuroimaging studies on text comprehension, *Hum Brain Mapp*, 29 (2008) 581-593.
- [7] D.A. Abrams, S. Ryali, T. Chen, E. Balaban, D.J. Levitin, V. Menon, Multivariate activation and connectivity patterns discriminate speech intelligibility in Wernicke's, Broca's, and Geschwind's areas, *Cereb Cortex*, 23 (2013) 1703-1714.
- [8] A.U. Turken, N.F. Dronkers, The neural architecture of the language comprehension network: converging evidence from lesion and connectivity analyses, *Front Syst Neurosci*, 5 (2011) 1.
- [9] V. Perlberg, L. Puybasset, E. Tollard, S. Lehericy, H. Benali, D. Galanaud, Relation between brain lesion location and clinical outcome in patients with severe traumatic brain

injury: a diffusion tensor imaging study using voxel-based approaches, *Hum Brain Mapp*, 30 (2009) 3924-3933.

[10] B.B. Bendlin, M.L. Ries, M. Lazar, A.L. Alexander, R.J. Dempsey, H.A. Rowley, J.E. Sherman, S.C. Johnson, Longitudinal changes in patients with traumatic brain injury assessed with diffusion-tensor and volumetric imaging, *Neuroimage*, 42 (2008) 503-514.

[11] S.N. Niogi, P. Mukherjee, J. Ghajar, C.E. Johnson, R. Kolster, H. Lee, M. Suh, R.D. Zimmerman, G.T. Manley, B.D. McCandliss, Structural dissociation of attentional control and memory in adults with and without mild traumatic brain injury, *Brain*, 131 (2008) 3209-3221.

[12] E.K. Geary, M.F. Kraus, N.H. Pliskin, D.M. Little, Verbal learning differences in chronic mild traumatic brain injury, *Journal of the International Neuropsychological Society*, 16 (2010) 506-516.

[13] R.E. Jorge, L. Acion, T. White, D. Tordesillas-Gutierrez, R. Pierson, B. Crespo-Facorro, V.A. Magnotta, White matter abnormalities in veterans with mild traumatic brain injury, *Am J Psychiatry*, 169 (2012) 1284-1291.

[14] M.F. Kraus, T. Susmaras, B.P. Caughlin, C.J. Walker, J.A. Sweeney, D.M. Little, White matter integrity and cognition in chronic traumatic brain injury: a diffusion tensor imaging study, *Brain*, 130 (2007) 2508-2519.

[15] E.M. Palacios, R. Sala-Llonch, C. Junque, D. Fernandez-Espejo, T. Roig, J.M. Tormos, N. Bargallo, P. Vendrell, Long-term declarative memory deficits in diffuse TBI: correlations with cortical thickness, white matter integrity and hippocampal volume, *Cortex*, 49 (2013) 646-657.



- [16] K.D.M. Farbota, A. Sodhi, B.B. Bendlin, D.G. McLaren, G. Xu, H.A. Rowley, C.E. Johnson, Longitudinal volumetric changes following traumatic brain injury: a tensor-based morphometry study, *Journal of the International Neuropsychological Society*, 18 (2012) 1006-1018.
- [17] V. Bonnelle, R. Leech, K.M. Kinnunen, T.E. Ham, C.F. Beckmann, X. De Boissezon, R.J. Greenwood, D.J. Sharp, Default Mode Network Connectivity Predicts Sustained Attention Deficits after Traumatic Brain Injury, *J Neurosci*, 31 (2011) 13442-13451.
- [18] A. Messe, S. Caplain, G. Paradot, D. Garrigue, J.F. Mineo, G. Soto Ares, D. Ducreux, F. Vignaud, G. Rozec, H. Desal, M. Pelegriani-Issac, M. Montreuil, H. Benali, S. Lehericy, Diffusion tensor imaging and white matter lesions at the subacute stage in mild traumatic brain injury with persistent neurobehavioral impairment, *Hum Brain Mapp*, 32 (2011) 999-1011.
- [19] D.J. Sharp, C.F. Beckmann, R. Greenwood, K.M. Kinnunen, V. Bonnelle, X. De Boissezon, J.H. Powell, S.J. Counsell, M.C. Patel, R. Leech, Default mode network functional and structural connectivity after traumatic brain injury, *Brain*, 134 (2011) 2233-2247.
- [20] M.C. Stevens, D. Lovejoy, J. Kim, H. Oakes, I. Kureshi, S.T. Witt, Multiple resting state network functional connectivity abnormalities in mild traumatic brain injury, *Brain Imaging Behav*, 6 (2012) 293-318.
- [21] Y. Zhou, M.P. Milham, Y.W. Lui, L. Miles, J. Reaume, D.K. Sodickson, R.I. Grossman, Y. Ge, Default-Mode Network Disruption in Mild Traumatic Brain Injury, *Neuroradiology*, 265 (2012) 882-892.

- [22] L. Tang, Y. Ge, D.K. Sodickson, L. Miles, Y. Zhou, J. Reaume, R.I. Grossman, Thalamic Resting-State Functional Networks: Disruption in Patients with Mild Traumatic Brain Injury, *Radiology*, 260 (2012) 831-840.
- [23] Y. Zhou, Y.W. Lui, X.N. Zuo, M.P. Milham, J. Reaume, R.I. Grossman, Y. Ge, Characterization of thalamo-cortical association using amplitude and connectivity of functional MRI in mild traumatic brain injury, *J Magn Reson Imaging*, 39 (2014) 1558-1568.
- [24] A.R. Mayer, M.V. Mannell, J. Ling, C. Gasparovic, R.A. Yeo, Functional connectivity in mild traumatic brain injury, *Hum Brain Mapp*, 32 (2011) 1825-1835.
- [25] E. Shumskaya, T.M.J.C. Andriessen, D.G. Norris, P.E. Vos, Abnormal whole-brain functional networks in homogeneous acute mild traumatic brain injury, *Neurology*, 79 (2012) 175-182.
- [26] A. Rigon, M.C. Duff, E. McAuley, A.F. Kramer, M.W. Voss, Is Traumatic Brain Injury Associated with Reduced Inter-Hemispheric Functional Connectivity? A Study of Large-Scale Resting State Networks following Traumatic Brain Injury, *J Neurotrauma*, 33 (2016) 977-989.
- [27] V. Bonnelle, T.E. Ham, R. Leech, K.M. Kinnunen, M.A. Mehta, R. Greenwood, D.J. Sharp, Salience network integrity predicts default mode network function after traumatic brain injury, *PNAS*, 109 (2012) 4690-4695.
- [28] T.E. Ham, V. Bonnelle, P. Hellyer, S. Jilka, I.H. Robertson, R. Leech, D.J. Sharp, The neural basis of impaired self-awareness after traumatic brain injury, *Brain*, 137 (2014) 586-597.

- [29] S.R. Jilka, G. Scott, T. Ham, A. Pickering, V. Bonnelle, R.M. Braga, R. Leech, D.J. Sharp, Damage to the Salience Network and interactions with the Default Mode Network, *J Neurosci*, 34 (2014) 10798-10807.
- [30] R. Angeleri, F.M. Bosco, M. Zettin, K. Sacco, L. Colle, B.G. Bara, Communication impairment in traumatic brain injury: A complete pragmatic assessment *Brain & Language*, 107 (2008).
- [31] L.J. Byom, L. Turkstra, Effects of social cognitive demand on Theory of Mind in conversations of adults with traumatic brain injury, *Int J Lang Commun Disord*, 47 (2012) 310-321.
- [32] C.A. Honan, S. McDonald, A. Gowland, A. Fisher, R.K. Randall, Deficits in comprehension of speech acts after TBI: The role of theory of mind and executive function, *Brain & Language*, 150 (2015) 69-79.
- [33] J.E. Johnson, L.S. Turkstra, Inference in conversation of adults with traumatic brain injury, *Brain Inj*, 26 (2012) 1118-1126.
- [34] S. McDonald, S. Flanagan, Social Perception Deficits After Traumatic Brain Injury: Interaction Between Emotion Recognition, Mentalizing Ability and Social Communication, *Neuropsychology*, 18 (2004) 572-579.
- [35] L. Togher, S. McDonald, C. Code, Communication disorders after traumatic brain injury, in: L. Togher, S. McDonald, C. Code (Eds.) *Communication disorders following traumatic brain injury*, Hove: Psychology Press 1999, pp. 1-18.
- [36] S. McDonald, Exploring the Process of Inference Generation in Sarcasm: A Review of Normal and Clinical Studies, *Brain and Language*, 68 (1999).

- [37] E.C. Ferstl, T. Guthke, D.Y. von Cramon, Text comprehension after brain injury: Left prefrontal lesions affect inference processes, *Neuropsychology*, 16 (2002) 292-308.
- [38] K. Le, C. Coelho, J. Mozeiko, F. Krueger, J. Grafman, Does brain volume loss predict cognitive and narrative discourse performance following traumatic brain injury?, *Am J Speech Lang Pathol*, 23 (2014) S271-284.
- [39] T.J. Farrer, R.B. Frost, D.W. Hedges, Prevalence of traumatic brain injury in juvenile offenders: a meta-analysis, *Child Neuropsychol*, 19 (2013) 225-234.
- [40] T.J. Farrer, D.W. Hedges, Prevalence of traumatic brain injury in incarcerated groups compared to the general population: a meta-analysis, *Prog Neuropsychopharmacol Biol Psychiatry*, 35 (2011) 390-394.
- [41] W.H. Williams, G. Cordan, A.J. Mewse, J. Tonks, C.N. Burgess, Self-reported traumatic brain injury in male young offenders: a risk factor for re-offending, poor mental health and violence?, *Neuropsychol Rehabil*, 20 (2010) 801-812.
- [42] S. Fazel, P. Lichtenstein, M. Grann, N. Langstrom, Risk of violent crime in individuals with epilepsy and traumatic brain injury: a 35-year Swedish population study, *PLoS Med*, 8 (2011) e1001150.
- [43] E. Durand, L. Watier, A. Lecu, M. Fix, J.J. Weiss, M. Chevignard, P. Pradat-Diehl, Traumatic brain injury among female offenders in a prison population: results of the FleuryTBI study, *Brain Behav*, 7 (2017) e00535.
- [44] J.A. Wszalek, L.S. Turkstra, Language impairments in youths with traumatic brain injury: implications for participation in criminal proceedings, *J Head Trauma Rehabil*, 30 (2015) 86-93.

- [45] J. Shorland, J.M. Douglas, Understanding the role of communication in maintaining and forming friendships following traumatic brain injury, *Brain Injury*, 24 (2010) 569-580.
- [46] P. Meulenbroek, L.S. Turkstra, Job stability in skilled work and communication ability after moderate-severe traumatic brain injury *Disability and Rehabilitation*, 38 (2016) 452-461.
- [47] J.F. Malec, A.W. Brown, C.L. Leibson, J.T. Flaada, J.N. Mandrekar, N.N. Diehl, P.K. Perkins, The mayo classification system for traumatic brain injury severity, *J Neurotrauma*, 24 (2007) 1417-1424.
- [48] A. Kertesz, *Western Aphasia Battery - Revised (WAB-R): Examiner's Manual*, Pearson PsyCorp2006.
- [49] L. Cosmides, The logic of social exchange: Has natural selection shaped how humans reason? Studies with the Wason selection task, *Cognition*, 31 (1989) 187-276.
- [50] E. Ermer, K.A. Kiehl, Psychopaths are impaired in social exchange and precautionary reasoning, *Psychol Sci*, 21 (2010) 1399-1405.
- [51] W. Semel, E.H. Wiig, W.A. Secord, *Clinical Evaluation of Language Fundamentals-Metalinguistics*, 5th Edition ed., Pearson Assessments, San Antonio, TX, 2014.
- [52] J.D. Cohen, B. MacWhinney, M. Flatt, J. Provost, PsyScope: A new graphic interactive environment for designing psychology experiments, *Behavioral Research Methods, Instruments, and Computers*, 25 (1993) 257-271.
- [53] M. Jenkinson, C.F. Beckmann, T.E. Behrens, M.W. Woolrich, S.M. Smith, *FSL*, *NeruoImage*, 62 (2012) 782-790.

- [54] S.M. Smith, M. Jenkinson, M.W. Woolrich, C.F. Beckmann, T.E.J. Behrens, H. Johansen-Berg, P.R. Bannister, M. De Luca, I. Drobnjak, D.E. Flitney, R. Niazy, J. Saunders, J. Vickers, Y. Zhang, N. De Stefano, J.M. Brady, P.M. Matthews, Advances in functional and structural MR image analysis and implementation in FSL, *NeruoImage*, 23 (2004) 208-219.
- [55] S.M. Smith, Fast robust automated brain extraction, *Hum Brain Mapp*, 17 (2002) 143-155.
- [56] J.L.R. Andersson, S. Skare, J. Ashburner, How to correct susceptibility distortions in spin-echo echo-planar images: application to diffusion tensor imaging, *NeruoImage*, 20 (2003) 870-888.
- [57] J.L.R. Andersson, M.S. Graham, E. Zsoldos, S.N. Sotiropoulos, An integrated approach to correction for off-resonance effects and subject movement in diffusion MR imaging, *Neuroimage*, 125 (2016) 1063-1078.
- [58] R.W. Cox, AFNI: Software for analysis and visualization of functional magnetic resonance neuroimages, *Computers and Biomedical Research*, 29 (1996) 162-173.
- [59] T.E.J. Behrens, H. Johansen-Berg, S. Jbabdi, M.F.S. Rushworth, M.W. Woolrich, Probabilistic diffusion tractography with multiple fibre orientations. What can we gain?, *Neuroimage*, 23 (2007) 144-155.
- [60] T.E.J. Behrens, M.W. Woolrich, M. Jenkinson, H. Johansen-Berg, R.G. Nunes, S. Clare, P.M. Matthews, J.M. Brady, S.M. Smith, Characterization and propagation of uncertainty in diffusion-weighted MR imaging, *Magn Reson Med*, 50 (2003) 1077-1088.
- [61] M. Jenkinson, S.M. Smith, A global optimisation method for robust affine registration of brain images, *Medical Image Analysis*, 5 (2001) 143-156.

- [62] M. Jenkinson, P.R. Bannister, J.M. Brady, S.M. Smith, Improved optimisation for the robust and accurate linear registration and motion correction of brain images. , *Neuroimage*, 17 (2002) 825-841.
- [63] Y. Lou, A. Irimia, P.A. Vela, M.C. Chambers, J.D. Van Horn, P.M. Vespa, A.R. Tannenbaum, Multimodal deformable registration of traumatic brain injury MR volumes via the Bhattacharyya distance, *IEEE Trans Biomed Eng*, 60 (2013) 2511-2520.
- [64] A.L. Alexander, S.A. Hurley, A.A. Samsonov, N. Adluru, A.P. Hosseinbor, P. Mossahebi, P.M. Tromp do, E. Zakszewski, A.S. Field, Characterization of cerebral white matter properties using quantitative magnetic resonance imaging stains, *Brain Connect*, 1 (2011) 423-446.
- [65] A.L. Alexander, J.E. Lee, M. Lazar, A.S. Field, Diffusion Tensor Imaging of the Brain, *Neurotherapeutics*, 4 (2007) 316-320.
- [66] J.R. Alger, The diffusion tensor imaging toolbox, *J Neurosci*, 32 (2012) 7418-7428.
- [67] S.M. Smith, M. Jenkinson, H. Johansen-Berg, D. Rueckert, T.E. Nichols, C.E. Mackay, K.E. Watkins, O. Ciccarelli, M.Z. Cader, P.M. Matthews, T.E.J. Behrens, Tract-based spatial statistics: Voxelwise analysis of multi-subject diffusion data., *NeruoImage*, 31 (2006) 1487-1505.
- [68] P.J. Basser, J. Mattiello, D. Lebihan, Estimation of the effective self-diffusion tensor of the NMR spin echo, *Journal of Magnetic Resonance*, 103 (1994) 247-254.
- [69] P.A. Cook, Y. Bai, S. Nedjati-Gilani, K.K. Seunarine, M.G. Hall, G.J. Parker, D.C. Alexander, Camino: Open-Source Diffusion-MRI Reconstruction and Processing, 14th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Seattle, WA, 2006, pp. 2756.

- [70] H. Zhang, B.B. Avants, P.A. Yushkevich, J.H. Woo, S. Wang, L.H. McCluskey, L.B. Elman, E.R. Melhem, J.C. Gee, High-dimensional spatial normalization of diffusion tensor images improves detection of white matter differences in amyotrophic lateral sclerosis, *IEEE Transactions on Medical Imaging*, 26 (2007) 764-785.
- [71] H. Zhang, P.A. Yushkevich, D.C. Alexander, J.C. Gee, Deformable registration of diffusion tensor MR images with explicit orientation optimization, *Medical Image Analysis*, 10 (2006) 764-785.
- [72] R.C. Team, R: A Language and Environment for Statistical Computing, R Foundation for Statistical Computing, Vienna, Austria, 2014.
- [73] T. Horowitz-Kraus, M. Grainger, M. DiFrancesco, J. Vannest, S.K. Holland, Right is not always wrong: DTI and fMRI evidence for the reliance of reading comprehension on language-comprehension networks in the right hemisphere, *Brain Imaging Behav*, 9 (2015) 19-31.
- [74] T. Horowitz-Kraus, Y.Y. Wang, E. Plante, S.K. Holland, The involvement of the right hemisphere in reading comprehension: a DTI study, *Brain Res*, 1582 (2014) 34-44.
- [75] D. Magistro, H. Takeuchi, K.K. Nejad, Y. Taki, A. Sekiguchi, R. Nouchi, Y. Kotozaki, S. Nakagawa, C.M. Miyauchi, K. Iizuka, R. Yokoyama, T. Shinada, Y. Yamamoto, S. Hanawa, T. Araki, H. Hashizume, Y. Sassa, R. Kawashima, The Relationship between Processing Speed and Regional White Matter Volume in Healthy Young People, *PLoS One*, 10 (2015) e0136386.
- [76] H. Karbasforoushan, B. Duffy, J.U. Blackford, N.D. Woodward, Processing speed impairment in schizophrenia is mediated by white matter integrity, *Psychol Med*, 45 (2015) 109-120.



- [77] M.M. Rizk, H. Rubin-Falcone, J. Keilp, J.M. Miller, M.E. Sublette, A. Burke, M.A. Oquendo, A.M. Kamal, M.A. Abdelhameed, J.J. Mann, White matter correlates of impaired attention control in major depressive disorder and healthy volunteers, *J Affect Disord*, 222 (2017) 103-111.
- [78] L. Fiddick, M.V. Spampinato, J. Grafman, Social contracts and precautions activate different neurological systems: An fMRI investigation of deontic reasoning, *Neuroimage*, 28 (2005) 778-786.
- [79] A.K. Barbey, J. Grafman, An integrative cognitive neuroscience theory of social reasoning and moral judgment, *WIREs Cognitive Science*, 2 (2010) 55-67.
- [80] M. Vigneau, V. Beaucousin, P.Y. Herve, H. Duffau, F. Crivello, O. Houde, B. Mazoyer, N. Tzourio-Mazoyer, Meta-analyzing left hemisphere language areas: phonology, semantics, and sentence processing, *Neuroimage*, 30 (2006) 1414-1432.
- [81] I.C. Bohrn, U. Altmann, A.M. Jacobs, Looking at the brains behind figurative language--a quantitative meta-analysis of neuroimaging studies on metaphor, idiom, and irony processing, *Neuropsychologia*, 50 (2012) 2669-2683.
- [82] R. Ptak, The frontoparietal attention network of the human brain: action, saliency, and a priority map of the environment, *Neuroscientist*, 18 (2012) 502-515.
- [83] W.W. Seeley, V. Menon, A.F. Schatzberg, J. Keller, G.H. Glover, H. Kenna, A.L. Reiss, M.D. Greicius, Dissociable intrinsic connectivity networks for salience processing and executive control, *J Neurosci*, 27 (2007) 2349-2356.
- [84] N.U. Dosenbach, D.A. Fair, F.M. Miezin, A.L. Cohen, K.K. Wenger, R.A. Dosenbach, M.D. Fox, A.Z. Snyder, J.L. Vincent, M.E. Raichle, B.L. Schlaggar, S.E.

Petersen, Distinct brain networks for adaptive and stable task control in humans, Proc Natl Acad Sci U S A, 104 (2007) 11073-11078.

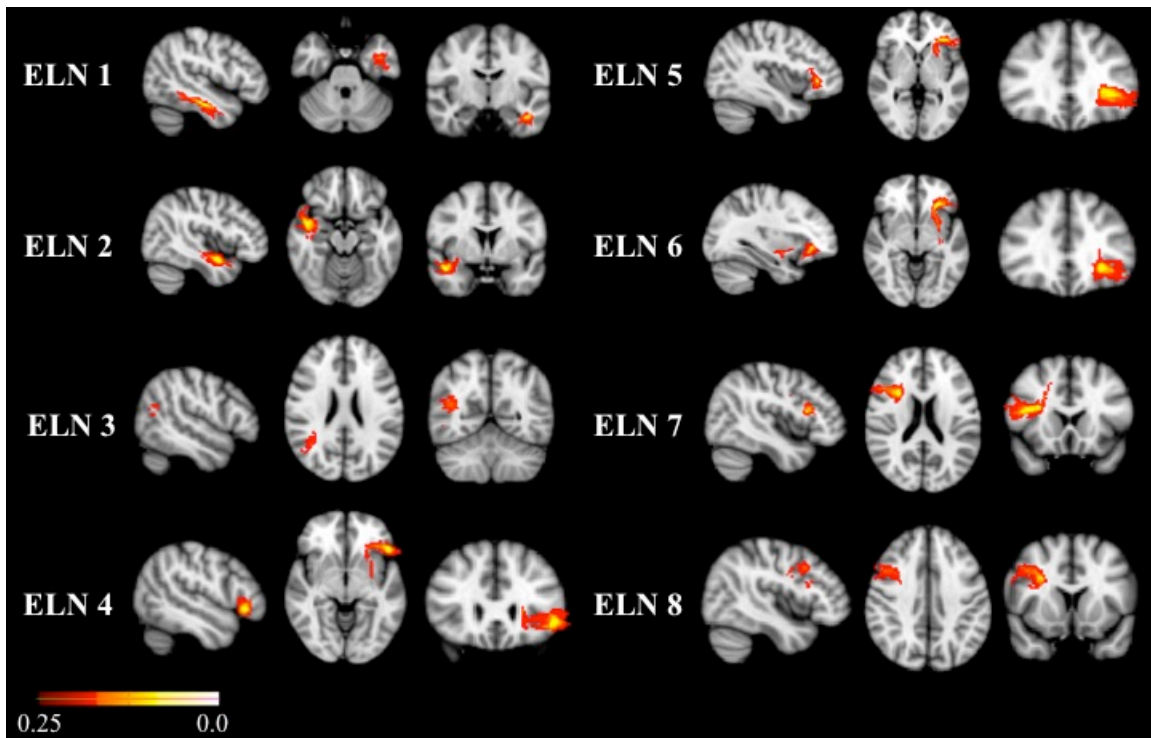
	<b>n = 15</b>
Age, y, mean (SD)	43.15 (12.99)
Age, range	24.75 – 64.50
Female, n (%)	9 (60%)
Highest Level of Education	
High School / GED	2
Some College/Associates/Tech	4
Bachelor's Degree	6
Post-Graduate	3
Time post injury, months, mean (SD)	16.21 (14.55)
Mechanism of Injury, n, (%) <sup>a</sup>	
Moving Vehicle Accident	11 (55%)
Fall	4 (25%)
Assault	1 (5%)
Sports-related	2 (10%)
Other	1 (5%)

**Table 1** Participant Demographics and Injury Characteristics

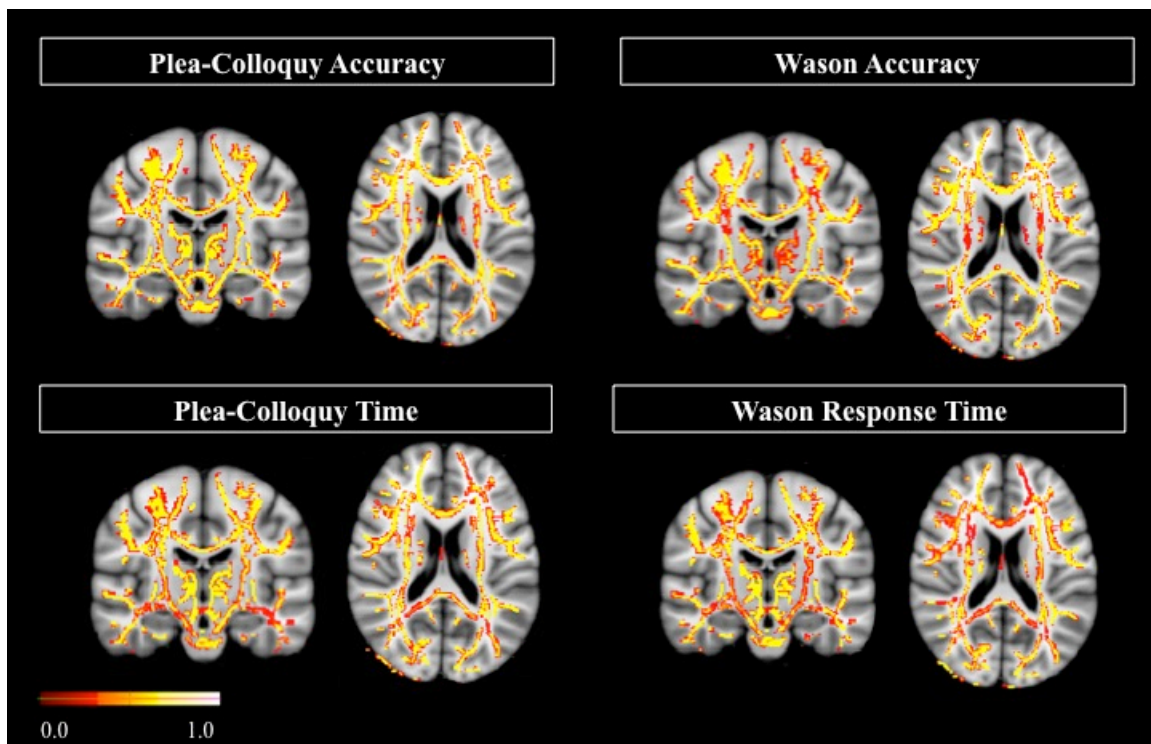
<sup>a</sup> Information on injury mechanism unavailable for 1 participant

Seed #	Coordinates (X, Y, Z)	Hemisphere	Anatomical Location
ELN Seed 1	-47, -9, -30	L	aTL, ITG
ELN Seed 2	43, 3, -15	R	aTL
ELN Seed 3	52, -57, 24	R	TPJ
ELN Seed 4	-50, 27, -6	L	IFG
ELN Seed 5	-38, 33, 0	L	IFG, pOG
ELN Seed 6	-32, 33, -6	L	IFG, pOG
ELN Seed 7	43, 18, 21	R	preSC
ELN Seed 8	43, 12, 39	R	preG

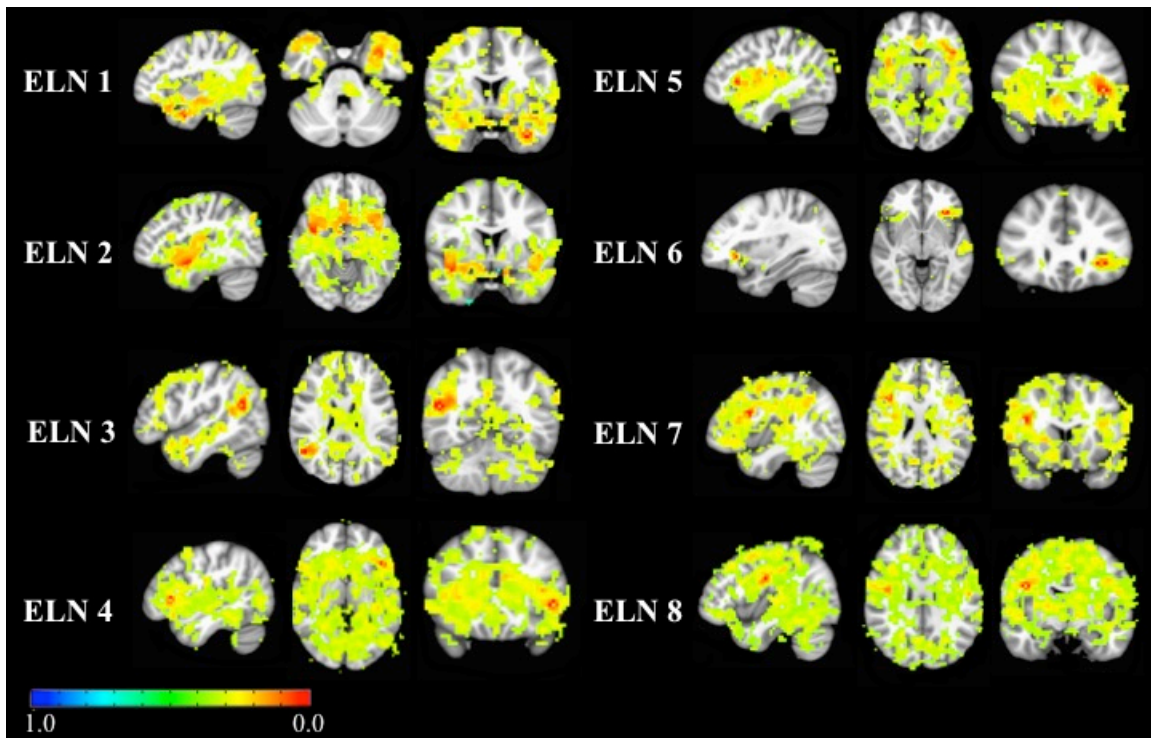
**Table 2** Descriptive information of eight seeds used to define the ELN. pOG = posterior orbital gyrus; preSC = pre-central sulcus; preG = precentral gyrus



**Figure One** Results of probabilistic tractography at each ELN node. Connectivity is shown on MNI 2mm template. Views are taken from at the coordinates: ELN 1 [  $x = -47$   $y = -9$   $z = -30$  ]; ELN 2 [  $x = 43$   $y = 3$   $z = -15$  ]; ELN 3 [  $x = 52$   $y = -57$   $z = 24$  ]; ELN 4 [  $x = -50$   $y = 27$   $z = -6$  ]; ELN 5 [  $x = -38$   $y = 33$   $z = 0$  ]; ELN 6 [  $x = -32$   $y = 33$   $z = -6$  ]; ELN 7 [  $x = 43$   $y = 18$   $z = 21$  ]; ELN 8 [  $x = 43$   $y = 12$   $z = 39$  ]. Tractography results are thresholded at 25%. Bar shows probability.



**Figure Two** Results of linear regression regressing behavioral scores on tbss fractional anisotropy projections. Images are taken from coordinates  $X = 91, Y = 109, Z = 91$ , and are displayed at  $1 - p$  probability. Bar shows  $1 - p$  probability.



**Figure Three** Results of resting-state connectivity at each ELN node. Images show Z-scores thresholded at 0.5 on MNI 1mm template. Views are taken from at the coordinates: ELN 1 [  $x = -47$   $y = -9$   $z = -30$  ]; ELN 2 [  $x = 43$   $y = 3$   $z = -15$  ]; ELN 3 [  $x = 52$   $y = -57$   $z = 24$  ]; ELN 4 [  $x = -50$   $y = 27$   $z = -6$  ]; ELN 5 [  $x = -38$   $y = 33$   $z = 0$  ]; ELN 6 [  $x = -32$   $y = 33$   $z = -6$  ]; ELN 7 [  $x = 43$   $y = 18$   $z = 21$  ]; ELN 8 [  $x = 43$   $y = 12$   $z = 39$  ]. Connectivity results are shown thresholded at  $p=0.5$  for illustrative purposes; Z-scores were extracted from seed regions. Bar shows probability.





	<b>n= 15</b>
WAIS-DIGIT	
Raw	14.60 (3.16)
Scaled	8.47 (2.10)
WAIS-PSI	93.40 (20.76)
LEGAL-LANGUAGE TASK – Plea Colloquy	
Accuracy (percent correct)	0.74 (0.20)
Comprehension time (min)	18.75 (9.70)
LEGAL-RULE TASK – Wason	
Accuracy (percent correct)	0.67 (0.32)
Response time (sec)	4.54 (2.31)

**Table 3** Data from behavioral measures. Data are mean (SD).

APPENDIX A – Plea-colloquy stimuli set

*Order = 4, 2, 3, 1*

**1\_UNM = By entering this plea, I give up the following constitutional rights**

- ¥ If I go into a plea, then I will admit that I lost to the US constitution
- Δ If I admit to committing a crime, then I will obtain certain legal protections from the constitution
- ≈ If I plead to a crime, then the laws of the United States will no longer apply to me
- ∅ If I plead to a crime, then I will give up certain legal protections from the constitution.

**1\_FREQ = By making this plea, I will not have the following constitutional rights**

- ¥ If I build a plea, then I will no longer be the owner of the US constitution
- Δ If I admit to committing a crime, then I will possess certain legal protections from the constitution
- ≈ If I plead to a crime, then the laws of the United States will no longer affect me
- ∅ If I plead to a crime, then I will no longer be able to use certain legal protections from the constitution.

**1\_SYNC = I give up the following constitutional rights when I enter this plea**

- ¥ As soon as I go into a plea, then I will admit that I lost to the US constitution.
- Δ As soon as I admit to committing a crime, then I will obtain certain legal protections from the constitution.
- ≈ As soon as I plead to a crime, then the laws of the United States no longer apply to me.
- ∅ As soon as I plead to a crime, I will give up certain legal protections from the constitution

*Order = 2, 1, 4, 3*

**2\_UNM = I give up my right to a trial**

- ¥ I can have a trial for my case if I want.
- Δ I will no longer be able to have a trial for my case
- ≈ I will not be able to go into a courthouse.
- ∅ I must have my case in a different court.

**2\_FREQ = I will stop having my right to a trial**

- ¥ If I want, I can have a trial for my case.
- Δ I will not be able to have a trail for my case.
- ≈ I will not own the deed to a courthouse.
- ∅ I can have my case in a different court.

**2\_SYNC = I give up my right to have a trial**

- ¥ I can have a trial for my case if I still want to.
- Δ I cannot have a trial for my case.
- ≈ I will admit that I don't own a trial.
- ∅ I will be able to have my case in a different court.

*Order = 4, 3, 2, 1*

**3\_UNM = I give up my right to remain silent and I understand that my silence could not be used against me at trial**

¥ I will not have the right to say absolutely nothing, and if I did say absolutely nothing, then nobody at my trial would try to harm me.

Δ I will not be able to decide not to talk about my crime, and if I did refuse, then my silence would not be an exhibit during my trial.

≈ I will not be able to choose to not talk about my crime, but if I did refuse, then it would mean that I was admitting to being guilty

∅ I will not be able to refuse to talk about my crime, and I know that if I did refuse, then it wouldn't hurt my chances of winning my case

**3\_FREQ = I will not have my right to remain silent and I understand that my case would not be harmed by my silence**

¥ I will not own the right to say nothing, but if I owned this right it wouldn't cause damage to the courtroom.

Δ I will not be able to choose to not talk about my crime, but if I did choose not to, then the judge would not exclude the jury from knowing about my choice.

≈ I will not be able to refuse to talk about my crime, but if I did refuse, then it would mean that my court case would be less likely to succeed

∅ I will not be able to decide not to talk about my crime, and I know that if I did decide not to, then it wouldn't hurt my chances of winning my court case

**3\_SYNC = I give up my right to remain silent. I understand that my silence could not be used against me at trial.**

¥ I will no longer have the right to say nothing at all. Saying nothing at all would not make anybody try to trick me.

Δ I can no longer decide to not talk about my crime. This decision would not be admissible as a piece of evidence during my trial.

≈ I can no longer choose to not talk about my crime. This choice might make me less likely to win my case in court.

∅ I can no longer refuse to talk about my crime. This refusal wouldn't hurt my chances of winning my case in court

*Order = 4, 3, 2, 1*

**4\_UNM = I give up my right to testify and present evidence at trial.**

- ¥ I will not be able to bring evidence as a present into the courtroom
- Δ I can't give testimony or evidence when I am arrested.
- ≈ I can be a witness and give information to the judge and jury at my trial.
- ∅ I will not be able to speak as a witness at my trial or offer information to the judge and jury

**4\_FREQ = I will stop having my right to testify and present information at trial.**

- ¥ I can't talk about present information, but I can talk about past or future information
- Δ I will no longer have the ability to give testimony or information whenever I talk to the judge.
- ≈ I will now have the ability to speak as a witness and give information at my trial.
- ∅ I will not be able to be a witness or offer information to the judge and jury at my trial.

**4\_SYNC = I give up my right to testify. I give up my right to present evidence at trial.**

- ¥ If I want to testify at my trial, then I can't do it in person: I must do it remotely.
- Δ I can't give testimony or information for the remainder of my court case.
- ≈ I can be a witness at my own trial, and I can give information at my trial.
- ∅ I can't be a witness at my own trial, and I can't give information at my trial.

*Order = 4, 2, 3, 1*

**5\_UNM = I give up my right to use subpoenas to require witnesses to come to court and testify for me at trial.**

- ¥ I can't own or operate a subpoena during my trial.
- Δ I can make the judge order people to come to court and be a witness on my behalf.
- ≈ I will not be able to make the judge order people to pay fines
- ∅ I will not be able to make the judge order people to come to court and be a witness on my behalf.

**5\_FREQ = I will lose my right to use an official order to require witnesses to come to court and testify for me at trial.**

- ¥ I will forget where I put my right to use an official order, so I won't be able to require witnesses to come to court.
- Δ I will be able to ask the judge to order people to come to court to be a witness for me.
- ≈ I can't ask the judge to order people to submit forms for my trial.
- ∅ I will no longer be able to ask the judge to order people to come to court to be a witness for me.

**5\_SYNC = I give up my right to use subpoenas to require witnesses to come to court so they can testify for me at trial.**

- ¥ I will abstain from using my right to make the judge order people to come to court and be a witness from me.
- Δ I will keep the ability to make the judge order people to come to court and be a witness for me at trial.
- ≈ I can no longer make the judge order people to come to court and sign official documents.
- ∅ I can no longer make the judge order people to come to court and be a witness for me during my case in court.

*Order = 1, 3, 4, 2*

**6\_UNM = I give up my right to a jury trial, where all 12 jurors would have to agree that I am either guilty or not guilty**

¥ I will not be able to have a trial by jury. In order to be found guilty of the crime, all 12 jurors would have had to agree that I am guilty..

Δ I can have a trial by jury in order to determine whether I can receive money compensation

≈ I will no longer have to right to go and visit a trial with 12 jurors.

∅ I will be able to have a trial by jury. I will not be found guilty unless all 12 jurors agree that I am guilty.

**6\_FREQ = I will stop having my right to a jury trial, where all 12 jurors would have to agree that I am either guilty or not guilty.**

¥ I can no longer have a trial by jury. In order to be found guilty of the crime, all 12 jurors would have had to agree that I am guilty

Δ I can have a trial by jury in order to determine if the prosecutor can accuse me of committing a crime.

≈ I will no longer have a right to a jury with 12 jurors, but I can have a jury with a different number of jurors.

∅ I will still have the choice to have a trial by jury. I will not be found guilty of the crime unless all 12 jurors agree that I am guilty.

**6\_SYNC = I give up my right to a jury trial. All 12 jurors would have to agree that I am either guilty or not guilty.**

¥ I will no longer be able to have a jury trial. In order for me to be guilty of the crime, all 12 jurors would need to agree that I committed the crime.

Δ I will no longer be able to have a jury trial. At this trial, the jurors would decide whether I am eligible to go to trial

≈ I will no longer be able to have a jury trial, but the 12 jurors will still meet to decide if I am guilty or not guilty.

∅ I will keep my right to a jury trial. I will not be found guilty unless all 12 jurors agree that I committed the crime

*Order = 4, 3, 2, 1*

**7\_UNM = I give up my right to confront in court the people who testify against me and cross-examine them.**

¥ I must stand face-to-face with the people who are witness against me during my court case in order to ask them questions.

Δ I can no longer object to the people who are witnesses against me during my court case.

≈ I can still ask questions to the people who are witnesses against me during my court case.

∅ I can no longer ask questions to the people who are witnesses against me during my court case.

**7\_FREQ = I will lose my right to confront the people who say things about me during my case and cross-examine them.**

¥ I cannot angrily examine witnesses who say things about me during my case.

Δ I cannot ask my lawyer to exclude certain witnesses who will testify against me during my trial

≈ I will now have the opportunity to ask questions to the people who are witnesses against me during my court case.

∅ I can no longer ask questions to the people who are witnesses against me during my court case.

**7\_SYNC = I give up my right to confront and cross-examine the people who testify against me.**

¥ I can walk across the courtroom in order to challenge the people who are witnesses against me at my trial.

Δ I can no longer know the identities of the people who are witnesses against me at my trial.

≈ I can question people who are witnesses against me at my trial.

∅ I can no longer question people who are witnesses against me at my trial.



*Order = 3, 4, 2, 1*

**8\_UNM = I give up my right to make the State prove me guilty beyond a reasonable doubt.**

¥ The prosecutor must now prove to the jury that it is more likely than not that I committed the crime in order for me to be found guilty.

Δ There must be doubt that is farther than reasonable in order for me to found guilty.

≈ I can require the prosecutor to convince the jury that I committed the crime beyond a reasonable doubt

∅ The prosecutor must no longer convince the jury that I committed the crime beyond a reasonable doubt in order for me to be found guilty

**8\_FREQ = I lose my right to make the State prove me guilty beyond a reasonable doubt.**

¥ I can now force the prosecutor to convince the jury with the preponderance of evidence that I committed the crime.

Δ I can no longer force the prosecutor to mathematically demonstrate that it was physically impossible for me to be innocent of the crime.

≈ I can still require the prosecutor to persuade the jury that I committed the crime beyond a reasonable doubt before I am found guilty.

∅ I can no longer force the prosecutor to show that I committed the crime beyond a reasonable doubt in order for me to be guilty.

**8\_SYNC = I give up my right to make the State prove that I am guilty beyond a reasonable doubt.**

¥ I can't require the prosecutor to provide legally-valid evidence in order to show that I committed the crime.

Δ I can't require the State to prove that I am guilty beyond a reasonable doubt, but I can ask them nicely to see if they say yes..

≈ I can require the prosecutor to convince the jury that I am guilty beyond a reasonable doubt of committing the crime.

∅ I can't require the prosecutor to convince the jury that I am guilty beyond a reasonable doubt of committing the crime.

*Order = 3, 2, 4, 1*

**10\_UNM = The crime to which I am pleading has elements that the State would have to prove beyond a reasonable doubt if I had a trial.**

¥ At trial, the prosecutor would need to explain each law that I broke in order to prove me guilty.

Δ The prosecutor would not need to show evidence for each of my crime's legal components to the jury during my trial in order to prove me guilty.

≈ In order to prove me guilty, the prosecutor would need to show what kind of weather my crime occurred in.

∅ In order to prove me guilty, the prosecutor would need to show evidence for each of my crime's legal components to the jury during my trial.

**10\_FREQ = The crime to which I am pleading has parts that the State would have to prove beyond a reasonable doubt if I went to trial.**

¥ At trial, the prosecutor would need to identify each law that I broke in order to prove me guilty.

Δ The prosecutor would not need to show evidence for each of my crime's legal components to the jury during my trial in order to prove me guilty.

≈ In order to prove me guilty, the prosecutor would need to take all the broken pieces of my crime and put them back together during my trial.

∅ In order to prove me guilty, the prosecutor would need to show evidence for each one of my crime's legal components to the jury during my trial.

**10\_SYNC = The crime to which I am pleading has elements. The State would have to prove them beyond a reasonable doubt if I had a trial.**

¥ At trial, the prosecutor would need to convince the jury that my crime has "elements" in order to prove me guilty.

Δ My crime does not have any legal components, so the prosecutor does not need to show evidence for any legal components to the jury during my trial.

≈ My crime has a chemical composition, and the prosecutor would need to explain what that chemical composition is in order to prove me guilty.

∅ My crime has legal components, and the prosecutor would need to show evidence of each one of my crime's legal components to the jury during my trial.

*Order = 1, 3, 2, 4*

**14\_UNM = The judge is not bound by any plea agreement or recommendations and may impose the maximum penalty.**

¥ The judge does not need to listen to or use any agreement or suggestions with regards to the total amount of punishment I should receive..

Δ The judge does not need to pay attention to any agreement or suggestions from either my attorney or the prosecutor about putting me on probation

≈ The judge must accept any agreement or suggestions with regards to the total amount of punishment I should receive.

∅ The judge is not physically tied up by the agreements or recommendations, so he can impose the maximum sentence

**14\_FREQ = The judge does not need to follow any plea agreement or recommendations and may give me the maximum penalty.**

¥ The judge does not need to go along with any agreement or suggestions about the total amount of punishment I should receive

Δ The judge does not need to agree to any agreement or suggestions about whether or not my case should be dismissed.

≈ The judge is required to agree with any agreement or suggestions about the total amount of punishment I should receive.

∅ The judge is not required to walk behind any agreement or suggestion about the total amount of punishment I should receive.

**14\_SYNC = The judge is not bound by any plea agreement or recommendations. He or she may impose the maximum penalty.**

¥ The judge does not need to go along with any agreements or suggestions, and he or she can give me the biggest punishment possible.

Δ The judge does not need to accept any agreements or suggestions, and he or she can give me whatever punishment he or she wants to.

≈ The judge must go along with any agreements or suggestions, and he or she may not give me the biggest punishment possible.

∅ The judge is not wrapped up in agreements or suggestions, and he or she can give me the biggest punishment possible

*Order = 3, 2, 4, 1*

**15\_UNM = The maximum penalty I face upon conviction is ten years in prison.**

- ¥ If I am convicted, the longest amount of probation time I can receive is ten years
- Δ The smallest punishment I can get is ten years in prison, if I am convicted.
- ≈ The biggest punishment in front of my face is ten years in prison if I am convicted.
- ∅ If I am convicted, the biggest punishment I can receive is ten years in prison.

**15\_FREQ = The maximum penalty I will get upon conviction is ten years in prison.**

- ¥ If I am convicted, the longest amount of court supervision I can receive is ten years.
- Δ The smallest punishment I can receive is ten years in prison, if I am convicted.
- ≈ Ten years in prison is the biggest punishment I will need to put on top of my conviction notice.
- ∅ If I am convicted, the biggest punishment I can receive is ten years in prison.

**15\_SYNC = The maximum penalty I face if I am convicted is ten years in prison.**

- ¥ If I am found guilty, the longest amount of probation I can receive is ten years.
- Δ The smallest punishment I face is ten years in prison, if I am found guilty.
- ≈ The biggest punishment I must overcome if I am found guilty is ten years in prison.
- ∅ If I am found guilty, the biggest punishment I face is ten years in prison.

*Order = 2, 1, 4, 3*

**16\_UNM = The judge must impose the mandatory minimum penalty, if any.**

- ¥ The judge does not need to order the smallest required punishment, if there is one.
- Δ The judge must order the smallest required punishment, if there is one.
- ≈ The judge must ask a favor of the smallest minimum punishment, if there is one.
- ∅ The judge must decide if I am eligible for the smallest required punishment, if there is one.

**16\_FREQ = The judge must give me the mandatory minimum penalty, if any.**

- ¥ The judge does not need to give me the smallest required punishment, if there is one.
- Δ The judge must to give me the smallest required punishment, if there is one.
- ≈ The judge must hand a copy of the smallest required punishment to me, if there is one.
- ∅ The judge must decide if I am eligible for the smallest required punishment, if there is one.

**16\_SYNC = If there is a mandatory minimum penalty, then the judge must impose it.**

- ¥ If there is a required minimum punishment, then the judge does not need to order it.
- Δ If there is a required minimum punishment, then the judge must order it.
- ≈ If there is a mandatory punishment, then it will also be the smallest.
- ∅ If there is a required minimum punishment, then the judge must decide if I am eligible for it.

*Order = 3, 2, 1, 4*

**17\_UNM = The mandatory minimum penalty I face upon conviction is 18 months in jail.**

- ¥ If I am convicted, the shortest amount of probation time I can receive is 18 months.
- Δ The smallest optional punishment I can receive is 18 months in jail, If I convicted.
- ≈ If I am convicted, the smallest required punishment I can receive is 18 months in jail.
- ∅ The smallest required punishment in front of my face 18 months in jail.

**17\_FREQ = The mandatory minimum penalty I will receive upon conviction is 18 months in jail.**

- ¥ If I am convicted, the shortest amount of court supervision I will get is 18 months.
- Δ The smallest optional punishment I will get is 18 months in jail, if I am convicted
- ≈ If I am convicted, the smallest required punishment I will get is 18 months in jail.
- ∅ The smallest required punishment I will obtain on the top of my conviction notice is 18 months in jail.

**17\_SYNC = If I am convicted, the mandatory minimum penalty I face is 18 months in jail.**

- ¥ If I am found guilty, the shortest amount of probation time I can receive is 18 months in jail.
- Δ The smallest optional punishment I face is 18 months in jail, if I am found guilty.
- ≈ If I am found guilty, the smallest required punishment I face is 18 months in jail.
- ∅ If I am found guilty, the smallest required punishment I must overcome is 18 months in jail.

*Order = 1, 2, 3, 4*

**18\_UNM = The presumptive minimum penalty, if any, I face upon conviction is 24 months in jail.**

¥ If I am convicted, the smallest punishment I will likely receive is 24 months in jail

Δ If I am convicted, I will most likely not receive 24 months in jail as the smallest punishment.

≈ If I am convicted, the shortest amount of probation I will likely receive is 24 months.

∅ If I am convicted, the smallest punishment I will likely have in front of my face is 24 months in jail.

**18\_FREQ = The probable minimum penalty, if any, I face upon conviction is 24 months in jail**

¥ If I am convicted, the smallest punishment I will probably receive is 24 months in jail.

Δ If I am convicted, I will probably not receive 24 months in jail as the smallest punishment.

≈ If I am convicted, the smallest amount of court supervision I will probably receive is 24 months.

∅ I will probably receive 24 months in jail on the top of my conviction notice.

**18\_SYNC = If I am convicted, the presumptive minimum penalty I face is 24 months in jail.**

¥ If I am found guilty, the smallest punishment I will likely receive is 24 months in jail.

Δ If I am found guilty, I am unlikely to receive 24 months in jail.

≈ If I am found guilty, the shortest amount of probation I will likely receive is 24 months.

∅ If I am found guilty, the smallest punishment I will likely need to turn to look at is 24 months in jail.

*Order = 3, 2, 4, 1*

**19\_UNM = The judge can impose a lesser sentence if the judge states appropriate reasons.**

- ¥ The judge can throw out my case if the judge has good reasons.
- Δ The judge can't order a lesser punishment even if the judge has good reasons.
- ≈ The judge can order a punishment that is numerically smaller if the judge has good reasons.
- ∅ The judge can order a lesser punishment if the judge has good reasons.

**19\_FREQ = The judge can give me a lesser sentence if the judge explains appropriate reasons.**

- ¥ The judge can order a longer trial if the judge has good reasons.
- Δ The judge can't give me a lesser punishment even if the judge has good reasons.
- ≈ The judge can hand a copy of a lesser punishment to me if the judge has good reasons.
- ∅ The judge can give me a lesser punishment if the judge has good reasons.

**19\_SYNC = If the judge states appropriate reasons, then he or she can impose a lesser sentence.**

- ¥ If the judge has good reasons, then he or she can throw out my case.
- Δ If the judge has good reasons, then he or she can impose whatever punishment he or she wants.
- ≈ If the judge has good reasons, then he or she can ask a favor of a lesser punishment.
- ∅ If the judge has good reasons, then he or she can order a lesser punishment.



*Order = 3, 2, 4, 1*

**21\_UNM = If I am not a citizen of the United States, my plea could result in deportation, the exclusion of admission to this country, or the denial of naturalization under federal law.**

¥ If I am not a citizen of the US and I plead to a crime, then it could affect my work status, my passport, and my federal taxes.

Δ If I am not a citizen of the US and I plead to a crime, then it will not affect my deportation, my admission into the US, or my naturalization.

≈ If I am not a citizen of the US and I plead to a crime, then I will be physically barred from entering the United States

∅ If I am not a citizen of the US and I plead to a crime, then I could be deported, prevented from entering the US, or prevented from becoming a US citizen.

**21\_FREQ = If I am not a citizen of the United States, my plea could cause my deportation, the exclusion of admission to this country, or the denial of naturalization under federal law.**

¥ If I am not a citizen of the US and I plead to a crime, then it could affect my work status, my passport, and my federal taxes.

Δ If I am not a citizen of the US and I plead to a crime, then it will not affect my deportation, my admission into the US, or my naturalization.

≈ If I am not a citizen of the US and I plead to a crime, then I will be physically barred from entering the United States

∅ If I am not a citizen of the US and I plead to a crime, then I could be deported, prevented from entering the US, or prevented from becoming a US citizen.

**21\_SYNC = If I am not a United States citizen, my plea could make me get deported, prevent me from entering this country, or deny my citizenship under federal law.**

¥ If I am not a citizen of the US and I plead to a crime, then it could affect my work status, my passport, and my federal taxes.

Δ If I am not a citizen of the US and I plead to a crime, then it will not affect my deportation, my admission into the US, or my naturalization.

≈ If I am not a citizen of the US and I plead to a crime, then I will be physically barred from entering the United States

∅ If I am not a citizen of the US and I plead to a crime, then I could be deported, prevented from entering the US, or prevented from becoming a US citizen.

*Order = 2, 4, 3, 1*

**22\_UNM = If I am convicted of any felony, I may not vote in any election until my civil rights are restored.**

¥ If I am convicted of a felony crime, I may not vote even if my rights are restored

Δ If I am convicted of any felony, then I can't vote in any election until my rights are repaired to their original condition.

≈ If I am convicted of a crime that is a felony, then I can't vote in any election until I register to vote as a felon.

∅ If I am convicted of a crime that is a felony, then I can't vote in any election until I get my rights back.

**22\_FREQ = If I am found guilty any felony crime, I may not vote in any election until my right to vote is given back.**

¥ If I plead guilty to any felony crime, then I can never again vote in any election even if I get my rights back.

Δ If I plead guilty to any felony crime, then I can't vote in any election until someone hands a copy of my rights back to me.

≈ If I plead guilty to any felony crime, then I can't vote unless I use special voting ballots.

∅ If I plead guilty to any felony crime, then I can't vote in any election until I get my right to vote back.

**22\_SYNC = If I am convicted of any felony, I will not be able to vote in any election until my civil rights are restored.**

¥ If I am convicted of a crime that is a felony, then I can't vote in any election even if I get my rights back.

Δ If I am convicted of any felony, then I can't vote in any election until my rights are repaired to their original condition.

≈ If I am convicted of a crime that is a felony, then I can't vote in any election until I register to vote as a felon.

∅ If I am convicted of a crime that is a felony, then I can't vote in any election until I get my rights back.

*Order = 1, 2, 4, 3*

**23\_UNM = If I am convicted of any felony, it is unlawful for me to possess a firearm.**

- ¥ If I am convicted of a crime that is a felony, then I can't lawfully own a gun.
- Δ If I am convicted of a crime that is a felony, then I can still own a gun.
- ≈ If I am convicted of a crime that is a felony, then I can't carry a gun on my person.
- ∅ If I am convicted of a crime that is a felony, then I must obtain a special gun license.

**23\_FREQ = If I am found guilty of any felony crime, it is illegal for me to have a firearm.**

- ¥ If I plead guilty to a felony crime, then I can't lawfully own a gun.
- Δ If I plead guilty to a felony crime, then I can still own a gun
- ≈ If I am discovered to already be guilty of a felony crime, then I can't own a gun.
- ∅ If I plead guilty to a felony crime, then I must take additional gun safety courses.

**23\_SYNC = If I am convicted of any felony, then it will be unlawful for me to possess a firearm.**

- ¥ If I am convicted of a crime that is a felony, then I can no longer lawfully own a gun.
- Δ If I am convicted of a crime that is a felony, then I can still own a gun.
- ≈ If I am convicted of a crime that is a felony, then I can't carry a gun on my person.
- ∅ If I am convicted of a crime that is a felony, then I must buy new guns

*Order = 1, 2, 4, 3*

**26\_UNM = Although the judge may consider read-in charges when imposing sentence, the maximum penalty will not be increased.**

¥ The judge can make note of additional charges when he sentences me, but they will not increase the total amount of punishment I can receive.

Δ The judge can make note of additional charges when he sentences me, and they can increase the total amount of punishment I can receive.

≈ The judge can make note of additional charges when he sentences me, but only charges that are read, not those that are said or heard.

∅ The judge can make note of additional charges when he sentences me, but they will not affect the length of my trial.

**26\_FREQ = Although the judge may think about read-in crimes when ordering a sentence, the maximum penalty will not be increased**

¥ The judge can make note of additional crimes when he sentences me, but they will not increase the total amount of punishment I can receive.

Δ The judge can make note of additional crimes when he sentences me, and they can increase the total amount of punishment I can receive.

≈ The judge can make note of additional crimes when he sentences me, but only charges that are read-in, not those that are said-in or heard-in.

∅ The judge can make note of additional crimes when he sentences me, but they will not affect the amount of money I need to pay my lawyer.

**26\_SYNC = The maximum penalty will not be increased even though the judge may consider read-in charge when he or she imposes sentence**

¥ The total amount of punishment I can receive will not increase even if the judge considers additional charges when he or she sentences me.

Δ The total amount of punishment I can receive will increase if the judge considers additional charges when he sentences me.

≈ The judge may consider read-in charges, but not said-in or heard-in charges.

∅ The total amount of punishment I can receive will not increase, but the judge can order me to have a different trial.

*Order = 1, 2, 3, 4*

**27\_UNM = I may be required to pay restitution on any read-in charges.**

- ¥ I may be required to pay fines for additional charges.
- Δ I will never be required to pay fines for additional charges.
- ≈ I may be required to pay extra lawyer's fees for additional charges.
- ∅ I may be required to pay charges to anyone named "Restitution"

**27\_FREQ = I may need to pay fines on any read-in charges.**

- ¥ I may be required to pay fines for additional charges.
- Δ I will never be required to pay fines for additional charges.
- ≈ I may need to pay extra lawyer's fees for additional charges.
- ∅ I may need to pay fines while standing on top of any read-in charges

**27\_SYNC = I may be required to pay restitution on any charges that are read-in.**

- ¥ I may be required to pay fines for additional charges
- Δ I will never be required to pay fines for additional charges.
- ≈ I may be required to pay extra lawyer's fees for additional charges.
- ∅ I may be required to pay anyone named "Restitution"

*Order = 1, 3, 2, 4*

**28\_UNM = The State may not prosecute me for any read-in charges.**

- ¥ The prosecutor can't charge me with the additional crimes.
- Δ The prosecutor can't make me have a separate trial for the additional crimes.
- ≈ The prosecutor can charge me with the additional crimes.
- ∅ The prosecutor can't prosecute for the charges that I read about.

**28\_FREQ = The State will not be able to prosecute me for any read-in charges.**

- ¥ The prosecutor can't charge me with the additional crimes.
- Δ The prosecutor can't make me have a separate trial for the additional crimes.
- ≈ The prosecutor can charge me with the additional crimes.
- ∅ The prosecutor can't charge me for any of the crimes that I read about.

**28\_SYNC = The State may not prosecute me for any charges that are read-in.**

- ¥ The prosecutor can't charge me with the additional crimes.
- Δ The prosecutor can't make me have a separate trial for the additional crimes.
- ≈ The prosecutor can charge me with the additional crimes.
- ∅ The prosecutor can't charge me for any of the crimes that I read about.

*Order = 4, 3, 1, 2*

**30\_UNM = I have decided to enter this plea of my own free will.**

- ¥ I decided to go into this plea freely.
- Δ I decided to plea to this crime knowingly and intelligently.
- ≈ I decided to plea to this crime freely and voluntarily.
- ∅ I decided to plea to this crime against my free will

**30\_FREQ = I have decided to make this plea by my free choice.**

- ¥ I decided to make this plea next to my free choice.
- Δ I decided to plea to this crime knowingly and intelligently.
- ≈ I decided to plea to this crime freely and voluntarily.
- ∅ I had no choice but to make this plea.

**30\_SYNC = I decided to enter this plea freely and willingly**

- ¥ I freely chose to go into this plea.
- Δ I decided to plea to this crime knowingly and intelligently.
- ≈ I decided to plea to this crime freely and voluntarily.
- ∅ I had no choice but to make this plea.

*Order = 2, 1, 3, 4*

**31\_UNM = I have not been threatened or forced to enter this plea.**

- ¥ Somebody threatened me or forced me to plead to this crime.
- Δ Nobody threatened me or forced me to plead to this crime.
- ≈ Nobody threatened me or forced me to commit this crime.
- ∅ Nobody threatened me or forced me to walk into a plea.

**31\_FREQ = I have not been threatened or forced to make this plea.**

- ¥ Somebody threatened me or forced me to plead to this crime.
- Δ Nobody threatened me or forced me to plead to this crime.
- ≈ Nobody threatened me or forced me to commit this crime.
- ∅ Nobody threatened me or forced me to fill in the plea forms.

**31\_SYNC = I have not been threatened or forced into entering this plea.**

- ¥ Somebody threatened me or forced me to plead to this crime.
- Δ Nobody threatened me or forced me to plead to this crime.
- ≈ Nobody threatened me or forced me to commit this crime.
- ∅ Nobody threatened me or forced me walk into this plea.



*Order = 2, 1, 4, 3*

**32\_UNM = No promises have been made to me other than those contained in the plea agreement.**

∕ Somebody promised me something in order to make me plea to this crime.

Δ Nobody promised me anything in order to make me plea to this crime.

≈ Nobody has every promised me anything before.

∅ Nobody promised me anything in order to make me commit this crime.

**32\_FREQ = No promises have been made to me other than those written in the plea agreement.**

∕ Somebody promised me something in order to make me plea to this crime.

Δ Nobody promised me anything in order to make me plea to this crime.

≈ Nobody has every promised me anything before.

∅ Nobody promised me anything in order to make me commit this crime.

**32\_SYNC = No promises have been made to me other than the promises in the plea agreement**

∕ Somebody promised me something in order to make me plea to this crime.

Δ Nobody promised me anything in order to make me plea to this crime.

≈ Nobody has every promised me anything before.

∅ Nobody promised me anything in order to make me commit this crime.

*Order = 1, 3, 4, 2*

**34\_UNM = I will plead guilty to the charge of disorderly conduct, and the State will recommend 24 months of probation.**

¥ I will admit that I committed the crime of disorderly conduct, and the prosecutor will tell the judge that I should receive a punishment of 24 months probation.

Δ I will admit that I committed the crime of disorderly conduct, and I will immediately receive a punishment of 24 months probation.

≈ I will admit that I committed the crime of disorderly conduct, and the prosecutor will tell me 24 months probation is a really good.

∅ I will admit that I did not commit the crime of disorderly conduct, and the prosecutor will not tell the judge that I should receive a punishment of 24 months probation.

**34\_FREQ = I will plead guilty to the crime of disorderly conduct, and the prosecutor will recommend 24 months of probation.**

¥ I will admit that I committed the crime of disorderly conduct, and the prosecutor will tell the judge that I should receive a punishment of 24 months probation.

Δ I will admit that I committed the crime of disorderly conduct, and I will immediately receive a punishment of 24 months probation.

≈ I will admit that I committed the crime of disorderly conduct, and the prosecutor will tell me 24 months probation is a really good.

∅ I will admit that I did not commit the crime of disorderly conduct, and the prosecutor will not tell the judge that I should receive a punishment of 24 months probation.

**34\_SYNC = I will plead guilty to the charge of disorderly conduct. The State will recommend 24 months of probation.**

¥ I will admit that I committed the crime of disorderly conduct, and the prosecutor will tell the judge that I should receive a punishment of 24 months probation.

Δ I will admit that I committed the crime of disorderly conduct, and I will immediately receive a punishment of 24 months probation.

≈ I will admit that I committed the crime of disorderly conduct, and the prosecutor will tell me 24 months probation is a really good

∅ I will admit that I did not commit the crime of disorderly conduct, and the prosecutor will not tell the judge that I should receive a punishment of 24 months probation.

THIS PAGE LEFT INTENTIONALLY BLANK

## APPENDIX B – Wason task stimuli set

### SOC\_1

**“If you get someone else to cover a work shift for you, then you have to make a donation to the community fund.”**

Employees at the Acme factory sometimes do favors for each other, like covering a work shift if a person has a doctor’s appointment or if their kid is sick. The Acme factory allows this, but they have a rule: “If you get someone else to cover a work shift for you, then you have to make a donation to the community fund.”

You want to check whether anybody broke this rule.

P

Kerry had someone else cover a work shift

notP

Jessie did not have someone else cover a work shift

Q

Collin made a donation to the community fund

notQ

Jon did not make a donation to the community fund

### SOC\_2

**“If you go canoeing on the lake, then you must clean your bunk house.”**

Lots of kids go to camp during their summer vacations. At Fallen Leaf Lake Camp, the kids' favorite activity is canoeing on the lake. The camp counselors have a rule: "If you go canoeing on the lake, then you must clean your bunk house."

You want to check whether anybody broke this rule.

P

Billy went canoeing on the lake

notP

Brent did not go canoeing on the lake

Q

Jenna cleaned her bunkhouse

notQ

Bethany did not clean her bunkhouse

**SOC\_3****“If you use the library, then you must pay the fee”**

The small town of Washbend, Oregon, has a user fee for their library. The fee pays for books and helps maintain the building. The town's rule is: "If you use the library, then you must pay the fee."

You want to check whether anybody broke this rule.

P

Margaret used the library

notP

Candice did not use the library

Q

Curtis paid the fee

notQ

Todd did not pay the fee

**SOC\_4****“If you borrow the car, then you have to fill up the tank with gas.”**

Teenagers who do not have their own cars usually borrow their parents' cars. In return for the privilege of borrowing the car, the Goldsteins give their kids the rule: "If you borrow the car, then you have to fill up the tank with gas."

You want to check whether anybody broke this rule.

P

Helen borrowed the car

notP

Dave did not borrow the car

Q

Brianne filled up the tank with gas

notQ

Kirk did not fill up the tank with gas

**SOC\_5**

**“If you borrow the motorcycle, then you have to wash it.”**

Joe owns a motorcycle, and he sometimes lets people borrow it. He likes to keep his motorcycle shiny and new, so he tells people: "If you borrow the motorcycle, then you have to wash it."

You want to check whether anybody broke this rule.

P

Kayla borrowed the motorcycle

notP

George did not borrow the motorcycle

Q

Diana washed the motorcycle

notQ

Tony did not wash the motorcycle

**SOC\_6**

**“If you are on a sports team, then you have to get good grades”**

A lot of people want to play on college sports teams, but college students have to abide by the rule: “If you are on a sports team, then you have to get good grades.”

You want to check whether anybody broke this rule.

P

Craig was on a sports team

notP

Jordan was not on a sports team

Q

Brooke got good grades

notQ

Karen did not get good grades

**SOC\_7**

**“If you watch the comedy show, then you have to buy a drink”**

At the Comedy Corner club, to make money, they have a rule: “If you watch the comedy show, then you have to buy a drink.”

You want to check whether anybody broke this rule.

P

Leah watched the comedy show

notP

Hannah did not watch the comedy show

Q

Gary bought a drink

notQ

Frank did not buy a drink

**SOC\_8**

**“If you buy a horse, then you have to have a pasture that is at least three acres”**

Many people in the town of Rolling Hills want to own a horse, but the city knows that horses like to have a lot of space to move around in. So, the city has a rule: “If you buy a horse, then you have to have a pasture that is at least three acres.”

You want to check whether anybody broke this rule.

P

Dennis bought a horse

notP

Denise did not buy a horse

Q

Jeremy has a pasture that is at least three acres

notQ

Alison does not have a pasture that is at least three acres

**SOC\_9**

**“If you have a vegetable garden, then you must water every day”**

The community garden lets people use a small plot of land to grow vegetables. Because the community garden wants people to take care of their plots, they have a rule: “If you have a vegetable garden, then you must water every day.”

You want to check whether anybody broke this rule.

P

Logan had a vegetable garden

notP

Sofia did not have a vegetable garden

Q

Evelyn watered every day

notQ

Matthew did not water every day

**SOC\_10**

**“If you pay with a credit card, then you must have a picture ID”**

Some stores don’t like to take credit cards unless they are sure that the card belongs to you. These stores have a rule: “If you pay with a credit card, then you must have a picture ID.”

You want to check whether anybody broke this rule.

P

Casey paid with a credit card

notP

Shane did not pay with a credit card

Q

Susan had a picture ID

notQ

Evan did not have a picture ID



**SOC\_11**

**“If you go out in the afternoon, then you have to finish your homework that night”**

The Coopers’ kids have been getting bad grades recently, so the family sets a new rule about homework: “If you go out in the afternoon, then you have to finish your homework that night.”

You want to check whether anybody broke this rule.

P

Gabe went out in the afternoon

notP

Darren did not go out in the afternoon

Q

Russ finished his homework that night

notQ

Wes did not finish his homework that night

**SOC\_12**

**“If you drink coffee at work, then you must clean the pot”**

Office workers at Midtown bank get to use a company coffee maker so they can have coffee at work. However, the company doesn’t want the coffee maker to get dirty, so they have a rule: “If you drink coffee at work, then you must clean the pot.”

You want to check whether anybody broke this rule.

P

Janet drank coffee at work

notP

Bob didn’t drink coffee at work

Q

Sue cleaned the pot

notQ

Tom didn’t clean the pot

**SOC\_13**

**“If you receive a birthday present, then you must send a thank-you card”**

The Johnson family likes to have birthday parties for their kids every year. Because they are good hosts, they give their kids a rule: “If you receive a birthday present, then you must send a thank-you card.”

You want to check whether anybody broke this rule.

P

Kimmy received a birthday present

notP

Bobby didn't receive a birthday present

Q

Joy sent a thank-you card

notQ

Timmy didn't send a thank-you card

**SOC\_14**

**“If you have a roommate, then you have to share your silverware”**

Many students live with roommates when they are in college so that they can save money and have fun. Because roommates often need to use the same kitchen, there is a rule: “If you have a roommate, then you have to share your silverware.”

You want to check whether anybody broke this rule.

P

Derrek had a roommate

notP

Kristy didn't have a roommate

Q

Dave shared his silverware

notQ

Allie didn't share her silverware

**SOC\_15**

**“If you eat dinner at a restaurant, then you have to leave a tip”**

People often like to go out to eat at restaurants so they don't have to worry about cooking and cleaning, and it is generally polite to pay the waiter or waitress extra money for the service. So the rule is: “If you eat dinner at a restaurant, then you have to leave a tip.”

You want to check whether anybody broke this rule.

P

Noah ate dinner at a restaurant

notP

Emma didn't eat dinner at a restaurant

Q

Liam left a tip

notQ

Olivia did not leave a tip

**SOC\_16**

**“If you get invited to a party, then you must RSVP”**

When people get invited to a party, it is polite for them to let the host know that they will attend so that the host can plan accordingly. Therefore, the rule for parties is: “If you get invited to a party, then you must RSVP.”

You want to check whether anybody broke this rule.

P

Mason was invited to a party

notP

Sophia was not invited to a party

Q

Jacob RSVPed

notQ

Ava did not RSVP

**SOC\_17**

**“If you move into a new house, then you have to introduce yourself to the neighbors”**

Members of the Woodcrest neighborhood like to meet their new neighbors whenever someone moves into a new house. The neighborhood has a rule: “If you move into a new house, then you have to introduce yourself to the neighbors.”

You want to check whether anybody broke this rule.

P

William moved into a new house

notP

Isabella did not move into a new house

Q

Ethan introduced himself to the neighbors

notQ

Mia did not introduce herself to the neighbors

**SOC\_18**

**“If you join the country club, then you must follow the dress code”**

Members of the Nine Rivers country club have access to a number of luxurious facilities and services. Because Nine Rivers wants its members to wear appropriate clothing, it has a rule: “If you join the country club, then you must follow the dress code.”

You want to check whether anybody broke this rule.

P

Abigail joined the country club

notP

James did not join the country club

Q

Emily followed the dress code

notQ

Alexander did not follow the dress code

**SOC\_19****“If you go on vacation, then you must send postcards to your friends”**

The Roberts family likes to go on trips, but they also like to give souvenirs to their friends. So, the Roberts have a rule: “If you go on vacation, then you must send postcards to your friends.”

You want to check whether anybody broke this rule.

P

Charlotte went on vacation

notP

Michael did not go on vacation

Q

Harper sent postcards to her friends

notQ

Benjamin did not send postcards to his friends

**SOC\_20****“If you want a new job, then you have to give two-weeks’ notice”**

Sometimes people quit their old job to start a new one, but it is generally best for them to give their employer sufficient notice. So, the rule for changing jobs is: “If you want a new job, then you have to give two-weeks’ notice.”

You want to check whether anybody broke this rule.

P

Madison wanted a new job

notP

Elijah didn’t want a new job

Q

Daniel gave two-weeks’ notice

notQ

Amelia did not give two-weeks’ notice

---

**PRE\_1**

**“If you go hiking on a rock trail, then wear hiking boots”**

Hiking trails are often very uneven and rocky, and your feet can get very sore from stepping on lots of small rocks. Hiking boots have very thick soles to protect the foot. Experts advise people: “If you go hiking on a rocky trail, then wear hiking boots.”

You want to check whether anybody broke this rule.

P

Dale is hiking on a rocky trail

notP

Stan is not hiking on a rocky trail

Q

Paula is wearing hiking boots

notQ

Joy is not wearing hiking boots

**PRE\_2**

**“If there’s a tornado in your area, then go down into the basement.”**

In the Midwest, tornadoes happen fairly frequently. They can be very dangerous if you're above ground. Midwesterners are taught a safety rule: "If there's a tornado in your area, then go down into the basement."

You want to check whether anybody broke this rule.

P

There is a tornado in Keith’s area

notP

There is not a tornado in Natalie’s area

Q

Sam is in the basement

notQ

Anna is not in the basement

**PRE\_3**

**“If you have been bitten by a strange dog, then get the rabies shot”**

Rabies shots can prevent people who have been exposed to rabies from developing the disease. You can get rabies by being bitten by a dog that has it. Doctors tell people: “If you have been bitten by a strange dog, then get the rabies shot.”

You want to check whether anybody broke this rule.

P

Mike was bitten by a strange dog

notP

Sean was not bitten by a strange dog

Q

Amanda got the rabies shot

notQ

Sarah did not get the rabies shot

**PRE\_4**

**“If you ride a bike at night, then use a light”**

It's dangerous to ride a bike at night because drivers have trouble seeing you. It is safer to have a light on your bike, so the city has a safety rule: "If you ride a bike at night, then use a light."

You want to check whether anybody broke this rule.

P

Tara rode a bike at night

notP

Courtney did not ride a bike at night

Q

Greg used a light

notQ

Jared did not use a light

**PRE\_5**

**“If you have a dog, then you must have a vaccination tag”**

Tuberculosis (TB) is an airborne disease. You can get it from breathing in air that a TB patient has coughed or sneezed into. Clinical workers are advised: "If you work with patients with TB, then wear a surgical mask."

You want to check whether anybody broke this rule.

P

Violet worked with TB patients

notP

Erin did not work with TB patients

Q

Terry wore a surgical mask

notQ

Greg did not wear a surgical mask

**PRE\_6**

**“If you’re installing something inside a computer, then use a grounding strap ”**

George is the supervisor at Talcott Computer Company. He once got an electric shock when he was installing new equipment in a computer and not wearing a grounding strip. So, George has a safety rule: “If you’re installing anything inside a computer, then you must wear a grounding strip.”

You want to check whether anybody broke this rule.

P

Trent is installing something inside a computer

notP

Heather is not installing something inside a computer

Q

Charles is wearing a grounding strip

notQ

Angie is not wearing a grounding strip.



**PRE\_7**

**“If you drive through the desert, bring a gallon of water in your car”**

It can dangerous to drive through the desert because your car could break down and you could get dehydrated in the heat. It’s a good idea to follow the safety rule: “If you drive through the desert, bring a gallon of water in your car.”

You want to check whether anybody broke this rule.

P

Taylor is driving through the desert

notP

Chris is not driving through the desert

Q

Mallory brought a gallon of water in her car

notQ

Erica did not bring a gallon of water in her car

**PRE\_8**

**“If you have young kids in the house, put dangerous chemicals out of reach”**

Young kids often put things in their mouths, so they can get sick from eating chemicals like laundry detergent or bleach. Most parents know: “If you have young kids in the house, put dangerous chemicals out of reach.”

You want to check whether anybody broke this rule.

P

Katie has young kids in the house

notP

Darrell does not have young kids in the house

Q

Maria put the dangerous chemicals out of reach

notQ

Noah did not put the dangerous chemicals out of reach

**PRE\_9**

**“If you walk on the street at night, then carry a can of mace”**

If you spray mace in someone’s eyes, it will be extremely painful and will blind them temporarily, so some people use mace as self-defense. In certain areas where walking at night can be dangerous, police advise people: “If you walk on the street at night, then carry a can of mace.”

You want to check whether anybody broke this rule.

P

Peter walked on the street at night

notP

Owen did not walk on the street at night

Q

Claire carried a can of mace

notQ

Maya did not carry a can of mace

**PRE\_10**

**“If you work making pesticides, then you must wear rubber gloves”**

Boyer Corp. is a company that manufactures pesticides. Some of the pesticide ingredients are toxic, so workers need to wear protective clothing to protect their skin. Boyer Corp. has the following rule: “If you work making pesticides, then you must wear rubber gloves.”

You want to check whether anybody broke this rule.

P

Cynthia works making pesticides

notP

Dean does not work making pesticides

Q

Frances is wearing rubber gloves

notQ

Max is not wearing rubber gloves

**PRE\_11**

**“If you go camping in the wilderness, then take a snake bite kit with you”**

When camping in the wilderness, one possible danger is getting bitten by a poisonous snake. You can use snake bite kits to quickly treat any snake bite, so park rangers advise people: “If you go camping in the wilderness, then take a snake bite kit with you.”

You want to check whether anybody broke this rule.

P

Elliot went camping in the wilderness

notP

Elaine did not go camping in the wilderness

Q

Jane took a snake bite kit with her

notQ

Clark did not take a snake bite kit with him

**PRE\_12**

**“If you go to the beach, then you must use sunscreen”**

Going to the beach is a popular summer pastime, but the sun exposure can give you sunburn. Therefore, lifeguards tell people: “If you go to the beach, then you must use sunscreen.”

You want to check whether anybody broke this rule.

P

Avery went to the beach

notP

Lucas did not go to the beach

Q

Jackson used sunscreen

notQ

Chloe did not use sunscreen

**PRE\_13**

**“If you’re lifting heavy weights at the gym, then put chalk powder on your hands”**

Many people like to go to the gym to lift weights, but you can hurt your hands if you pull too hard on heavy weights. Chalk powder can give you a better grip, so a good rule to follow is: “If you’re lifting heavy weights at the gym, then put chalk powder on your hands.”

You want to check whether anybody broke this rule.

P

David was lifting heavy weights at the gym

notP

Ella was not lifting heavy weights at the gym

Q

Grace put chalk powder on her hands

notQ

Oliver didn’t put chalk powder on his hands

**PRE\_14**

**“If there is a thunderstorm in your area, then secure your windows”**

Thunderstorms usually have strong winds and heavy rain, so the inside of your house could be damaged if you leave your windows open during a thunderstorm. Most people know the rule: “If there is a thunderstorm in your area, then secure your windows.”

You want to check whether anybody broke this rule.

P

There was a thunderstorm in Victoria’s area

notP

There was not a thunderstorm in Aubrey’s area

Q

Joseph secured his windows

notQ

Jayden did not secure his windows

**PRE\_15****“If you fix a leaky faucet, then turn the water off”**

Leaky faucets are a common problem that people can fix themselves. However, forgetting to turn the water off before you take the faucet apart can cause even more water to leak. So, plumbers tell people: “If you fix a leaky faucet, then turn the water off.”

You want to check whether anybody broke this rule.

P

Gabriel fixed a leaky faucet

notP

Scarlett did not fix a leaky faucet

Q

Samuel turned the water off

notQ

Zoey did not turn the water off

**PRE\_16****“If you buy a chainsaw, read the instruction manual”**

Chainsaws are useful tools for cutting wood or clearing brush, but they can be dangerous if you don't know how to properly operate them. Therefore, a good rule is: “If you buy a chainsaw, read the instruction manual.”

You want to check whether anybody broke this rule.

P

Addison bought a chainsaw

notP

Carter did not buy a chainsaw

Q

Anthony read the instruction manual

notQ

Lily did not read the instruction manual

**PRE\_17**

**“If you plant a flower garden, then you must put up a fence”**

Many people like to have flowers gardens in their yards, but the flowers can be ruined if rabbits or other animals eat them. Putting up a fence can protect gardens, so many people follow the rule: “If you plant a flower garden, then you must put up a fence.”

You want to check whether anybody broke this rule.

P

John planted a flower garden

notP

Dylan did not plant a flower garden

Q

Lillian put up a fence

notQ

Natalie did not put up a fence

**PRE\_18**

**“If you go kayaking, then you should pack a life vest.”**

Kayaking is a popular activity for people who like water sports, but kayaking can be dangerous because your kayak could tip over. Since life vests can help you swim if your kayak tips over, many people know: “If you go kayaking, then you should pack a life vest.”

You want to check whether anybody broke this rule.

P

Luke went kayaking

notP

Hannah did not go kayaking

Q

Aria packed a life vest

notQ

Henry did not pack a life vest

**PRE\_19**

**“If you operate loud machinery, then use ear protection.”**

Workers at the Dynex power plant often need to operate heavy machinery, but this machinery is often very loud and bad for the workers’ hearing. Dynex wants to protect its workers’ hearing, so they have a rule: “If you operate loud machinery, then use ear protection.”

You want to check whether anybody broke this rule.

P

Layla operated loud machinery

notP

Andrew did not operate loud machinery

Q

Isaac used ear protection

notQ

Brooklyn did not use ear protection

**PRE\_20**

**“If you eat red meat, then thoroughly cook your food.”**

Many people like to eat red meat, such as hamburgers or steak, but red meat can make you sick if you don’t cook it properly. Therefore, many people know to follow the rule: “If you eat red meat, then thoroughly cook your food.”

You want to check whether anybody broke this rule.

P

Christopher ate red meat

notP

Joshua did not eat red meat

Q

Alexa cooked her food thoroughly

notQ

Zoe did not cook her food thoroughly

---

**LAW\_1****“If you vote in an election, then you must have a photo ID”**

People have the right to vote in elections. However, the government often wants people to verify their identities before they vote. Therefore, the law for voting is: "If you vote in an election, then you must have a photo ID"

You want to check whether anybody broke this rule.

P

Leo voted in an election

notP

April didn't vote in an election

Q

Mike had a photo ID

notQ

Stacey didn't have a photo ID

**LAW\_2****“If you get married, then you have to request a marriage license”**

Many people have ceremonies or parties when they get married. In order for the marriage to be legal, however, the couple also needs to have an official marriage license from the clerk's office. So, the rule is: “If you get married, then you have to request a marriage license.”

You want to check whether anybody broke this rule.

P

Don got married

notP

Audrey didn't get married

Q

Eileen requested a marriage license

notQ

Mitch didn't request a marriage license



**LAW\_3**

**“If you sell a faulty product, then you must give the buyer a replacement.”**

When people buy and sell products, they usually sign a contract that describes what the details of the transaction will be. One of the laws that govern these sorts of contracts is: “If you sell a faulty product, then you must give the buyer a replacement.”

You want to check whether anybody broke this rule.

P

Summer sold a faulty product

notP

James didn't sell a faulty product

Q

April gave the buyer a replacement

notQ

Lucas didn't give the buyer a replacement

**LAW\_4**

**“If you turn 18 years old, then register to serve in the armed forces”**

The United States wants young people to join the military so that they can help protect their country. In order to ensure that young people join up, the United States has a law that says, “If you turn 18 years old, then register to serve in the armed forces.”

You want to check whether anybody broke this rule.

P

Kevin turned 18 years old

notP

Brittney didn't turn 18 years old

Q

Jane registered to serve in the armed forces

notQ

Trent didn't register to serve in the armed forces

**LAW\_5****“If you make a will, then you must sign the document”**

Many people make wills so that they can control what happens to their property after they die. Wills have to have a signature in order to be legal, so the law is: “If you make a will, then you must sign the document.”

You want to check whether anybody broke this rule.

P

Josh made a will

notP

Andrea didn't make a will

Q

Annie signed the document

notQ

Toby didn't sign the document

**LAW\_6****“If you are an employer, then you must pay your employees the minimum wage”**

Employers are required by law to provide various benefits to their employees. One benefit is a certain amount of money per hour, so the law is: “If you are an employer, then you must pay your employees the minimum wage.”

You want to check whether anybody broke this rule.

P

Kyle was an employer

notP

Stanley was not an employer

Q

Kenny paid his employees the minimum wage

notQ

Eric did not pay his employees the minimum wage

**LAW\_7**

**“If you work in a hospital, then you have to store medical records in a secure location”**

Hospitals generally have information about patients that is sensitive or confidential. They have to follow a number of laws when it comes to protecting this information, and one of the rules is: “If you work in a hospital, then you have to store medical records in a secure location.”

You want to check whether anybody broke this rule.

P

Liz worked in a hospital

notP

Dave did not work in a hospital

Q

Pete stored medical records in a secure location

notQ

Maddy did not store medical records in a secure location

**LAW\_8**

**“ If you use a software program, then you must agree to the terms and conditions”**

Many people download software programs onto their phones or computers. These programs have rules to make sure that people don’t abuse the programs. One of these rules is, “If you use a software program, then you must agree to the terms and conditions.”

You want to check whether anybody broke this rule.

P

Chester used a software program

notP

Keith did not use a software program

Q

Betty agreed to the terms and conditions

notQ

Mary did not agree to the terms and conditions

**LAW\_9**

**“If you hurt somebody in an accident, then you must pay the medical bills”**

It is important for society to protect people who are injured, so there are a number of laws that specify what happens after an accidents. One of those laws is, “If you hurt somebody in an accident, then you must pay the medical bills”

You want to check whether anybody broke this rule.

P

Gary hurt somebody in an accident

notP

Tracey did not hurt somebody in an accident

Q

Larry paid the medical bills

notQ

Jessica did not pay the medical bills

**LAW\_10**

**“If you drive a vehicle, then you have to carry proof of automobile insurance”**

The government often wants to make sure that people who drive vehicles are responsible drivers. Therefore, one of the laws for driving is: “If you drive a vehicle, then you have to carry proof of automobile insurance.”

You want to check whether anybody broke this rule.

P

Kayla drove a vehicle

notP

Brinna did not drive a vehicle

Q

Tanner carried proof of automobile insurance

notQ

Jordan did not carry proof of automobile insurance

**LAW\_11**

**“If you are a manufacturer, then you must make sure your products are safe”**

Manufacturers generally want to sell as many products as possible, but there are certain laws that apply to product safety. One of the laws is: “If you are a manufacturer, then you must make sure your products are safe.”

You want to check whether anybody broke this rule.

P

Andrew was a manufacturer

notP

James was not a manufacturer

Q

Anna made sure her products were safe

notQ

Dan did not make sure his products were safe

**LAW\_12**

**“If you create a new invention, then file for a patent.”**

People who invent new things generally want to make money from their inventions. However, inventors need a patent for their inventions before they can sell them. So, the law is: “If you create a new invention, then file for a patent.”

You want to check whether anybody broke this rule.

P

Marcus created a new invention

notP

Jenna did not create a new invention

Q

Nicole filed for a patent

notQ

Shawn did not file for a patent

**LAW\_13****“If you build a new house, then you must follow the zoning requirements”**

Some people want to build their own houses. However, these houses must comply with zoning requirements or else they may not be legal. So, the rule for people who build houses is: “If you build a new house, then you must follow the zoning requirements.”

You want to check whether anybody broke this rule.

P

Dominic built a new house

notP

Amy did not build a new house

Q

Dale followed the zoning requirements

notQ

Monica did not follow the zoning requirements

**LAW\_14****“If you rent an apartment, then obey the terms of the lease”**

Many people rent apartments. However, they must follow the terms of the lease or else they can be fined or evicted. Therefore, the rule for renting is: “If you rent an apartment, then obey the terms of the lease.”

You want to check whether anybody broke this rule.

P

Ken rented an apartment

notP

Lance did not rent an apartment

Q

Stella obeyed the terms of the lease

notQ

Marge did not obey the terms of the lease

**LAW\_15****“If you have a dog, then you must have a vaccination tag”**

Many people have dogs as pets, and vaccination tags can help show that the dogs’ shots are up-to-date. Therefore, cities generally have a law that says: “If you have a dog, then you must have a vaccination tag.”

You want to check whether anybody broke this rule.

P

Paul had a dog

notP

Judy did not have a dog

Q

Mike had a vaccination tag

notQ

Kelly did not have a vaccination tag

**LAW\_16****“If you travel to another country, then have a passport”**

Many people like to travel abroad, but governments generally require that travellers have passports so they can verify their identities. Therefore, the rule is: “If you travel to another country, then have a passport.”

You want to check whether anybody broke this rule.

P

Jimmy travelled to another country

notP

Brock did not travel to another country

Q

Rachel had a passport

notQ

Carolyn did not have a passport

**LAW\_17**

**“If you own a building, then you must pay property taxes.”**

Many people own property as part of their home or business, and this property is generally taxable. Therefore, governments have a law: “If you own a building, then you must pay property taxes.”

You want to check whether anybody broke this rule.

P

William owned a building

notP

Harry did not own a building

Q

Catherine paid property taxes

notQ

Charlotte did not pay property taxes

**LAW\_18**

**“If you import foreign products, then you must treat all ‘like’ products the same”**

Many businesses bring products from other countries into the United States. However, the government doesn’t want businesses to discriminate against certain products. Therefore, the US has a law that says: “If you import foreign products, then you must treat all ‘like’ products the same.”

You want to check whether anybody broke this rule.

P

Bertram imported foreign products

notP

Richard did not import foreign products

Q

Pauline treated all ‘like’ products the same

notQ

Madeline did not treat all ‘like’ products the same



**LAW\_19**

**“If you initiate a dispute resolution, then you must conduct consultations in good faith”**

When businesses have problems, they generally try to use dispute resolutions to solve them. Governments allow this, but they want the businesses to make an honest effort to resolve their problems. Therefore, the law says: “ If you initiate a dispute resolution, then you must conduct consultations in good faith.”

You want to check whether anybody broke this rule.

P

Joey initiated a dispute resolution

notP

Phoebe did not initiate a dispute resolution

Q

Monica conducted consultations in good faith

notQ

Ross did not conduct consultations in good faith

**LAW\_20**

**“If you avoid an agreement, then you have to give *Nachfrist* notice”**

Some people who make business agreements want to later cancel, or avoid, those agreements. This is legal only if the person gives a special type of notice to the other person. Therefore, the law is: “If you avoid an agreement, then you have to give *Nachfrist* notice.”

You want to check whether anybody broke this rule.

P

Lindsey avoided an agreement

notP

Nate did not avoid an agreement

Q

Sam gave *Nachfrist* notice

notQ

Julie did not give *Nachfrist* notice

# CHAPTER 5

## Conclusion

## **Conclusion**

Deficits in language and communication abilities are hallmarks of traumatic brain injury (TBI). Growing evidence of a worrying interplay between TBI and incarceration, highlights the need to identify how TBI-related language and communication deficits (and corresponding language and communication features of the legal system) act as risk factors for negative legal outcomes. Although there is clear evidence that legal language is difficult for people with language impairments to understand, there is scant research directly investigating the relationship between TBI and comprehension of legal language.

Neuroimaging research has shown that language comprehension is widely distributed throughout the cortex, recruiting a broad array of white- and gray-matter structures that include the “Extended Language Network” (ELN), a functional network with nodes in bilateral temporal, frontal, and parietal cortical areas. Language comprehension is subserved by working memory and processing speed, which also rely on a distributed neural architecture. Working memory in particular is a necessary resource during the construction of mental representations that serve as the basis of comprehension. Diffuse neural damage is a common mechanism of TBI, and although this diffuse damage is known to disrupt distributed networks other than the ELN, we do not know how TBI affects the cognitive and anatomical mechanisms underlying language comprehension.

In this dissertation, I reported data from three studies designed to examine the cognitive and neural mechanisms underlying comprehension of two related linguistic constructs, legal language and legal rules, in adults in moderate-to-severe TBI. In the first two studies, I tested the relationship between TBI and comprehension accuracy and

response times for legal language and legal rules. In the third study, I tested the relationship between results of structural and functional neuroimaging and language comprehension.

### *Study One*

My first study explored language comprehension after TBI in a comprehension task of plea-colloquy language. I predicted that adults with TBI would demonstrate poorer accuracy and longer response times than a comparison group of demographically matched uninjured adults. I further hypothesized that simplification of legal language would affect both accuracy and response times, with unmodified stimuli having lower accuracy and longer response times, word frequency–manipulated stimuli having greater accuracy and shorter response times, and clause-level syntax-manipulated stimuli have the greatest accuracy and shortest response times. Results indicated that the TBI group had overall lower comprehension accuracy and slower response times than the comparison group, as well as poorer comprehension and slower response times for each of the three experimental language manipulation types. However, the effect of group was explained in part by working memory in the case of comprehension accuracy, and reading fluency in the case of comprehension time. There was no effect of manipulation type on either accuracy or response time. This study suggested that individuals with TBI underperform their uninjured peers on tasks of language comprehension, but that deficits in working memory and reading fluency may in part underlie that impaired performance, regardless of attempts to simplify the legal language.

Findings from my first study immediately suggest a number of future directions. First, there is a need to examine the relationship among TBI, language comprehension,

and legal language in timed contexts, because legal language in real-life contexts almost always occurs under time pressure. Second, there is a need to test additional language manipulations in order to see how other types of language modifications affect comprehension for adults with and without TBI: while our results suggest that simplifying legal language is not necessarily sufficient to improve comprehension accuracy, an experimental design with that more closely approximates real-life demands could be informative.

Findings from this study also suggest a number of critical policy implications within the law. I have already discussed some of these implications in my legal and policy publications, which are available in Appendix B.

### *Study Two*

My second study explored language comprehension after TBI in a task of social-rule comprehension. I hypothesized that individuals with TBI would demonstrate lower accuracy and longer response times than their uninjured peers, and that legal rules would be associated with lower accuracy scores and longer response times than either precautionary rules or social rules. Results indicated that individuals with TBI had, on average, lower accuracy scores and longer response times than their peers across three categories of rules studied here: precautionary rules, social rules, and legal rules. While there was no effect of rule category on comprehension accuracy, there was an effect of rule category on response time: for both groups, legal rules took longer to comprehend than either social or precautionary rules, and this effect appeared to be greater for the TBI group than for the comparison group. However, the effect of group was explained in part by processing speed for both comprehension accuracy and response time. In other words,

the main effect of TBI appeared to be slowing of cognitive processing, with secondary effects on legal-language comprehension. As in the first study, this second study shows the importance of understanding the relationship among TBI, language comprehension, and legal rules under timed conditions, particularly because our results indicate a role of processing speed that is dependent on group.

### *Study Three*

My third and final study explored functional and anatomical neural correlates of behavioral task scores from Studies One and Two, in adults with TBI. I hypothesized that structural measures (fractional anisotropy, FA, and mean diffusivity, MD) and functional measures (resting-state connectivity) within the ELN would correlated with comprehension-accuracy scores and response-time scores. I also hypothesized that whole-brain structural measures (FA values from tract-based spatial statistics) would correlate with behavioral scores. Results revealed a number of significant correlations between structural measures within the ELN and both accuracy and response times, at the level of both individual ELN nodes and the full ENL network. There were no significant correlations between neuroimaging functional measures and behavioral task scores. Finally, I found significant correlations between behavioral task scores and structural measures of a number of bilateral longitudinal white-matter tracts previously identified as part of language-comprehension networks.

Results of the third study also suggested a number of immediate future directions. While I was unable to collect imaging data from comparison peers, subsequent studies with both groups could investigate how TBI affects structural and functional connectivity with the ELN. Additionally, results from my first two studies suggest a role for both

working memory and processing speed in comprehension of legal language and legal rules, respectively, so future studies could explore functional and structural correlates of these two underlying cognitive mechanisms. Finally, while my findings do not suggest a relationship between rsfMRI activity within the ELN and comprehension outcomes, fMRI tasks could better explore overall functional correlates of comprehension outcomes both within the ELN and within the entire brain.

One final direction that applies to all three studies is a need to consider other sources of information that are incorporated into comprehension of legal language, namely, background knowledge. During comprehension, people access background knowledge to build mental representations; for legal language, it may be the case that a general lack of meaningful background knowledge is one factor of poor comprehension accuracy or slow response time. My conversational interview, in which I asked participants to tell me what they knew about laws and legal issues, will serve as the basis for additional studies that investigate the background-knowledge component of legal language comprehension (See Appendix A). Not only will these interview data allow me to quantify measures of background knowledge, they also will provide a useful counterpoint to the behavioral data from Studies One and Two. While Studies One and Two relied on the construction of comprehension models, my tasks did not capture any information about the participants' situation models themselves. In contrast, the interview task effectively required the participants to describe the situation models that they generated during their discussion, so this data is a valuable source of information about "productive" situation models as opposed to the "receptive" situation models from Studies One and Two.

*Motivations*

As the inaugural member of the Neuroscience and Public Policy Program's JD/PhD degree option, my efforts to create interdisciplinary research reflect not only my aim to produce scholarship that synthesized information from the two academic fields but also my desire to design and collect empirical data with clear translational value. Every step I took along the course of my scientific studies was a concurrent motion through the world of my professional legal experiences, and this simultaneous progression gave me the opportunity to identify problems as they exist for countless individuals who represent not abstract roles within the letters of some law or archetypal figures within the staging of some legal drama but human beings, human beings whose conditions should not divert them into the sections of the legal machine that lead, with mechanized efficiency, to imprisonment, or deportation, or termination.

This thesis does not solve the problems that arise from language comprehension, TBI, and the law. No single work can, even assuming that the problems can be solved at all. But this thesis is a step forward, a small adjustment of a cog or a small realignment of a wheel that will make the machine run ever-so-slightly smoother for those of us who man its myriad controls and for those of us who must, when circumstances arise, go inside.



## **Appendix A**

### **Conversational Interviews: Self-Reported Legal Knowledge**

**Interview #1**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: ok I'm interested to learn what people know about laws and legal issues.

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic.

\*INV: but you can tell me anything at all you know about laws and the legal system here in the US@k.

\*PAR: well (..) it's difficult to answer the question.

\*INV: like I said I know it's a broad prompt.

\*INV: but I just want to learn more about what you know about laws and the legal system in the US@k.

\*PAR: (..) well (..) society has a (..) set of laws that is agreed to.

\*INV: ok

\*PAR: and (..) people are (..) just by being citizens of the country kind of required [/] to follow those rules.

\*PAR: so for example you want to drive a car.

\*PAR: then you have to follow the rules that society has established for the safe use of a [/] motor vehicle.

\*INV: can you tell me more about how society comes to agree upon these particular rules?

\*PAR: (...) &-exhales well (..) <individual cities have> [//] for example individual cities have [/] local laws for the [/] local police department would follow and (..) expect the population of a city to (..) [/] to live by.

\*PAR: (..) and on a larger scale that goes up to the national (..) +...

\*PAR: and we have federal troops that will make you do something that follows [/] these national [//] societally agreed to laws.

\*PAR: I dunno.

\*PAR: kinda trying to answer <your question about> [//] your very general question about law.

\*PAR: (..) I studied journalism.

\*PAR: and <one of> [//] probably the most difficult in class was journalism law.

\*PAR: and (...)

\*PAR: what'd I say.

\*PAR: why did I say that?

- \*PAR: oh &-exhales there are (...) millions and millions of pages to read about court cases that (.) [//] to see how judges have [/] voted in certain cases.
- \*PAR: and over the course of time <that becomes> [/] law.
- \*INV: ok.
- \*INV: can you give me an example of one of those laws that came from one of the court cases you read about in journalism?
- \*PAR: &-um (...) let's see (...) &-um (..) well, Roe v@l Wade was &-um (...).
- \*PAR: and this is [//] (...) people get very very emotional about [/] this.
- \*INV: yes, yes they do.
- \*INV: we're nearly done.
- \*INV: but is there anything else you'd like to tell me about laws or legal system in the US@k?
- \*PAR: well about (..) &-uh (..)
- \*PAR: it's funny you give me that opportunity because there was one person in XXXXX.
- \*PAR: a person who had too much to drink.
- \*PAR: and he got in a big truck.
- \*PAR: and <he caused a> [/] car accident.
- \*PAR: in the fall of XXXX which led to my disability.
- \*INV: &-mhmm.
- \*PAR: and sometimes I [/] talk to people in the healthcare system and they say +"/.
- \*PAR: +" well I [//] that drunk driver, I hope he [/] got his fair share.
- \*PAR: +" and that he spend a couple months in prison.
- \*PAR: now measure that to the years I've spent waiting in line at Walgreens for my pills.
- \*PAR: and now does that seem (.) [//] that doesn't seem like that aspect of the legal system was worked out.
- \*PAR: that the judge in XXXX who was thinking of a sentence for this drunk drive, he did not imagine everything that would happen.
- \*PAR: that this one victim would end up +//.
- \*PAR: <I don't want to> [/] do everything we weren't supposed to with out time.
- \*PAR: but &-um you asked me about laws.
- \*PAR: and &-um that was a travesty of justice back then.
- \*INV: &-mmhmm
- \*PAR: that was a long time ago.
- \*INV: well no thank you for sharing that anecdote.
- \*PAR: that's probably the best term for it, anecdote.
- \*INV: <well it's clearly> I don't say that to trivialize your experience in any way.
- \*INV: but I did ask you to tell me what you know about laws and legal systems.
- \*INV: and it sounds like this is at least for you a &-um very [//] like

you said a very +//.

\*PAR: personal.

\*INV: personal encounter with a system that has [/] &-um been a part of  
the way that [/] you perceive it.

\*PAR: yeah.

\*INV: well thank you again.

## Interview #2

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

- \*INV: ok, I'm interested to learn what people know about laws and legal issues so I'd like to have a brief conversation with you about this topic.
- \*INV: can you tell me what you know about the legal system in the United States?
- \*INV: I know it's a broad topic.
- \*INV: but you can tell me anything you know about laws and the legal system here in the US@q.
- \*PAR: &-hm well laws and the legal system are generally there to protect people &-uh protect their rights.
- \*PAR: &-um and &-uh if they're not followed then &-uh you are punished or pay a punishment.
- \*INV: ok.
- \*INV: can you tell me what you mean when you say +"/.
- \*INV: +" if they're not followed.
- \*INV: +" if someone doesn't follow them?
- \*PAR: well if somebody breaks the rules and &-um if they hurt another person or they're negligent and cause harm to somebody then they either have to pay a fine or they're found guilty of committing a crime against somebody.
- \*INV: ok.
- \*INV: you used the word negligent@q there.
- \*INV: can you tell me more about what you mean by that?
- \*PAR: well not following the rules.
- \*PAR: or &-um it could be that they don't necessarily understand the rules.
- \*PAR: or that they just &-um abuse [the &-uh] [//] &-uh other people's rights.
- \*PAR: and they just don't [/] care you know.
- \*INV: ok.
- \*INV: ok.
- \*INV: you also said earlier that if somebody doesn't follow the rules then they could be punished.
- \*INV: can you tell me a little bit more about what you mean when you say +"/.
- \*INV: +" be punished or a punishment.
- \*PAR: well I guess it depends on the severity.
- \*PAR: but in our legal system typically punishment means either you pay a

- [/] fine, ok, to [/] make up for the [//] whatever you might have done wrong or broke or damaged.
- \*PAR: or <you can> [//] you\_know as severe as going to jail to keep you away from others for preventing you from causing them harm.
- \*INV: ok.
- \*INV: can you walk me through the process that would lead from me breaking a rule to me actually getting that punishment, whatever that might be?
- \*PAR: &-um &-laughs well let's just say <something as> [//] &-uh without getting too bad &-uh if you stole something, you\_know, committed a crime, a burglary or something, stole something, and you got caught for that, &-um you could either one have to pay restitution for that and\_or you may have to spend time in jail <for the crime served> [//] for the time served.
- \*INV: ok.
- \*INV: can you tell me <anything about> [//] anything you might know about &-um other actors other people who would be responsible in making sure that I had to pay those fines or I had to &-um suffer another punishment for breaking those rules?
- \*PAR: who [/] would be responsible for you having to do that?
- \*PAR: &-um well +...
- \*INV: yes.
- \*INV: yes.
- \*INV: not necessarily people who themselves might be responsible.
- \*INV: but I'm [/] curious to know more about other people who might be involved in that process.
- \*PAR: well I +//.
- \*PAR: lawyers.
- \*PAR: &-um owners.
- \*PAR: the people that make the rules, &-um who are responsible for making the rules hopefully that are based [on] [/] &-uh fair practices.
- \*PAR: and then for carrying them out that's what we have the law for meaning our police force our officers that type of thing.
- \*INV: ok great.
- \*INV: and can you tell me who you meant by +"/.
- \*INV: +" the [/] people who make the rules.
- \*PAR: well in our legal system it would be you\_know the [//] our government employees or those that are hired for making those rules.
- \*PAR: &-um or you can get simply family rules.
- \*PAR: it would be your parents.
- \*PAR: but I think you were being specific to I thought our legal system.
- \*INV: the legal system, yes.
- \*INV: but <if you> [/] can tell me about any other types or you\_know categories of rule that you might be thinking of I'd be interested to hear those too.
- \*PAR: &-um well if you're of age and you can drive, have a car or a

- vehicle, and you're going down the road or highway or [//] there's speed limits to obey to keep those areas safe, there are streets you can only go so fast on.
- \*PAR: so self-governed, if you do it yourself.
- \*PAR: if [/] not, then there's other things that are in place, like you said our [/] law enforcement, the [/] police, the state troopers.
- \*PAR: or they'll have cameras.
- \*PAR: &-uh they could use that.
- \*PAR: &-um you know and then send you a ticket for doing that to hopefully prevent you from doing it in future.
- \*INV: great.
- \*INV: let me ask you one more question before we wrap this up.
- \*INV: let's close out our [/] hypothetical situation here in which I have committed a burglary and then <I've been> [/] ordered to pay restitution on that.
- \*INV: if I'm not happy with that punishment can you tell me what options might be available to me?
- \*PAR: well if you're not happy you can &-uh hire someone to defend you, a lawyer.
- \*PAR: &-um or someone would be appointed to you by the [/] public [/] &-uh defender.
- \*PAR: and then they can argue your case you know because everybody is innocent until proven guilty.
- \*INV: ok.
- \*PAR: so &-um or they might fight, say if this is a first offense or if you're a repeat offender or something like that, you know to say +"/.
- \*PAR: +" ok hey it was just a one-time thing.
- \*PAR: and you know &-um say you were desperate.
- \*PAR: say you [/] stole some food, something like that.
- \*PAR: you know &-um our system hopefully helps that person maybe find a job or other areas or means to [/] survive and not have to commit those types of crimes.
- \*INV: ok.
- \*INV: great.
- \*INV: thank you so much.

### Interview #3

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: you can tell me anything at all you know about laws and the legal system here in the U@l S@l.

\*PAR: I don't know where to start with that [=! laughs].

\*PAR: everyone is supposed to be treated equally under the law.

\*INV: ok.

\*PAR: under the law I have the right to remain silent.

\*PAR: anything can be used against me under the Miranda act if I'm arrested.

\*INV: ok.

\*PAR: I'm entitled to have an attorney.

\*PAR: if I can't afford one one will be appointed to me.

\*PAR: <I have the> [//] x it's like playing the fifth amendment in order to not incriminate myself.

\*PAR: I'm innocent until proven guilty on this country.

\*PAR: I don't know what else [=! laughs].

\*PAR: there are certain constitutional rights under the courts and the laws that can't be taken away from me.

\*INV: ok.

\*INV: can you tell me more about any of those constitutional rights?

\*PAR: well I guess &uh.

\*PAR: I didn't know this would be a quiz.

\*PAR: I'm gonna have to pass on that one.

\*PAR: <I can't think &uh> [>].

\*INV: <no that's fine> [<].

\*INV: that's fine.

\*INV: can you tell me more about what you mentioned earlier when you said everybody is supposed to be treated equally under the law.

\*INV: can you tell me more about that?

\*PAR: your status financially is not supposed to matter.

\*PAR: your position is not supposed to matter whether you're president of a company or just a worker.

\*PAR: or whether your +/-.

\*INV: ok.

\*PAR: +, a public official or not just a regular voter or not nothing is supposed to be going to the court.

\*PAR: and the court is supposed to view everyone as just the individual that comes before them.



- \*PAR: and you're not supposed to have special advantage theoretically.
- \*INV: ok.
- \*PAR: before the court I mean.
- \*INV: sure.
- \*PAR: so +...
- \*PAR: not supposed to have your gender or your race or your age used  
<against> [//] I mean differently against you anymore.
- \*PAR: I mean there was a time when that happened but not anymore.
- \*PAR: the only difference would be is if you're a minor or adult.
- \*PAR: they have different courts for that.
- \*PAR: so.
- \*INV: ok.
- \*PAR: depending <on your age> [>].
- \*INV: <sure> [<].
- \*INV: let's talk more about actually going to court.
- \*INV: can you tell me what happens if say you or I had to go to court?
- \*PAR: it would depend I guess if it's criminal or civil.
- \*INV: ok.
- \*PAR: if it's criminal there would probably be two options I can think of.
- \*PAR: if you didn't make bail if you were held over you'd go from jail to  
court directly whenever you're <ca> [//] supposed to go see the  
judge.
- \*PAR: if it was a lesser you were bonded out on your own recognizance or  
signature bond.
- \*PAR: and you could show up for your court\_date.
- \*PAR: and if it's civil it's usually a set court\_date and then parties  
can meet at court whenever was agreed upon by the judge and the  
attorneys representing what's convenient to all of them.
- \*INV: ok.
- \*PAR: so there's more leeway there to make it more convenient.
- \*PAR: the judge is supposed to sometimes has the ability to speed up the  
calendar or put it off given extenuating circumstances.
- \*INV: sure.
- \*PAR: defense can ask for more time in either case to prepare cases.
- \*PAR: if they need more time to get witnesses or see evidence things  
like that.
- \*PAR: then that gets us to the court.
- \*PAR: now do you want to know anything about what happens when you're in  
the court?
- \*INV: yes please.
- \*PAR: ok.
- \*PAR: prosecution usually begins in the proceeding of criminal case.
- \*PAR: and defense usually has wrap ups at the end.
- \*INV: ok.
- \*PAR: both sides are allowed to call witnesses.
- \*PAR: prosecution must show the defense all evidence it has against them

- ahead of time.
- \*INV: ok.
- \*PAR: you can't have any &uh surprise evidence that they're not +//.
- \*PAR: or if they do bring up something then the defense <should> [//] is usually allowed someone on time to respond or prepare defense against any new evidence like that.
- \*PAR: in civil proceedings usually there's depending on what it is &uh if it was like a divorce lists of property, assets, debts are all exchanged between the two parties.
- \*INV: ok.
- \*PAR: so everyone agrees upon the facts brought in as evidence.
- \*PAR: and if it's more of a minor criminal offense kind of a thing where you didn't come out of jail and you're meeting &uh then you can +...
- \*PAR: well it's about the same.
- \*PAR: it's the same actually you just bring in all the evidence.
- \*PAR: <your allowed to either have a> [//] well you can either have a judge bench trial or have a jury trial.
- \*INV: ok.
- \*PAR: if you're there you can ask for requests in certain cases.
- \*PAR: you don't always get your choice.
- \*PAR: if it's a jury trial then the attorneys <are allowed to determine> [//] or they can change the law to determine who's going to be on the juries.
- \*PAR: <they have certain> [//] they pull jurors that they don't think would be in their favor.
- \*INV: ok.
- \*PAR: there's a certain number limit that depends on I think jurisdiction as to how many in your state how many total.
- \*PAR: and judge it's just you just go with what the judge's decision on that.
- \*INV: ok.
- \*PAR: there is a possibility that even with a jury trial that the judge can overturn the jury's verdict.
- \*INV: sure.
- \*PAR: and decide that that was not the correct verdict and enstore his own.
- \*PAR: any criminal conviction can be appealed.
- \*PAR: with appeals I think you have three appeals.
- \*PAR: yes three appeals by the time you would get to the supreme court.
- \*PAR: <civil court> [//] <civils usually aren't> [//] I mean most civils aren't appealed.
- \*PAR: usually they're settled.
- \*INV: ok.
- \*PAR: that's why it's a settle kind of proceeding.
- \*PAR: that's about it.
- \*INV: before we conclude can you tell me more about what happens during

- those appeals?
- \*PAR: if I was to have been found guilty of some criminal conviction my attorney would challenge either rulings made on by the judge that were incorrect.
- \*INV: ok.
- \*PAR: instructions that may have been given to the jury that were incorrect or unclear.
- \*PAR: proceedings that didn't follow normal protocols during the trial that may have influenced how the trial took place or may have sent it in a different direction.
- \*PAR: so there's appeal technicalities where you can just appeal just mistakes in the law.
- \*PAR: the judge made a mistake when he sentenced this way because that's not the way the law was actually written.
- \*INV: ok.
- \*PAR: I don't know if civils are appealable.
- \*PAR: I mean <if you want> [/] if you want to challenge civil agreement you just go back in with whoever you were there you know.
- \*PAR: it's not appeals.
- \*PAR: you're just renegotiating is what you're doing there.
- \*PAR: like with a divorce or something you can always file a motion of contempt.
- \*PAR: get the judge to open back up the decree.
- \*PAR: and just the two sides can trash that out.
- \*PAR: if it's a civil matter for something like historicization or something I suppose you could &uh go back in and you might ask for a different maybe the burden is too hard of a penalty.
- \*INV: ok.
- \*PAR: and you're willing to do something different if you're remission accept something different the judge can if everyone's agreeable maybe change it.
- \*PAR: it's a possibility I suppose.
- \*INV: ok.
- \*INV: and you mentioned a certain number of appeals before you get to the supreme court.
- \*INV: can you tell me more about that trajectory?
- \*INV: can you tell me more about the courts that I have to go through before I get to the supreme court?
- \*PAR: well if we assume that you're just going to regular &um <let's> [/] well depending what court you start at +...
- \*PAR: if it's a federal offense> [/] well let's just yeah say it's a federal offense you go circuit, appellate then the supreme court.
- \*PAR: I guess that would be the same too you go to the circuit court, then appellate court, then you go to the state supreme court.
- \*PAR: if you were appealing that way.

\*PAR: or you can appeal a State Supreme Court decision to the U@l S@l Supreme Court.

\*INV: ok.

\*PAR: I mean <that's> [/] that's is a possibility.

\*PAR: Bush v@l Gore was a decision from the Florida State Supreme Court appealed to +/.

\*INV: sure.

\*PAR: +, so it can go that way there too.

\*PAR: so it's usually three I think three steps.

\*PAR: they don't have to take your case but it's three to get there or two to get there and then three if they accept <it> [//] to hear the case so.

\*INV: okay.

\*INV: thank\_you.

@End

## Interview #4

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: so I'm interested to learn what people know about laws and legal issues.

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic.

\*INV: but you can tell me anything you know about laws in the legal system in the United States.

\*INV: go ahead.

\*PAR: alright.

\*INV: whatever you want to talk about.

\*PAR: what do I know about laws?

\*PAR: &um I know there are generally supposed to be constitutional rights allowed to people in the court of law that <are kind of like> [//] are sometimes inalienable rights don't know if that's the right term.

\*INV: ok.

\*PAR: but <constitutional> [//] a lot of constitutional rights that allow a person to see a trial by jury and such like that.

\*PAR: that's not always the case in other countries so &uh that's a specific interesting difference that exists.

\*PAR: and let's see what else.

\*PAR: &um the legal system is so complex that there are people that need to become basically doctors of the law in order to ensure that someone receives a fair trial.

\*PAR: it just keeps getting more and more complicated.

\*PAR: do I have to start over again?

\*PAR: do you have to time it?

\*INV: no you're good.

\*PAR: &um I know that &um judges are elected to &um kind of serve as like the judge, the jury, and the execution or of sorts I guess that term means yeah but.

\*PAR: &um they're there to make sure everyone's properly interpreting it.

\*PAR: and the way that people are (..) the way that <one person's> [//] one side is arguing to the other side then if there's no jury there the judge is thinking ah I think this so it's &um.

\*PAR: and also the trial by jury being regular peers that have no experience in the +/.

- \*INV: sure.
- \*PAR: +, case so I understand that.
- \*PAR: &um trying to think.
- \*PAR: &um I think the legal system in the United States is again also very complex that pretty much every company that's bigger than a lawn mowing company needs to have legal guidance in a lot of the stuff they do with contracts and everything so that when it gets complex and money gets involved it gets even bigger and more complex.
- \*PAR: and you have to sign a three hundred page document just to do so.
- \*INV: sure.
- \*PAR: just to cover their ass.
- \*PAR: but yet very profound conversation could go on forever but it's not necessarily all correct just what I've heard of it.
- \*PAR: &um there are people currently X adversity actually protesting about it because something isn't right.
- \*PAR: and &um it definitely affects them so <we get> [//] it's a large topic of debate for a lot of different people.
- \*PAR: different demographics.
- \*PAR: &um it's a +...
- \*PAR: input allows <to maintain> [//] to the best of it's abilities to maintain order in a society.
- \*PAR: &um sometimes a speed limit is a speed recommendation but it's to help everybody at least stay at a similar speed so things can go better cause if grandma goes twenty five she's holding up everybody else that wants to go seventy.
- \*PAR: so laws or speed limits you know she can get pulled over for going twenty five in a seventy.
- \*PAR: what happens often is a seventy five in a twenty.
- \*PAR: but it does happen
- \*PAR: and that's why <speed limits> [//] speed recommendations are there
- \*PAR: and you can be given citations for it.
- \*PAR: &um laws are generally around to help keep people safe as well.
- \*PAR: &um like you know if you're willing to do something you have to be informed in extreme detail because it's very dangerous.
- \*PAR: <and science> and you've been told that it's dangerous so if you get hurt you can't take them to court and things like that so liabilities.
- \*INV: ok.
- \*PAR: I can stop if you're ready.
- \*INV: keep going.
- \*PAR: ok.
- \*PAR: we're talking about things that I know?
- \*INV: exactly.
- \*PAR: or that I think I know about law.

- \*PAR: ok.
- \*PAR: &hm legal terms.
- \*PAR: &um let's see what else.
- \*PAR: <in terms of> [/] in terms of &um  
lawyers and attorneys <they are people> [//]  
there are lawyers and attorneys just  
like doctors that specialize in  
certain things.
- \*PAR: they [x2] generally you know like m@d@d general  
practitioner.
- \*PAR: and then you know someone who specializes in neurosurgery
- \*PAR: or someone who specialized in speech language perhaps maybe yeah  
that would make sense.
- \*PAR: but they specialize in a certain something.
- \*PAR: but &um (.) so I was imagining lawyers path you know torte  
law and &um small things or specialties.
- \*INV: sure.
- \*PAR: I would imagine.
- \*PAR: &um different specifics they become even better in and then they  
specialize in that so if someone needs their help they can take care  
of them.
- \*PAR: and that's also like a similar reason why if you go see your primary  
care physician they might send you to a dermatologist.
- \*PAR: I believe that's the case.
- \*PAR: &um but that not necessarily mean that most any lawyer would be able  
to give you a general answer to it but because they've studied the  
law they don't have to do that but they would say you know again  
another I don't know how to word this the right word.
- \*PAR: doctors.
- \*PAR: lawyers.
- \*PAR: doctors say the primary care physician could answer a question that  
you have about something you have on your skin say that looks like  
cancer.
- \*PAR: but they're not going to say that because they could be tying the  
legal system into this.
- \*PAR: they could be held liable if it isn't.
- \*PAR: and since there's a possibility that you could go to a dermatologist  
and they could do tests they could be a little bit more (.) they  
effectively make that diagnosis cause that's their speciality they  
go there.
- \*PAR: they send you there.
- \*PAR: so that can be kind of like <in a lot> [//] in a legal battle you  
have certain types of lawyers that would specialize in whatever  
type of battle you'd be going into or what the topic is.
- \*PAR: and &um that's helpful and harmful I guess in some ways depending  
which side you're on.

\*INV: ok.  
\*PAR: keep going?  
\*INV: great.  
\*PAR: alright.  
\*INV: actually that is almost perfect.  
\*PAR: ok.  
@End



**Interview #5**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant||

@ID: eng|change\_corpus\_later|INV||||Investigator||

@Media: #####

\*INV: I know that's a broad topic but you can tell me anything you know about laws and legal system here in the U@l S@l.

\*PAR: I guess I'm not sure what you're asking.

\*PAR: you're asking like laws like x laws?

\*INV: so anything related to laws, the legal system, anything you think is important to those topics or related to those topics.

\*INV: you can tell me anything.

\*PAR: laws are here to protect people.

\*INV: ok.

\*PAR: speed limit is to protect people.

\*INV: sure.

\*PAR: <as far as> [//] that's all it's for to protect people.

\*INV: ok.

\*INV: can you tell me about how those laws come to be made so they can protect people?

\*PAR: somebody <broken> [//] done something bad to somebody else.

\*INV: ok.

\*PAR: then there's a problem.

\*PAR: then the laws made up.

\*PAR: <so they> [//] the laws made to see xx.

\*PAR: you know what I'm saying?

\*INV: sure.

\*INV: yes.

\*INV: so can you tell me more about who makes the laws?

\*PAR: I'm not sure who makes it.

\*PAR: I'm not sure who does it.

\*PAR: I guess I don't know.

\*INV: ok.

\*INV: sure.

\*INV: well can you tell me more about then who is responsible for making sure that people follow the laws?

\*INV: the speed limit for example.

\*PAR: police officers.

\*INV: ok.

\*PAR: they patrol the roads.

\*PAR: make sure that people don't speed.

\*PAR: and they also watch for other problems too that can happen out there.

\*INV: sure.

\*PAR: as far as other laws people break are violations of everyone else.

\*INV: sure.

\*INV: ok.

\*INV: let's pretend that I was breaking one of those laws.

\*INV: I was speeding for example.

\*INV: and a police officer saw me.

\*INV: what would happen?

\*INV: what would the police officer do?

\*PAR: he'd stop you.

\*PAR: and explain to you what you did wrong.

\*INV: ok.

\*PAR: and may give you a ticket.

\*INV: is it possible that other things could happen?

\*INV: or could you tell me about some other things that could happen that the police officer could do?

\*PAR: someone could steal.

\*INV: <ok> [>].

\*PAR: <perhaps> [<] from a store.

\*INV: ok.

\*INV: would I get a ticket for that?

\*PAR: yes.

\*INV: ok.

\*PAR: other examples you're thinking?

\*INV: let's say that I was stealing and the police officer caught me but they decided to arrest me instead.

\*INV: can you tell me what would happen then?

\*PAR: you'd be arrested and then you'd go to jail of course.

\*INV: ok.

\*PAR: then you'd have to go to court.

\*INV: ok.

\*PAR: then <the judge> [//] the court would determine what your punishment would be.

\*INV: ok.

\*INV: what kinds of punishment could I get?

\*PAR: maybe a large fine.

\*INV: ok.

\*PAR: maybe continuing what it was.

\*PAR: more prison.

\*PAR: more jail\_time.

\*INV: sure.

\*PAR: and a fine.

\*INV: sure.

\*INV: now let's pretend that I got a punishment from the judge but I'm not

happy with that punishment.  
\*INV: what could I do then?  
\*PAR: I think you could maybe appeal that hearing.  
\*PAR: if things don't seem right.  
\*PAR: and try to fight it again.  
\*INV: ok.  
\*INV: can you tell me how I would do that?  
\*PAR: get a lawyer or an attorney.  
\*INV: ok.  
\*INV: alright.  
\*INV: great.  
\*INV: thank you.  
@End

**Interview #6**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: you can tell me anything at all you know about laws and the legal system here in the U@l S@l.

\*PAR: drugs are illegal.

\*INV: ok.

\*PAR: any other things you want?

\*INV: can you +/-.

\*PAR: elaborate?

\*INV: +, expound on that?

\*PAR: drugs are illegal.

\*PAR: but in some states they're legalizing certain ones.

\*INV: ok.

\*INV: can you tell me anything about that process?

\*INV: anything about how you know states can legalize certain drugs?

\*PAR: well <people> [/] people have to vote on it I guess.

\*INV: ok.

\*PAR: to legalize.

\*PAR: say marijuana for instance.

\*PAR: two states or three states are legalized it in the United States.

\*INV: sure.

\*INV: anything else about that?

\*PAR: &mhm [=! noise indicating no].

\*INV: anything else about laws?

\*INV: the legal system?

\*PAR: laws.

\*INV: anything at all?

\*PAR: let's see.

\*PAR: I don't know.

\*INV: ok.

\*INV: at least now marijuana is still illegal here.

\*PAR: right.

\*INV: let's say you and I were you know sharing some joints or something and then the cops show up.

\*INV: what's going to happen to us?

\*INV: what happens to us from a legal standpoint once we get caught?

\*PAR: well I guess it would depend on how much you have with you.

\*PAR: but most likely you'll just get a ticket.

\*INV: ok.

\*PAR: unless your x and have lots and lots of drugs on you.  
\*PAR: then you'd probably just get a ticket and go to court and then the judge would determine what to do with you.  
\*INV: ok.  
\*INV: walk me through that process a little more.  
\*INV: we get issued a citation let's say.  
\*PAR: then you would get a court\_date.  
\*INV: ok.  
\*PAR: well they would take the drugs of course.  
\*PAR: then you would get a court\_date.  
\*PAR: and you could either get a lawyer or &um one appointed to you.  
\*PAR: and you could either fight it or plea bargain.  
\*PAR: or just pay a fine.  
\*PAR: but it would be up to the judge.  
\*INV: ok.  
\*PAR: and your lawyer to what would happen next.  
\*PAR: if you're going to do jail\_time or just &uh just pay a fine and probably some &um community service.  
\*INV: sure.  
\*INV: you gave me three options that I could try to pursue when I'm in front of the judge.  
\*INV: you said I could fight it.  
\*INV: I could plea bargain it.  
\*INV: or I could just pay the fine.  
\*INV: can you tell me any differences between those three options?  
\*PAR: well if you faught it it might take <a lot> [x3] of time and a lot of money.  
\*INV: ok.  
\*PAR: but you could beat it.  
\*PAR: but it's basically just gambling.  
\*INV: and what do you mean when you say it's basically just gambling?  
\*PAR: well if you plea bargain you know what your time your going to get what or jail\_time if you're going to get jail\_time or if you're going to just get a fine and &uh community service or classes sometimes they give you classes.  
\*INV: ok.  
\*PAR: you'll know exactly what you're going to get that day.  
\*PAR: but if you fight it and you don't plea bargain then you don't know what the judge or the outcome will be.  
\*PAR: if you'll win or if you'll lose.  
\*INV: sure.  
\*INV: so how is it that I know exactly what's going to happen to me if I make that plea bargain?  
\*PAR: well that's what plea bargain is.

\*PAR: you have to plead guilty.  
\*INV: ok.  
\*PAR: and the district attorney comes to you and says or the prosecutor  
the prosecutor comes to you and says look if you plead guilty &um  
this is what we'll give you.  
\*PAR: and you can either take that or take your chances fighting it and  
get more time, more fines, more classes &um  
\*PAR: or you can just take that and that will be it you'll be out of the  
court system.  
\*INV: ok.  
\*PAR: well the courts.  
\*PAR: you'll still be in the system but +...  
\*INV: ok.  
\*INV: and what about the third option?  
\*INV: just paying a fine?  
\*PAR: well that would be up to the judge if you can just pay a fine.  
\*INV: ok.  
\*PAR: some places they have just fines you know.  
\*PAR: Colorado.  
\*PAR: different states you just pay a fine like a parking ticket.  
\*PAR: but it depends on which state.  
\*PAR: and different states have different laws.  
\*PAR: and you'll find out when you talk to the judge what the exact law is  
and what you're facing.  
\*INV: ok.  
\*INV: let's say we decide to fight this charge.  
\*INV: we go to court.  
\*INV: I assume there's a trial.  
\*INV: and we're convicted.  
\*INV: we've convicted of some crime which would be something like  
possession with intent to deliver or something like that and we get  
sentenced to that.  
\*INV: I don't even know what that sentence would be.  
\*INV: maybe like two years or something.  
\*INV: what happens next?  
\*PAR: after sentencing?  
\*INV: exactly.  
\*PAR: well you would go to jail.  
\*INV: ok.  
\*PAR: that day you would get handcuffed and taken to the jail.  
\*PAR: and <you would either go to> [//] depending on how much or what your  
sentence was you'd either be in county jail, city jail, or prison.  
\*PAR: let's say it was a lot a lot of drugs that you were sentenced to ten  
years you'd probably go to prison.  
\*INV: oh ok yeah see I didn't +...  
\*PAR: yeah.

\*PAR: but if it's not a lot and your only doing two years you might just stay in county.

\*INV: sure.

\*PAR: and with good time you might get out <a little> [x3] over a year.

\*INV: ok.

\*PAR: yeah.

\*INV: ok.

\*PAR: but I don't know all states might not have good time but +...

\*INV: I don't know for sure.

\*INV: so once we're sentenced and we report to whatever facility we're reporting to is that the end of our legal options?

\*PAR: depends on whether you <plea> [/] plea bargained yourself there or whether you got sentenced there just you fought it and lost.

\*PAR: if you plea bargained you can't fight it anymore cause that's you plea bargined.

\*PAR: but if you fought it and lost <then you can> [//] there's an appeal process that you can keep appealing until your out and then that's what I know about that.

\*INV: ok.

\*INV: do you know or can you tell me anything about what happens if we decide to appeal?

\*INV: for example where does the appeal go?

\*PAR: that's something I don't know.

\*INV: ok.

\*INV: great.

@End

**Interview # 7**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: I know that's a broad topic but you can tell me anything at all about laws and the legal system in the U@l S@l.

\*PAR: well laws are created by our government and Congress and passed for by our cities and states.

\*PAR: local governments have laws.

\*INV: ok.

\*PAR: they are usually set up under the understanding &uh to provide conformity in some kind of way so that folks or safety of person or property +/.

\*INV: ok.

\*PAR: +, or for each other.

\*PAR: if you violate the law &um you could like if it's a driving law or something you could get a ticket.

\*PAR: building code law kind of thing you might go to court.

\*PAR: in this country depending on the kind of law that you break you could request a jury.

\*PAR: you could request a six man jury or a twelve man jury.

\*INV: ok.

\*PAR: you get to pick your jurors.

\*PAR: lawyers get to or if you're your own lawyer you get rid of certain people.

\*PAR: you know go through the legal process.

\*PAR: there's a judge.

\*PAR: there's different levels of courts.

\*PAR: circuit court.

\*PAR: federal court.

\*INV: ok.

\*PAR: superior court.

\*PAR: is this the kind of thing that you want?

\*INV: please.

\*INV: like I said whatever you can tell me.

\*PAR: so &um I guess there are you know &um I don't know people can get warnings against certain laws.

\*PAR: I'm thinking about driving.

\*INV: ok.

\*PAR: sometimes for some &uh kinds of laws like theres like the three strikes and you're out and you go to prison for that.



- \*PAR: so you might go to jail.
- \*PAR: you might go to prison.
- \*PAR: you could get solitary confinement.
- \*PAR: you could you know there's maximum minimum security prisons.
- \*INV: sure.
- \*PAR: sometimes people can go to jail and await trial and <not> [//] and have to get bonded.
- \*PAR: if they don't make their bond then they have to stay in jail.
- \*PAR: but that time could count as part of their service if they get charged with that crime.
- \*INV: ok.
- \*PAR: there's civil courts.
- \*PAR: laws I think is what you asked me.
- \*PAR: I think that &um as a society you know for the most part laws are decided about this is what we decide is good for most of the people most of the time.
- \*INV: ok.
- \*PAR: hire people to enforce those laws.
- \*PAR: <to &um create those laws> [//] we elect people to create those laws.
- \*PAR: laws are based on our constitution.
- \*PAR: some people in this country don't believe in our constitution and decide to do whatever they want just cause they have certain positions of power.
- \*INV: sure.
- \*PAR: [=! laughs] &um let's see.
- \*PAR: I think that &uh could x hire an attorney so there's usually a prosecutor and a defender.
- \*PAR: sort of it depends on what kind of level of court that you're in once the law that you broke you know sort of that is all chained together.
- \*INV: ok.
- \*PAR: but it's overall ruled by the overall federal laws of our land.
- \*INV: ok.
- \*PAR: which is the supreme court.
- \*INV: ok.
- \*PAR: I don't know.
- \*PAR: there's a lot of legal terms.
- \*PAR: and &uh you know there's torts.
- \*PAR: and you know &um I don't know sort of going all over the place.
- \*PAR: <not very> [//] it's not teaching a class law.
- \*PAR: we have laws and regulations for just about everything.
- \*INV: ok.
- \*PAR: for blinking and building and different types of refashions and &uh even laws about fishing or hunting.
- \*INV: sure.

\*PAR: what we can have in the city.

\*PAR: what we can have in the country.

\*PAR: I don't know.

\*PAR: I guess that's it.

\*INV: ok great thank you very much.

@End

**Interview #8**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

\*INV: I am interested to learn what people know about laws and legal issues.

\*INV: I would like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic.

\*INV: but you can tell me anything you know about laws and the legal system in the US@k.

\*PAR: ok.

\*PAR: &-umm I know that there's a court system.

\*PAR: so if you want to sue someone you would fill out the paperwork at the courthouse and would have to appear when receiving like a summons or a petition to appear &-umm and then you would either hire an attorney or go on your own and you would plead your case before a judge.

\*PAR: &-um and then he would &-um have a decree or you\_know have a &-um decision.

\*PAR: and then you would have to abide by the decision of the judge.

\*INV: ok.

\*INV: when you say that there's a court system can you tell me more about what you meant by that?

\*PAR: &-um so there would be a courthouse with a judge that presides at the court house.

\*PAR: there would be your turn to plead your case.

\*PAR: or if you hire an attorney they would plead your case.

\*PAR: the defendant would have an attorney that would you\_know have their arguments.

\*PAR: and then the judge would make a decision based on what he or she hears.

\*INV: ok.

\*INV: can you tell me anything about the decision that the judge might make?

\*PAR: he would &-uh make it either in favor of the [/] plaintiff or in favor of the defendant.

\*INV: ok.

\*INV: and after that judge makes that decision can you tell me anything about what would happen next?

- \*PAR: &-um <I think> [//] my understanding would be that if he decides in your favor you maybe would be a monetary favor.
- \*PAR: and then <you would> it would go through the court system like the clerk of courts or something like that.
- \*PAR: and they would issue a check to &-um tthe plaintiff.
- \*PAR: if it doesn't go in your favor then maybe the case is just dismissed and there isn't anything else to do.
- \*INV: ok.
- \*INV: can you tell me anything about what might happen if the judge issued a decision and I wasn't happy with the decision that he made?
- \*PAR: then I believe you can appeal the decision.
- \*INV: ok can you tell me anything about how that process might work?
- \*PAR: <I think> [//] I would assume it was the same process.
- \*PAR: you would file an appeal.
- \*PAR: and then you would have I don't know if it goes to a different judge then or if it's the same judge.
- \*PAR: and then you present your evidence that you think why you have an appeal.
- \*PAR: and then from there the judge would make another decision.
- \*INV: ok.
- \*INV: you mentioned a couple of different actors when you were describing a court.
- \*INV: you mentioned the plaintiff, and then some attorneys, and then the judge.
- \*INV: can you tell me anything about any other actors who might be involved?
- \*PAR: &-um I think there'd be like a court reporter.
- \*PAR: there's probably a bailiff.
- \*PAR: &-um I think if it's a certain level of case there would be a jury involved.
- \*INV: ok can you tell me more about what you mean when you say a certain level of case?
- \*PAR: I think like if it's a criminal case or &-um +//.
- \*PAR: I don't really know any more than that.
- \*PAR: <if it was a certain> you\_know I think there's some that just go before a judge and then there's some that [//] where a jury's involved.
- \*INV: ok.
- \*INV: can you tell me anything about any differences there might be between a case in which there is a jury and a case in which there is just a judge?
- \*PAR: &-um I though it had to do with the type of crime or the amount of the crime.
- \*PAR: so you\_know the amount of the lawsuit or complaint.
- \*INV: ok great.

**Interview #9**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: I know it's a broad topic but you can tell me anything you know about laws and the legal system here in the U@l S@l.

\*INV: so go ahead.

\*PAR: ok.

\*PAR: there are laws when you're on the road you know speed limit for an example.

\*PAR: you gotta follow the rules otherwise you get in trouble.

\*PAR: you know just basic rules.

\*PAR: you can't steal.

\*PAR: you can't hurt you know people.

\*PAR: and I'm not sure what I'm supposed to be saying basically.

\*INV: I'm curious to know what you know so +...

\*PAR: ok.

\*PAR: about laws?

\*INV: &mhm.

\*PAR: you know &uh you &um you know <are> [//] <there are> [//] you can't punch people.

\*PAR: that's how I got hurt.

\*PAR: you know I was assaulted.

\*PAR: you &um laws &uh you &um you have rights.

\*PAR: I don't know if that's another category.

\*PAR: you know you have the right to vote.

\*PAR: you know it's not a law.

\*INV: ok.

\*PAR: a different department but &um +...

\*PAR: you have &uh you know which goes into the freedom that we have which relates to other you know but there's still laws.

\*PAR: you know passport is a law.

\*PAR: we can't just go into other countries without having a passport.

\*INV: sure.

\*PAR: laws &um.

\*PAR: we &um we have you know rules and laws being parents.

\*PAR: you know I don't know you know just &um one other topic to put under different categories I guess.

\*PAR: there are laws for &um city laws you know living in the city.

\*INV: ok.

\*PAR: there are laws here at the college.

\*PAR: you can't park your car unless you have a pass is an example.  
 \*INV: sure.  
 \*PAR: there are different types of laws in the United States.  
 \*PAR: whether it's city laws.  
 \*PAR: state laws.  
 \*PAR: you know government laws.  
 \*PAR: there are laws so what is a law +...  
 \*PAR: there is a law for a vehicle.  
 \*PAR: you have a tread on your tires.  
 \*PAR: I mean there are <just> [/] just another example.  
 \*PAR: there are so many different types of laws.  
 \*PAR: I mean endless little laws.  
 \*PAR: and endless different departments in the United States.  
 \*INV: let me ask you another question.  
 \*INV: you said that you have some rights like the right to vote was the example you gave me.  
 \*INV: can you tell me more about those rights?  
 \*INV: for example can you tell me where they come from or <how they get> [//] how they come about?  
 \*INV: can you tell me more about that?  
 \*PAR: it's you know the Constitution of the United States.  
 \*INV: ok.  
 \*PAR: you know just like I don't know I think you have to be eighteen years or older to vote.  
 \*PAR: and things may be different in different states for you know &um I'm not sure but &um to vote.  
 \*PAR: let's see.  
 \*PAR: <you have to> [//] you can't cheat [=! laughs].  
 \*PAR: that's a rule.  
 \*PAR: you have to &um you have the right to vote for you know &uh like when I voted for the president <I had to vote> [//] I didn't have to vote for the other people &uh if I didn't want to.  
 \*PAR: I just voted for which president I wanted.  
 \*INV: sure.  
 \*PAR: you have I guess the freedom to vote for all candidates or just certain ones.  
 \*INV: sure.  
 \*PAR: what else.  
 \*PAR: voting.  
 \*INV: that all sounds really good.  
 \*INV: thanks.  
 \*INV: I'm going to stop it right there.  
 @End

**Interview #10**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

- \*INV: in this interview task I'm interested to learn what people know about laws and legal issues.
- \*INV: so I'd like to have a brief conversation with you about this topic.
- \*INV: can you tell me what you know about the legal system in the United States?
- \*INV: I know it's a broad topic.
- \*INV: but you can tell me anything at all you know about laws and the legal system here in the US@q.
- \*PAR: &-um laws and the legal system &-um.
- \*PAR: well I know that if you break the laws you [/] suffer a punishment +/.
- \*INV: ok.
- \*PAR: +, and that &-uh depending on which law you break and how you choose to break it that it may involve a [/] &-uh hearing possible attorneys &-um witnesses that whole thing.
- \*PAR: and if it does get to that point where more action is required then &-um legal counsel is generally (.) recommended highly.
- \*INV: ok.
- \*PAR: and &-um most people I think (.) decide to hire an attorney or something to represent them because the laws the way they're worded is &-um hard to understand for most people including myself.
- \*INV: &-mmhmm.
- \*PAR: so that way lawyers are trained to know all that stuff.
- \*PAR: and so why not have someone that is trained and has learned and is educated about this topic.
- \*PAR: why not have them represent you in that way?
- \*PAR: so &-um if [/] you do go to court a lot of times &-um +...
- \*PAR: ok I want to say something before I forget.
- \*PAR: sometimes you can not have to go to court &-uh.
- \*INV: ok.
- \*PAR: you can go through &-um mediation which is basically &-um the <two> &-um [/] opposing sides get together and talk about everything and decide if there's an agreement that they can come to.
- \*INV: ok.
- \*PAR: and most often that's what you want to do and [//] as well as to go to court because then there's [//] it's [/] <it's all> [//] I [/] think it's a lot more involved.

- \*PAR: <and there's> [//] &-um and <you do have> [//] I mean you do have to pay for an attorney for the mediation process.
- \*PAR: but I think it gets even more expensive with needing to go to court.
- \*PAR: and &-um (..) usually I've +//.
- \*PAR: I feel like I'm talking in circles.
- \*PAR: but &-um &-uh at the end of a hearing once the judge has heard &-um both sides of the story, talked to different witness, the jury has put in their verdict, the judge will take that all into consideration and decide if you're guilty or not.
- \*INV: ok.
- \*INV: ok.
- \*INV: and after the judge does make that decision can you tell me what happens?
- \*PAR: after the judge makes that decision &-um <you either have to> &-um [//] <you could> [/] say you're not guilty which is (..) usually a good thing right?
- \*PAR: and [//] &-um but if you are guilty then either [//] &-um lesser sentences are you may have to pay a fine +//.
- \*INV: ok.
- \*PAR: +, you may have to be [//] &-um have &-uh some probation +//.
- \*INV: sure.
- \*PAR: +, or you may have to go to jail.
- \*PAR: that's a more severe punishment.
- \*PAR: but if [/] the crime fits it then I suppose +...
- \*INV: ok.
- \*INV: great.
- \*INV: thank you very much.



**Interview #11**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: ###

\*INV: can you tell me anything you know about the legal system in the United States?

\*INV: I know that's a very broad topic but you can tell me anything you know about laws and the legal system here in the U@l S@l.

\*PAR: innocent until proven guilty.

\*INV: ok.

\*PAR: the right to representation.

\*PAR: you can have &uh you get judged by a pe+// like you know you can &uh jury.

\*PAR: just what the jury is &uh (.) not peers but you know people &uh.

\*PAR: i'm sure you kind of know what I'm saying.

\*PAR: that's pretty much overall.

\*PAR: i'm not sure how much you want in terms of like what's +/.

\*INV: yeah so tell me.

\*PAR: +, what's legal or not legal.

\*INV: so tell me more about some of those rights you just mentioned.

\*INV: you said innocent until proven guilty.

\*INV: right to a jury.

\*INV: <do you> [//] can you tell me anymore about those?

\*PAR: innocent until proven guilty as in in terms of let's say like you murder someone like you can't at least you can't just be you know locked away for years like they have to prove within a certain amount of time that you actually did it.

\*INV: ok.

\*PAR: and have enough evidence like for the death penalty there has to be beyond a reasonable doubt that you did it.

\*INV: ok.

\*PAR: then like right to a lawyer if you can't afford one then the state will give you one so.

\*INV: ok.

\*PAR: no matter what you will have legal representation.

\*PAR: jury of your peers in a sense that if you know everything going on if your a black man accused of something it's not going to be just white people on the jury you have a right just to know that they are going to make sure there is an unbiased jury.

\*PAR: so I know like a lot of times if you get jury duty <if you> [/] if you're a family of cops a lot of times you won't be on the jury so

- just things like that making sure that supposedly supposed to be <unbiased> [//] as unbiased as possible.
- \*INV: ok.
- \*PAR: is that it?
- \*INV: can you tell me anything else about the evidence you mentioned?
- \*INV: you said something to the effect of if they want to prove you guilty of a crime that they have to have a certain amount of evidence.
- \*INV: can you tell me anymore about evidence or how +/-.
- \*PAR: well I guess each.
- \*INV: +, how that works.
- \*PAR: judge is different so based on a lot of what's going on there could be a lot of evidence and still get away with it.
- \*PAR: but &um a lot of times D@l N@l A@l evidence proving that you you know raped someone or murdered someone then that can affect the severity of your sentence even though in the U@l S@l you can be proven to do something and still get off really easily.
- \*PAR: like I said D@l N@l A@l evidence, witnesses, kind of fall into that term of evidence that you know you have a right to you know <say> [//] have kind of an alibi things like that that can be taken into effect it's not just you know someone could say you were there but you have a right to defend yourself too.
- \*INV: can you tell me more about my right to defend myself?
- \*PAR: in the sense <someone could be like> [//] someone else's lawyer can't just get up there and say you did all these things without you or your lawyer being able to counter that.
- \*INV: ok.
- \*PAR: you know a witness says you did this and it doesn't just end like that you have a right to then come back and say why it isn't so or +...
- \*INV: ok.
- \*INV: you also mentioned severity of punishment.
- \*INV: different types of punishment or something like that.
- \*INV: can you expand upon that at all?
- \*INV: can you tell me more about that?
- \*PAR: yeah.
- \*PAR: I mean obviously i'm not a lawyer so I don't know exactly what usually goes for a certain sentence but the case that comes into my head is that whole Stanford rapist.
- \*INV: sure.
- \*PAR: how even though the jury said that he should get a certain number I think it was fourteen years in jail he ended up getting out in a couple weeks for good behavior so even though +/-.
- \*PAR: and that was because the judge decided the jury that was too severe a punishment.
- \*PAR: so there are certain guidelines from what I understand but that doesn't necessarily mean that's what your going to get in the end.

\*INV: great.

\*INV: that sounds good.

\*INV: thanks very much.

@End

## Interview #12

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

\*INV: you can tell me anything you know about laws and the legal system here in the U@l S@l.

\*PAR: oh my god o@l k@l.

\*PAR: laws and the legal system.

\*PAR: ok.

\*PAR: so just start talking about anything.

\*INV: yep anything at all you know about laws and the legal system in the U@l S@l.

\*PAR: ok I wouldn't say I'm like super well informed with the legal system.

\*PAR: <I> [/] I guess when I think about the legal system I think about &um so if you like have to go to court you need to get &um a lawyer which is wildly expensive.

\*INV: ok.

\*PAR: if you can't afford one they can give you one but I can imagine that those are like much lower in quality.

\*INV: ok.

\*PAR: for free but yeah those probably aren't great.

\*PAR: <I know that the legal system> [//] I don't know there's like a stereotype kind of I don't know what the word is perception that lawyers are kind of snakey and do whatever they can and various forms of cheating to get their clients whatever they want cause obviously they get paid more when they win.

\*PAR: I know &um I don't know just like a lot of systems or legal system is &um you know it's &um I'm sure you could argue that it's corrupted in a lot of ways.

\*PAR: and a lot of our laws are super racist historically and of course they're still racist.

\*INV: ok.

\*PAR: I know that &um so obviously <if you> [/] if you're found guilty of crimes you're going to have a variety of punishments.

\*PAR: <the worst> [//] <one of the worst> [//] well the worst beyond the death penalty would be like really long\_term jail or prison sentences.

\*INV: ok.

\*PAR: and I know that they refer to the prison system as the new Jim Crow meaning that more men of color are imprisoned than were ever

- enslaved which is really shocking and alarming.
- \*INV: sure.
- \*PAR: yeah I'm just really glad to not have any kind of legal record [=! laughs] cause that just sounds like a nightmare.
- \*PAR: like having to go to court that just sounds so stressful.
- \*PAR: I know that a lot of times proceedings <take> [//] they can take months you know and then sometimes they have evidence thrown out or people can't &um testify so they have to move it back.
- \*PAR: so <you just> [//] it's just like this months long potentially I would assume some cases last years just like a super expensive nightmare.
- \*PAR: yeah.
- \*PAR: I don't know.
- \*PAR: do you want me to keep going?
- \*INV: yes please.
- \*PAR: ok.
- \*PAR: the legal system and laws.
- \*PAR: this test you just had me do is really fascinating because <I know a lot of people> [//] like legal speech legal terms are not laymans terms.
- \*PAR: they're not laymans speech.
- \*INV: ok.
- \*PAR: like people don't &um +//.
- \*PAR: and they're probably intentionally made that way to be confusing so that &um you know people that work in the legal system can kind of warp it and find loopholes and be +...
- \*PAR: it's probably particularly helpful for people who are prosecuting you.
- \*PAR: they can like throw legal speech at you.
- \*PAR: and it's just really confusing you just get freaked out.
- \*INV: ok.
- \*PAR: and you say like ok i'll sign whatever you say.
- \*PAR: if you're going to get me a lower sentence I'll say whatever you want me to.
- \*PAR: and then you just like screw yourself &um into a terrible legal thing that you can never get out of.
- \*INV: sure.
- \*PAR: that sounds really terrible.
- \*PAR: <I know> [//] so there are obvious laws that everyone knows to not break.
- \*PAR: so probably the best example would be murder.
- \*PAR: you probably shouldn't kill people.
- \*PAR: it's illegal.
- \*PAR: and the consequences are pretty severe right [=! laughs].
- \*PAR: so but there are so many laws that I think people don't know about.
- \*PAR: ok so for example <so I> [//] the like one ever traffic incident I

- was involved in I got pulled over for not having a front license plate.
- \*PAR: but there's no license plate holder thing on the front of my car so I didn't even know that that was technically a law that I was breaking.
- \*PAR: and so &um everything turned out fine.
- \*PAR: it was totally whatever.
- \*PAR: I just drilled some holes in the front of my car and put it on.
- \*PAR: and it was fine.
- \*PAR: but like I didn't know that and I was technically breaking a law that I didn't know.
- \*PAR: that's a very trivial minor law.
- \*PAR: but &um I'm sure people break laws all the time and they're unaware of it.
- \*PAR: and so then you get caught by a cop or whatever and suddenly you're involved in a legal system.
- \*PAR: but it's like how are you supposed to know what's legal and what's not.
- \*PAR: there's no like ok you're eighteen time to take you're like U@l S@l law exam and make sure you know what's legal and what's not.
- \*INV: sure.
- \*PAR: so that's weird.
- \*PAR: you're expected to follow laws but you don't know what they are.
- \*PAR: I don't think people break laws all the time.
- \*PAR: but I think there are minor ones that you can be breaking without even knowing that you are.
- \*PAR: so that's troubling.
- \*PAR: I think people just get really intimidated by anything legal.
- \*PAR: legal speech is hard to follow.
- \*PAR: it's hard to process and understand.
- \*PAR: I think anytime &um anytime you're involved at all like to any degree to any extent at level in a legal system for me it would be really stressful.
- \*PAR: I'm really glad like I said that I have no legal record.
- \*PAR: I have kind of a lifelong goal of never having a legal record.
- \*PAR: it sounds like a nightmare.
- \*PAR: I think even having jury duty would really stress me out.
- \*PAR: like I have to go and determine if someone is guilty or not of a crime.
- \*PAR: and I have to listen to two different people +//.
- \*PAR: this is so cynical.
- \*PAR: two different people who are getting paid to convince me of two different truths.
- \*PAR: one that is actually not true obviously.
- \*PAR: and I have to listen to this like legal jargon and <then determine> [//] I have to be one of several people to determine this persons

like fate.

\*PAR: you know thankfully <we> [//] well for me personally I think it's a good thing I'm glad that I don't live in a state that allows the death penalty.

\*PAR: but I mean I don't know if they get like certain and this is proving my point of how nobody knows anything about the legal system I don't know if they would get different types of jurors for a serious case where &um they may give you the death penalty.

\*PAR: but I'm just really thankful that unless something changes in the future I will never be involved in a case like that.

\*INV: sure.

\*PAR: I can't imagine being responsible for that choice.

\*PAR: and I'm so &um I don't mean to get political.

\*PAR: and if this is like uncomfortable I'm sorry.

\*PAR: I'm so &um like deeply, inherently, morally against the death penalty that I think even if I thought someone was guilty of a crime and this is another problem with the system I think I would say that they're not guilty just cause I don't find purpose in like using my tax money to murder somebody.

\*PAR: that just seems really morally bankrupt and abhorrent to me so.

\*PAR: I feel like I'm rambling.

\*PAR: would you like me to keep talking?

\*INV: let's see.

\*INV: no actually that's perfect.

\*INV: you can stop right there.

\*INV: thank you.

@End

**Interview #13**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

\*INV: I'm interested to know what people know about laws and legal issues.

\*PAR: ok

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know that's a broad topic.

\*INV: but you can tell me anything you know about laws and the legal system in the United States.

\*PAR: like concerning the first amendment or court system?

\*PAR: they're different variety of it.

\*INV: either of those.

\*INV: either of those.

\*PAR: &-um my double major was &-uh mass communications.

\*INV: ok.

\*PAR: so there's different ways to do it.

\*PAR: like for a communication area there are different things to like a newspaper part.

\*PAR: but the laws +...

\*PAR: every state has different laws for different type.

\*PAR: so I don't know much about the legal system.

\*PAR: 'cause don't need to deal with it every day &-laughs

\*PAR: never run into a jury, nothing.

\*PAR: < and there are different> [//] you could shoot somebody.

\*PAR: you could be in a jail.

\*PAR: XXX two years, that's how bad it is.

\*INV: ok.

\*INV: let's say I did shoot somebody.

\*INV: can you tell me about what would happen to me after I did that?

\*PAR: you could be [//] kill yourself.

\*PAR: or get arrested.

\*PAR: and it's gotta be that &-um gotta be

\*PAR: or you could flee the country.

\*PAR: never be found again.

\*PAR: or get caught.

\*PAR: but there are different areas that you have to +...

\*PAR: you know what to use.

\*PAR: <and how> there would be evidence for that area.



\*PAR: depends on if it's a bullet or what the caught [//] catch you in time or out of the country.

\*INV: ok.

\*INV: so can you tell me more about what you think would happen if the police did catch me and they did find some evidence?

\*PAR: ok.

\*PAR: then you'd be arrested based on what's in [//] for the fingerprints.

\*PAR: and they arrest you.

\*PAR: and it could be a few months to years before your trial begins.

\*INV: ok can you tell me more about that trial?

\*INV: can you tell me more about what might happen in that trial?

\*PAR: well there [//] depends what states or what county there could be up to ten or twelve juries.

\*INV: ok can you tell me more about the jury?

\*PAR: I never been in the jury system.

\*PAR: but <we did> [//] for one of our studies we had to go in court for your trial thing.

\*INV: ok.

\*PAR: and first of all you wanna hire defense lawyer.

\*INV: ok.

\*PAR: versus &-um DA@k.

\*PAR: you would think &-um they could listen to what the DA@k says, your attorney says, or what lawyers really want.

\*PAR: and they'd listen to facts.

\*PAR: it basically comes down to facts.

\*PAR: then they could say not guilty or guilty.

\*PAR: easy.

\*INV: sure.

\*INV: can you tell me what might happen after the jury says either not guilty or guilty?

\*INV: can you tell me what would happen to me then?

\*PAR: &-um they said you're not guilty.

\*PAR: like a lot of people you see the tv@k.

\*PAR: for example they brought it up again.

\*PAR: oj@k.

\*INV: sure.

\*PAR: not guilty.

\*PAR: free to go.

\*PAR: but guilty?

\*PAR: you could be the rest of your life, twenty\_five to life.

\*PAR: depends what the facts are.

\*INV: ok.

\*PAR: that's you\_know the jury part.

\*PAR: or our attorneys.

\*PAR: <This I heard> we're tv@k

\*INV: sure.

\*INV: when you said it depends on what the facts are +/-  
\*PAR: yes.  
\*PAR: evidence, basically.  
\*INV: +, can you give me an example of what some of those facts might be?  
\*PAR: &-um the facts'll be first the jury listening to both sides.  
\*PAR: and there's gotta be enough evidence to find you guilty.  
\*PAR: but within about two days, there's not evidence to see who shoot or  
kill somebody, free to go.  
\*INV: ok.  
\*PAR: they only can hold you about three days, up to three days.  
\*PAR: and the wrong fingerprints?  
\*PAR: adios.  
\*PAR: easy.  
\*INV: ok great.  
\*INV: well thank you.

**Interview #14**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: i'm interested to know what people know about laws and legal issues.

\*INV: so I would like to have a brief conversation with you about this topic.

\*PAR: laws and legal issues?

\*INV: laws and legal issues.

\*PAR: ok.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: it's a broad topic but you can tell me anything you know about laws and the legal system here in the U@l S@l.

\*PAR: alright.

\*INV: anything at all.

\*PAR: well there's different laws.

\*PAR: there's federal laws.

\*PAR: there's state laws.

\*PAR: there's municipal laws.

\*PAR: often times courts create the laws.

\*PAR: and they're enforced by law enforcement.

\*PAR: and there are penalties for breaking the law including fines and potentially jail\_time.

\*INV: ok.

\*INV: can you tell me more about courts in this context?

\*PAR: courts in this context?

\*INV: yes so when you say that often times courts can create laws can you tell me how the different categories of laws you mentioned can interact with the courts?

\*PAR: the courts &uh <review ca> [/] the different types of courts can review cases where they see if a law has been violated &um or not.

\*PAR: and a law can be passed by a municipality or &um government.

\*PAR: and the courts can determine whether or not that law is &um constitutional.

\*PAR: and &um xxx [=! laughs].

\*INV: can you tell me more about the different types of courts you mentioned?

\*PAR: ok well there is the circuit courts, &um county courts, &um courts for different types of cases like family law cases courts, criminal

- courts.
- \*PAR: there's the supreme court.
- \*PAR: &um there's probably other ones too [=! laughs].
- \*INV: sure.
- \*INV: can you describe as best you can the actual procedure for courts reviewing a case?
- \*INV: so how do cases actually get to courts and what happens once a case is in a court?
- \*PAR: sometimes there will be a &um prosecutor and defendant.
- \*PAR: and one person is bringing a charge against another person.
- \*PAR: and they would have lawyers who would go to the court.
- \*PAR: and each lawyer would give their &um testimony in front of a jury.
- \*PAR: and &um the &uh judge would determine a punishment.
- \*PAR: and the jury will often decide whether or not &um the defendant is guilty or not.
- \*PAR: and <that's> [//] not all courts are like that.
- \*PAR: other courts there's no lawyers or jury.
- \*PAR: people just go in and the judge will &um +...
- \*PAR: like for instance like in divorce court or something.
- \*INV: ok.
- \*PAR: the judge will grant the divorce.
- \*PAR: and so it's not really a violation of law it's just a change in the legal status.
- \*INV: can you tell me more about the different parties you mentioned when you said you know there are two parties in court maybe somebody is suing the other party and they both have lawyers?
- \*INV: can you tell me more about how the dynamic between those two parties plays out?
- \*PAR: dynamic between the two parties which is &um the defendant and I want to say plaintiff I'm not entirely sure on the terminology but &um the one party believes that the other party is in &um violation of the law.
- \*PAR: and so they filed a claim.
- \*PAR: and so the court bring them together in a civilized manner to settle the dispute &um <which can also> [//] which can usually lead to the &uh if the court decides that the claim is valid then the defendant would have to <pay> [//] often times pay a certain amount of money to the person who filed the claim.
- \*PAR: and if the court decides that it's not a valid &um claim then there's no exchange of money.
- \*INV: ok.
- \*INV: and can you tell me what happens after the case has been resolved?
- \*INV: for example I was in a jury trial, the jury decided that I committed a crime, the judge imposed a punishment.
- \*INV: can you talk about what happens next?
- \*PAR: to any party?

- \*PAR: or just to you or?
- \*INV: sure.
- \*PAR: ok so after +/-.
- \*INV: to either party or just the system in general.
- \*PAR: +, ok.
- \*PAR: alright if you were convicted of a crime by a jury depending on the severity of the crime you might go directly to jail or you might &um just go home but be faced to pay whatever the &uh the settlement is.
- \*INV: sure.
- \*PAR: and the &uh the case <goes on recor> [//] is recorded &um is on record and &um at that point the dispute should &um is settled in a court of law and you should move on with you life I guess [=! laughs].
- \*INV: ok.
- \*INV: so the last question I'll have or the last point I'll have us follow\_up on is one you mentioned earlier when you said sometimes the courts play a role in making the laws.
- \*INV: can you talk more about that?
- \*PAR: so the way I understand it +/-.
- \*PAR: well the courts don't create the law necessarily but &um the laws are created by &um governments.
- \*PAR: and the courts enforce the laws that are being+//.
- \*PAR: and they can also determine whether the laws are &um justifiable or constitutional.
- \*PAR: and they have precedence from previous laws and previous rulings.
- \*INV: ok.
- \*INV: tell me more about the concepts you mentioned of being justifiable or being constitutional if you can.
- \*PAR: alright so <the court will> [//] <when> [//] the court when reviewing a law usually what would happen is a law would get passed and then if there was a party that thought that the law was unjustifiable they would file a claim and it would go to court.
- \*PAR: and &um the court <would look> [/] would look at the law and see if it violates certain aspects of the constitution such as &um if it violates any of the amendments.
- \*INV: ok.
- \*PAR: if it's discriminatory against different groups of people and such.
- \*PAR: there's a whole host of things.
- \*PAR: or if &um <the law isnt> [//] it's not just the constitution but it could be in violation of a previous law that had gotten passed that they had essentially already settled that situation.
- \*INV: ok.
- \*INV: so if the court determines that the law in question had violated either one of those constitutional provisions or one of those previous laws what happens next?
- \*PAR: then if they find out the law is in violation of constitution or

previous laws then that law that they're reviewing would be terminated as far as I understand.

\*INV: ok.

\*PAR: or it could get appealed to a higher court and then they would settle that.

\*INV: alright great.

@End

**Interview #15**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: you can tell me anything at all you know about laws and the legal system here in the U@l S@l.

\*PAR: I know there's certain laws that you have to follow.

\*INV: ok.

\*PAR: they're set to protect people.

\*PAR: set to protect &uh businesses.

\*INV: ok.

\*PAR: individuals.

\*PAR: I think thats +//.

\*PAR: and if you don't do that then there can be fines or jail\_time on certain things.

\*INV: sure.

\*INV: when you tell me that the laws are set can you tell me more about the process by which they become set?

\*PAR: I think legislators you know senators and people vote on it.

\*INV: ok.

\*PAR: and you know is this a good law?

\*PAR: is it a bad law?

\*PAR: will this help?

\*PAR: will this won't help?

\*PAR: you know and then the majority of the people say ya or nay and then the law goes in effect.

\*INV: ok.

\*INV: so if there is a law that I'm supposed to follow and I don't follow it can you tell me what happens?

\*PAR: <either you> [/] either you get a fine or your gonna be put in jail or you can get a written citation saying hey you did this wrong next time there could be more consequences down the road.

\*INV: ok.

\*INV: so if one of my potential punishments is going to jail how do I actually end up there?

\*INV: what steps are required?

\*PAR: you'd first be &um arrested and then I guess given your rights and then taken to a certain place either a police department or something +...

\*INV: ok.

\*INV: when you said I would be given my rights can you tell me more about

- that?
- \*PAR: everybody has rights so &um you know if you needed a lawyer you could set up a x lawyer.
- \*INV: ok.
- \*PAR: or if you needed a phone call home you could do that.
- \*PAR: if you needed to notify someone close to you you would have that just grant x for a while.
- \*INV: ok.
- \*INV: can you tell me more about those rights?
- \*INV: like for example where they come from or +...
- \*PAR: I think you're rights come from &uh just sort of things that they can and cannot do.
- \*PAR: you know if you were held <you'd have to have a> [//] you know you've got to have a lawyer present with you.
- \*INV: ok.
- \*PAR: you gotta be able to &um I'm trying to think.
- \*PAR: yeah I think that's the biggest thing to have.
- \*PAR: representation.
- \*INV: ok.
- \*PAR: you know so you're just not one person by yourself in a room of a million people.
- \*INV: sure.
- \*PAR: x what you possible did or did not do.
- \*INV: ok so I've broken the law by doing something I wasn't supposed to do.
- \*INV: and then lets say I was arrested.
- \*INV: I was read my rights.
- \*INV: I was maybe taken to jail or to the police station.
- \*INV: what happens next?
- \*PAR: <then there's gonna be> [//] &uh then there's probably gonna be a preliminary you're probably going to meet with your lawyer and there's gonna be probably a preliminary hearing.
- \*INV: ok.
- \*PAR: and then probably a court hearing.
- \*PAR: and then after that you know either you get a fine or you'd be sentenced to a jail.
- \*INV: sure.
- \*INV: can you tell me more about that preliminary hearing?
- \*PAR: I think it would be more of &um what can happen, what can't happen, &um what are you looking at for a sentence cause <you> [//] you know both sides are gonna be like is it worth charging him for this or is it worth charging him for that?
- \*PAR: is it worth our time to spend all that money on this or is it more easier just to say hey you know lets move down this route and then it's gonna be a lot easier?
- \*INV: sure.
- \*INV: can you tell me who you mean when you say both sides?



\*PAR: <the prosecutor> [/] the prosecutor and <the people trying to> [//]  
your defendant and the prosecutor.

\*INV: ok.

\*INV: and after that preliminary hearing you said it could be+..?

\*PAR: a full court hearing.

\*INV: can you tell me what happens in that?

\*PAR: you have both sides.

\*PAR: your lawyer would say you know Joe did not do this.

\*INV: ok.

\*PAR: and then a prosecutor would said yeah Joe did do this.

\*PAR: and this is the evidence that we have.

\*PAR: and the your lawyer would come back and say this is the evidence we  
have that Joe did not do that.

\*INV: ok.

\*PAR: and you would tell that in front of a jury of citizens.

\*INV: ok.

\*PAR: and then they would you know kind of say Joe did or did not do it.

\*INV: ok.

\*INV: and after the jury makes that decision what happens next?

\*PAR: and then it goes to &uh and then it &uh they think about it and then  
once they come up with their vote they give that to the judge and  
then the judge would read the verdict.

\*INV: ok.

\*PAR: and that's basically then what stands unless you wanted to appeal it.

\*INV: can you just briefly tell me more about what would happen if I  
decided to appeal it?

\*PAR: then you would basically give the jury new evidence brought  
in or there may possibly some evidence that shouldn't have been in  
the thing that could have been taken out.

\*INV: ok.

\*PAR: and then possibly another jury would be choosen and <then another>  
[/] basically another court hearing you know &uh to be able to hear  
both sides again basically a second trial and new information or  
information that's been taken out and new people and possibly you  
know it's this or you know you walk free.

\*INV: ok.

\*INV: great.

@End

**Interview #16**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: I know that's a broad topic but you can tell me anything at all you know about laws and the legal system in the U@l S@l.

\*PAR: wow.

\*PAR: I guess what I know is mostly through watching T@l V@l and reading the paper.

\*INV: ok.

\*PAR: so there's <diff> [//] many different type of &uh well there's lots of laws but I guess with the legal one court system a lot of times either A@l go to trial with the trial with people judging if you're guilty.

\*PAR: or sometimes there's not and it's just the judge making it.

\*INV: ok.

\*PAR: and then of course there's sometimes when a company gets taken to court because a company failed or did something wrong.

\*PAR: or then there's an individual doing something wrong.

\*INV: ok.

\*INV: can you tell me more about those the first two different types of trials you said?

\*INV: you said there's one with a jury and one with just a judge.

\*PAR: yeah.

\*INV: can you tell me more about that?

\*PAR: well I've never actually gone to either of them so I don't know how long they take but I know that in a sense you've got &uh one party and then they present their +...

\*PAR: say in a jury.

\*INV: ok.

\*PAR: the person who's you know supposedly guilty so he has a defense.

\*PAR: he tries to explain why &um he didn't do it.

\*INV: ok.

\*PAR: and the jury's listening to everything and taking little mental notes.

\*PAR: and then the other guy &um the other lawyer is trying to say why &um that's wrong or trying to prove <that &um> [//] why the guy is guilty.

\*PAR: so it's kind of like a tennis match going back and forth.

\*INV: ok.

\*PAR: where one guy one lawyer defends his accused person and then the

- other guy tries to break it down and you know prove <that> [//] why he's guilty or why those statements aren't correct.
- \*INV: ok.
- \*PAR: meanwhile the jury listens to all of this and then at the very end they surmise everything and then &uh the jury makes a decision.
- \*iINV: ok.
- \*INV: can you tell me what happens after the jury makes a decision?
- \*PAR: well from what I know &uh the jury makes a decision and you know I think it has to be by two thirds decision or something,
- \*INV: ok.
- \*PAR: so then they &uh they come back and they read what their verdict is and then &um from what I know &uh then the judge makes a decision based on that what &uh how long he'll be in jail.
- \*INV: ok.
- \*PAR: and then it can be the minimum or the maximum.
- \*PAR: and especially they give him a higher one if they show like no remorse.
- \*PAR: if they feel really bad then they a lot of times can give him a minimum and then sometimes they give him some supervision and stuff so +...
- \*INV: ok.
- \*INV: can you tell me more about that minimum and maximum you mentioned?
- \*PAR: [=! laughs] <like let's say if somebody> [//] you know I'm just pulling something out of the air
- \*INV: that's ok.
- \*PAR: let's say somebody hits somebody.
- \*PAR: and they kill somebody on a bike.
- \*PAR: ok so killing somebody may have a minimum of ten years or maximum of thirty.
- \*PAR: so if the guy that hit the biker that killed him &uh didn't mean to like maybe the sun was in their eyes.
- \*INV: ok.
- \*PAR: ok so the judge may say well &uh <you're> [//] you get a ten year sentence but <five> [//] if you behave yourself in five years you can be up for &um supervision.
- \*PAR: but if the guy was on heroin or drunk and he killed him and he fled you know like hit and run and he didn't seem to have any remorse or really show any signs that he would quit using heroin then you say well I'll slap the maximum on you and you're going to be in jail for thirty years.
- \*INV: ok.
- \*PAR: with no chance for parole.
- \*INV: ok.
- \*PAR: that's what I was looking for +....
- \*INV: thank you.
- \*INV: <can you> [//] tell me tell me if you can how those minimum and

- maximum punishments come about?
- \*PAR: well that's a good question.
- \*PAR: I'm guessing that &uh those are established by probably it's either a state or a federal where they put rubber stamp on it.
- \*INV: ok.
- \*PAR: so <that> [//] there's probably a little book that says you know for killing &uh like manslaughter one &uh the law is minimum of this maximum of that.
- \*PAR: and I think it's so that everybody is treated the same.
- \*INV: ok.
- \*PAR: so if somebody hits and kills somebody on a bike they don't get three years and &uh the next guy gets ten.
- \*PAR: so they're trying to keep it within the same framework so everybody is supposedly treated the same although you know no two cases are the same.
- \*INV: sure.
- \*INV: ok let's go back to the trial you were telling me about.
- \*INV: let's pretend that the jury reached it's decision and then the judge made his decision based on the jury's decision.
- \*PAR: ok.
- \*INV: so let's pretend that I hit somebody and killed them.
- \*PAR: ok.
- \*INV: and the judge decided to give me fifteen years.
- \*PAR: ok.
- \*INV: can you tell me anything about what would happen next to me?
- \*PAR: well I mean <some> [//] from what I know sometimes like after they're found guilty they actually don't go into sentencing for a while which is kind of surprising.
- \*INV: ok.
- \*PAR: so &um but let's say this person the judge has come back with sentencing and it's fifteen years.
- \*PAR: I think that from that point that person will get thrown in jail.
- \*PAR: and &uh it's like they're locked up from cause they have to show up in court.
- \*PAR: but sometimes during that sentencing period they're actually free to run around for a while.
- \*PAR: but most of them are on like some type of bail.
- \*PAR: so you know if their family puts up the bail they better not leave but +...
- \*PAR: and if somebody's a high risk then <they put> [//] they slap a really big fee.
- \*PAR: but &um at least this is a little what I know.
- \*PAR: lucky for me I don't have any experience [=! laughs].
- \*INV: yes.
- \*INV: so if I am not happy with the judge's decision.
- \*PAR: oh.

\*INV: like if I disagree with his decision.

\*PAR: yeah.

\*INV: can you tell me what might happen or what I could possibly do about that?

\*PAR: well yeah so if you're not happy then &uh and it happens a lot &um I'm trying to think of the word but sure you can appeal it.

\*INV: ok.

\*PAR: and then it kind of starts all over again.

\*PAR: so you appeal the decision but <I think> [//] meanwhile I think they have to go to jail and then &uh meanwhile they in a sense have another court all over again.

\*INV: sure.

\*PAR: and then they present new in that from what I know is important in if there's no new evidence and it's going to end the same way.

\*PAR: so when they make an appeal the appeal is based on something that went wrong or there's more evidence or they found &um somebody that can be helpful or help make the decision or an alibi type of thing.

\*INV: ok great.

@End

**Interview #17**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator||

@ID: eng|change\_corpus\_later|PAR||||Participant||

@Media: #####

\*INV: so here we go.

\*INV: anything you know about laws and the legal system in the U@l S@l.

\*PAR: well you need a drivers license to drive a car.

\*PAR: and you &um need to have auto insurance proof of auto insurance in your car in case you get pulled over.

\*PAR: no drinking alcohol and driving.

\*PAR: need a marriage license to get married.

\*INV: ok.

\*PAR: should have health insurance.

\*PAR: if you get into a car accident stay at the scene.

\*PAR: you should get an attorney if you need one.

\*PAR: god that's so broad with law.

\*PAR: drugs are illegal.

\*INV: ok.

\*PAR: marijuana and the other drugs.

\*PAR: anything specific you're looking for?

\*INV: no like I said you can just tell me anything you know about laws or legal systems in the United States.

\*PAR: do you need me to keep going on?

\*INV: well I can participate too.

\*INV: you mentioned a number of different laws.

\*INV: can you just tell me more about them?

\*INV: like for example you said drugs are illegal and marijuana is illegal +/.

\*PAR: well marijuana.

\*INV: +, can you tell me more about that?

\*PAR: well I can tell you marijuana is illegal in Wisconsin.

\*INV: ok.

\*PAR: other states it is not.

\*PAR: meaning you know you can't grow it.

\*PAR: you get busted having it in your system.

\*PAR: you know obviously you could be fined.

\*INV: ok.

\*PAR: the other drugs heroine cocaine is just illegal.

\*PAR: should not have that on you at all times.

\*PAR: if you do obviously you'll get fined possibly put in jail.

- \*PAR: <the drinking> [//] obviously the drinking age is twenty one so any underage drinking is against the law but at any age if you're drinking and driving &um you can get a fine or go to jail.
- \*INV: ok so earlier you said that if you get into a car accident &um.
- \*PAR: if you get into a car accident it's your fault obviously you should get an attorney.
- \*INV: yes.
- \*PAR: and if it's not your fault you should get an attorney.
- \*INV: ok tell me more about that process.
- \*INV: tell me more about getting an attorney.
- \*PAR: well if you get into a car accident whether it's your fault or not if there was some significant damage obviously you want to make sure you stay at the scene have a police report written up.
- \*INV: ok.
- \*PAR: and then you would want to contact your attorney.
- \*PAR: you can go through referrals of friends or your insurance company might have a referral for you.
- \*INV: ok.
- \*PAR: contact them.
- \*PAR: most people have a free consultation for the first time.
- \*PAR: and they'll &um kind of assess the whole situation and see if they can honestly help you or not.
- \*PAR: if it's worth their time.
- \*PAR: then give you some feedback and then you kind of go from there.
- \*INV: ok.
- \*INV: what would the next steps look like?
- \*PAR: after you hire an attorney?
- \*INV: correct.
- \*PAR: or after +...
- \*PAR: well I think then the steps <would be> [//] in my understanding would be the steps would be in the attorneys hands.
- \*PAR: they would probably want to &uh get the police report.
- \*PAR: hopefully you had gotten the name or in the police report is the name of the other client involved in the accident.
- \*INV: sure.
- \*PAR: so they can contact their insurance company and then you would hope that they would be in contact with you.
- \*PAR: and my understanding is usually that attorney if it's a good case they'll take it and then they would get a percent of whatever it is that you would get.
- \*INV: ok.
- \*INV: you also said that while growing and use of marijuana is illegal in Wisconsin it is not illegal in other states.
- \*INV: can you tell me more about the difference between those two laws or those sets of laws?
- \*PAR: actually I can't.

\*PAR: <I don't even> [//] I can't even tell you what states that they are legal I just hear my lovely children tell me about it.

\*INV: ok.

\*PAR: it's not that bad cause some states it's legal and one day it'll be legal in Wisconsin so it's not that bad [=! mimicking]

\*INV: [=! laughs].

\*PAR: so but otherwise I don't even know what states it's legal in to be honest with ya.

\*INV: ok.

\*INV: well you also talked about needing a marriage license to be married.

\*INV: can you talk about the legal procedure necessary to go through that process?

\*PAR: well my understanding is that if you want to get married you would have to go to the courthouse and have legal documentation, your birth certificate, drivers license, and or passport and then you have to fill out forms at the courthouse and then they would get your [x2] certificate there and then you'd bring it with you to the church or wherever it is that you get married.

\*INV: ok.

\*INV: great.

@End



**Interview #18**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: I know it's a broad topic but you can tell me anything at all you know about laws and the legal system here in the U@l S@l.

\*PAR: well there are state laws.

\*PAR: there are federal laws.

\*INV: ok.

\*PAR: and if you break any of those laws you can go on trial and end up going to jail or prison.

\*INV: ok.

\*PAR: there are many different fines.

\*PAR: many different penalties for doing this.

\*PAR: you know it can be as little as just getting off with a minor fine.

\*PAR: say for example you get pulled over in your car and you didn't have your seatbelt on and the policeman would give you a ticket.

\*INV: sure.

\*PAR: and you'd be able to drive off as long as you pay the fine.

\*INV: sure.

\*PAR: then there are other penalties you know if you commit you know murder or something like that you can go to trial and +...

\*INV: ok.

\*PAR: go to jail.

\*PAR: and even get a life sentence.

\*INV: you said that if I broke either a state law or a federal law I could go to trial.

\*INV: can you tell me more about that?

\*PAR: well usually if you break the law you don't get sent to jail right away.

\*PAR: <you usually are> [//] in the United States you're allowed a trial so you're allowed +/.

\*INV: <ok> [>].

\*PAR: +, <to prove yourself> [<] either guilty or not guilty.

\*PAR: and you get a lawyer and all that stuff.

\*INV: ok.

\*PAR: and as far as state versus federal laws &um <I> [x2] don't think it's different <if you you know> [/] if you you know do something wrong for one law for a federal versus a state law.

\*INV: sure.

\*PAR: it's takes the same <xx> [>] you know situation.

- \*INV: <sure> [<].
- \*INV: so can you tell me more about what happens when somebody does go to trial?
- \*PAR: <so they get or assigned> [//] a jury is assigned.
- \*INV: ok.
- \*PAR: so they pull people from &um the area I guess.
- \*INV: ok.
- \*PAR: so everybody that lives in an area has to be registered to be able to go on trial.
- \*PAR: and they're picked randomly.
- \*INV: sure.
- \*PAR: and so you get a random panel of &um i forgot what they're called &uh jurors.
- \*PAR: <and so they> [//] &uh and so then your first thing would be to go to court.
- \*PAR: and you know like I said you plead guilty or not guilty.
- \*PAR: <and you present all the ev> [//] all evidence is presented.
- \*INV: ok.
- \*PAR: and &uh you know there's a case.
- \*PAR: and <then> [/] &um then the judge sees the case.
- \*PAR: and the judge decides again whether or not he or she thinks <you're> [x2] guilty or not guilty.
- \*INV: ok.
- \*INV: after the judge has made that decision can you tell me anything about what happens next?
- \*PAR: well I would assume that if it's a guilty sentence then <the person> [//] depending on whatever the penalty is that that penalty would be enforced.
- \*PAR: so police would probably take the person away right away.
- \*INV: sure.
- \*PAR: and take them to jail or whatever.
- \*INV: sure.
- \*PAR: and then if it's not guilty I would assume that they're let off you know <let> [x3] free to go.
- \*INV: ok.
- \*PAR: you know whether its operation or whatever.
- \*INV: ok.
- \*INV: you said a little bit ago that in the United States you have the right to a trial.
- \*INV: like people have the right to a trial.
- \*INV: <can you tell me more> [//] can you tell me anything more about that or what that means?
- \*PAR: so I guess <in other countries> [//] in some countries <you> [//] they don't have a system like ours.
- \*PAR: a judicial system.

- \*INV: ok.
- \*PAR: and so if they think you committed a crime or if they just don't like you for some reason they can throw you in jail.
- \*PAR: and you don't have any say in it.
- \*INV: sure.
- \*PAR: you know it's not under your control at all.
- \*PAR: and you don't get a chance to defend yourself.
- \*INV: ok.
- \*PAR: and &um this is because we have <our> [x2] judicial system set\_up the way that it is that we allow for every person to get a trial.
- \*INV: ok.
- \*INV: can you tell me anything more about the way in which the judicial system is set\_up?
- \*INV: can you tell me more about where the you know the right to a trial some of the other rights you've been describing where those things come from?
- \*PAR: alright.
- \*PAR: well they &uh and this is back to U@l S@l history but <they> [/] they originally come from our constitution.
- \*INV: ok.
- \*PAR: the constitution states the rights of all the people.
- \*PAR: and it kind of lays out the foundation of our government.
- \*PAR: and when it's established in seventeen seventy six when our country separated from &uh England.
- \*INV: yeah.
- \*PAR: and so the Founding Fathers laid out <this> [x2] document that basically <defends the rights of> [//] you know gives the rights to all citizens.
- \*PAR: and one of those is the right to a trial.
- \*INV: ok.
- \*INV: so let's go back to the hypothetical individual on trial.
- \*INV: you also mentioned that that person can get a lawyer.
- \*INV: can you tell me anything more about that?
- \*PAR: yeah so <I> [x2] think that there are there are lawyers that are I guess I don't know whether they choose to do it or not but they are practicing lawyers and try to become a more established lawyer where they are forced to take &uh well not forced to but they have to take trials of people who can't really afford lawyers.
- \*INV: ok.
- \*PAR: and so everybody even if you can't afford a lawyer you get one.
- \*INV: sure.
- \*PAR: and they might be a student you know wanting to become a lawyer or not.
- \*INV: ok.
- \*PAR: but yeah I guess you can either have that kind of a lawyer.
- \*INV: or you can pay for your own lawyer.

\*PAR: ok.  
\*PAR: to get better you know +...  
\*INV: ok.  
\*PAR: if you can afford one.  
\*INV: ok.  
\*INV: can you tell me anything more about what the lawyers do during trial?  
\*PAR: I think they basically try to convince the judge on behalf of their  
you know the defendent &um or the person they're defending or the  
state or whatever.  
\*PAR: they try to convince the judge and present the evidence.  
\*PAR: and &um basically convince the judge that their client <is> [x2] not  
guilty or whatever they're arguing in the case.  
\*INV: ok.  
\*PAR: and so they present the evidence.  
\*PAR: they you know give arguments.  
\*PAR: and they try to convince the jurors and the judge.  
\*INV: ok.  
\*PAR: one way or the other.  
\*INV: so after the trial's done you told me about what happens say that  
the individual is found guilty then maybe they're punished, sent to  
jail, or fined.  
\*INV: or they're not found guilty and you know they just get to go free  
for example.  
\*INV: can you tell me about what happens next with respect to &um the  
legal system?  
\*INV: so for example say the individual was found guilty.  
\*INV: can you tell me what would happen next within the courts?  
\*INV: not just how the individual is punished but what happens next in the  
courts there?  
\*PAR: I actually don't really know cause I've never had to do that.  
\*INV: ok.  
\*PAR: but I would assume they write up some formal you know documents  
to document the trial.  
\*INV: ok.  
\*PAR: and they probably have the you know <jur> [//] the judge and the  
jurors sign off on this document that probably states you know the  
trial in more detail and what the findings were.  
\*INV: ok.  
\*PAR: and &uh the sentence.  
\*INV: ok.  
\*INV: let me phrase that in a slightly different way though.  
\*INV: so say the person has been found guilty but they're not happy about  
that decision.  
\*PAR: oh.  
\*INV: what happens next?  
\*PAR: I think <they can re> [//] they can try to re\_do the trial.

\*PAR: they can +...  
\*INV: ok.  
\*INV: can you tell me more about that?  
\*PAR: <so if it's> [//] it depends on what level in the court system  
you're at.  
\*INV: ok.  
\*PAR: so let's say you're at a lower court system <I think you can>  
[//] and you're found guilty I think you can apply to get the case  
heard at a higher level +...  
\*INV: ok.  
\*PAR: in the court system.  
\*PAR: I'm not exactly sure how that works.  
\*INV: ok.  
\*PAR: but I think that's what can happen if someone's guilty.  
\*INV: ok.  
\*INV: can you tell me anything else about those different levels of courts?  
\*PAR: well so obviously they highest level is the supreme court.  
\*INV: ok.  
\*PAR: and then below that I remember the term appellate courts.  
\*INV: ok.  
\*PAR: so I'm not sure where that one's at.  
\*PAR: but I know there's multiple levels.  
\*PAR: you know the supreme court is the federal and then there's the state  
courts.  
\*PAR: and yeah I'm just not too +....  
\*INV: alright.  
\*INV: perfect.  
\*INV: thanks so much.  
\*PAR: [=! laughs] you're welcome.  
\*INV: we'll stop it there.  
@End

**Interview #19**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*PAR: you're innocent until proven guilty.

\*INV: ok.

\*PAR: that's the main thing.

\*INV: can you tell me more about what that means to you?

\*PAR: unless they can show proof that you committed the crime +/-.

\*INV: ok.

\*PAR: +, then you're innocent.

\*INV: ok.

\*INV: when you say they?

\*PAR: the courts.

\*INV: ok.

\*PAR: and the police.

\*INV: ok.

\*INV: so if the courts and the police wanted to try to convict me of a crime what would they have to do?

\*PAR: well <there's like> [//] it depends on what the crime is <you know> [>].

\*INV: <ok> [<].

\*PAR: fingerprints.

\*PAR: witnesses that saw you do it.

\*INV: ok.

\*PAR: physical proof.

\*INV: ok.

\*PAR: like marks on a body or fingerprints on a gun or on a lock.

\*PAR: whatever it might be that you did.

\*INV: ok.

\*INV: can you tell me more about how I would actually go into court and how they would bring all of that information or evidence into court?

\*PAR: well there's lawyers.

\*PAR: you'd have to have a lawyer.

\*PAR: and they'd have to have a lawyer.

\*PAR: and they'd show the proof or the against the you know if your lawyer says no that's not right that's they have contrary evidence.

\*PAR: they'd have to submit the evidence probably ahead of time.

\*INV: ok.

\*PAR: I'm really not sure how that works but I think your lawyers take care of it [=! laughs].

\*PAR: I've never +...

\*PAR: I just get it all from watching T@l V@l [=! laughs].

\*INV: sure.

\*INV: ok so after everybody brings their evidence into court can you tell me more about what happens?

\*PAR: well they present it.

\*INV: ok.

\*PAR: and <they have> [//] you know they have witnesses and then they like if your lawyer <would say> [//] would probably bring a witness saying that you don't do it.

\*PAR: and their lawyer will say you know try to discredit that lawyer or discredit that witness.

\*PAR: <or> [//] and the same with the evidence.

\*PAR: your lawyer present what they proves that <you're not> [//] didn't do it.

\*PAR: they <pro> [//] show <why you> [//] why that evidence isn't right and same with the witnesses.

\*PAR: and either a judge listens and then the judge rules.

\*PAR: or if it's a jury trial the jury gets together and decides your fate.

\*INV: ok.

\*INV: after either the judge or the jury make their decision, can you tell me what happens next?

\*PAR: well you <either> [x2] pay the fine that the judge says you have to pay or <do the> [x2] jail sentence <that the> [x3] judge or jury says you have to do.

\*PAR: or you can appeal it which means that you've got to try it all over again within a certain amount of time I think.

\*INV: ok.

\*INV: can you tell me anything else about that appeal?

\*PAR: just think that you just have the trial they just redo the trial.

\*INV: ok.

\*PAR: you represent everything.

\*INV: ok.

\*INV: great.

@End

**Interview #20**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: Clip 11:36 long

\*INV: I know that's a broad topic but you can tell me anything at all about laws or about the legal system here in the U@l S@l.

\*PAR: seriously?

\*INV: anything at all &mhm.

\*PAR: [=! laughs] it's filled with systemic racism.

\*PAR: and too many black people are in jail.

\*INV: can you tell me more about what you mean when you say systemic racism?

\*PAR: they call it the criminal justice system but <it's really> [>] quite the opposite.

\*INV: <ok> [<].

\*INV: ok.

\*PAR: for instance I just watched the movie thirteen.

\*PAR: so &um when you look at the number of black men in jail especially here in Wisconsin it's &um it's racist.

\*PAR: it's a punitive system rather than a restorative system.

\*INV: ok.

\*INV: can you explain those terms more for me?

\*INV: punitive and rehabilitative.

\*PAR: well for example if you look at the laws regarding crack and the laws regarding &um cocaine <it's> [//] research has shown that the majority of black people or lower income people will have crack cocaine versus &um cocaine which is more the upper white I guess.

\*INV: ok.

\*PAR: and <there's> [//] the laws &um if you compare them side by side definitely you get more of a puniitive sentence for crack for example.

\*INV: ok.

\*PAR: and &um it's not I believe that &um currently the justice system is really another Jim Crow for example.

\*INV: ok.

\*PAR: Michelle Alexander wrote a book on that so.

\*PAR: it's just another way to keep slavery.

\*INV: of course.

\*PAR: and power you know it's all about power.

\*INV: of course.

\*INV: so you said that there are different laws for these different you



- know classes of drugs.
- \*INV: can you tell me about anything about the process by which there came to be these different laws?
- \*PAR: well &um it's I think criminalization of the poor.
- \*PAR: for example here in Wisconsin I moved here like three years ago &um there's lots of laws against people living on the streets.
- \*PAR: and it's not like people just want to live on the streets.
- \*PAR: however now if you're found sleeping near the capitol you're put in jail.
- \*PAR: and to me that's not really the answer.
- \*PAR: the answer is why are they on the streets?
- \*PAR: and do they need mental health services which the answer a lot of times is yes.
- \*PAR: or do they need &um you know A@l O@l D@l A@l services?
- \*PAR: it's kind of putting the accent on the wrong syllable.
- \*INV: ok.
- \*PAR: did that answer your question?
- \*INV: &mhm it did yes.
- \*INV: and I'm also curious to know more about you know to the best of your knowledge how those laws like physically got +/-.
- \*PAR: oh yeah that was what you were getting at.
- \*INV: +, on the books.
- \*PAR: they from what I've been seeing &um they're proposed and then &um the public can comment on them &um <and> [//] but yet often times like with the homeless population there is a board of people that are working &um with people living on the streets and often times these laws are proposed and kinda like pushed through before there's even opportunity <for> [/] for public comment.
- \*INV: ok.
- \*PAR: I don't know how it happens <like &um I'm not a legal scho> [//] like nationally how it happens.
- \*PAR: I've just seen it like locally.
- \*PAR: the things are often proposed &um that are going to be harmful to people that are vulnerable &um but there isn't much opportunity for public discourse <so to speak> [>].
- \*INV: <sure> [<].
- \*INV: when you say that the laws are proposed can you tell me more about who is doing the proposing?
- \*PAR: well I mean right now the budget is being proposed by Walker for example.
- \*PAR: the governor.
- \*INV: ok.
- \*PAR: and there's some really I was looking at it and there's some really sneaky things that they're trying to sneak in.
- \*PAR: like one is a weird thing around &um unlicensing requirements for people that are you know like a radiologist or whatever would

- no longer have to have a license or would no longer have to have continuing education things like that &um which to me I think is odd.
- \*PAR: but what I was reading was &um it's really another way to just kind of reduce the quality and the pay.
- \*PAR: and you know it's another anti-union strategy.
- \*INV: sure.
- \*PAR: so &um it's another way I think to keep <one> [//] I don't know lesser income down and raise up the people with more income.
- \*INV: sure.
- \*PAR: with like that weird tax law that's here in Wisconsin where it gives <bi> [//] you know millions of dollars to like the wealthiest eleven percent.
- \*PAR: <I don't remember the> [//] I'm not not at all legally si+... just now since I'm a social worker and becoming so I was kind of laughing at some of those questions because &um you know for instance the not being able to vote it's like after you've done your time if you did commit a crime you know I mean I'm not saying that like people who murder shouldn't go to jail but it's a lifetime for a crime often times where you can't get a job because you're a felon.
- \*PAR: you can't find a house.
- \*PAR: no one will rent to you.
- \*INV: sure.
- \*PAR: you can't I mean it's it's you're still shackled even after your sentence.
- \*INV: great.
- \*INV: let me ask you one more kind of follow up on what you were talking about.
- \*INV: pretend I am &um I'm using crack or I'm using cocaine and you can you know make me whoever you imagine me to be.
- \*INV: can you describe what happens inbetween me using drugs and then me ending up in jail?
- \*INV: just whatever you can tell me about that process.
- \*PAR: oh goodness I don't really know that much about it.
- \*PAR: but &um I would assume you would get arrested &um and then you would go to jail.
- \*PAR: <you> [//] bail would be posted.
- \*INV: ok.
- \*PAR: so if you could pay it then I guess you could you know be released until trial but if you can't then you would just stay in jail until the trial.
- \*PAR: you would even if you can't afford it have the right to a lawyer.
- \*INV: ok.
- \*PAR: you I mean you have certain constitutional rights &um that are protected all along the way.
- \*PAR: then you would go to trial &um I don't know a whole lot about that.

- \*PAR: I mean you might not even have to go to trial I guess if you plea bargained.
- \*PAR: or if things like that happened.
- \*PAR: I'm trying to remember.
- \*PAR: let's see.
- \*PAR: so then you &um you would have your lawyer and I guess the prosecution or the state or whomever and then the judge would decide.
- \*PAR: some of the drug crimes now you go through restorative court.
- \*PAR: they have like a restorative justice process now.
- \*PAR: so hopefully maybe you wouldn't even have to go to trial and have to go to jail and have all that on your record.
- \*PAR: so there is another option now that they're trying in Wisconsin which is great.
- \*PAR: how that works I think you have like &um a panel of people working with you.
- \*PAR: so you would have like a social worker.
- \*PAR: you would have &um the law enforcement.
- \*PAR: you would have &um the lawyers all kind of like coming together and coming up with a plan.
- \*PAR: so that's another option.
- \*PAR: but if you did end up in trial you would then after all of that end up with a sentence and &um a probation officer.
- \*INV: ok.
- \*PAR: and then hopefully whatever time you did in jail would be subtracted from your sentence.
- \*INV: sure.
- \*INV: ok.
- \*INV: well that's great.
- \*PAR: [=! laughs] I'm totally making this up.
- \*PAR: I have no idea.
- @End

**Interview #21**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

\*INV: so like I said on the last task I'm interested to know what people know about laws and legal issues.

\*INV: so I'd like to have a brief conversation with you about that topic.

\*PAR: ok.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic.

\*INV: but you can tell me anything you know about laws and the legal system in the u@s@l s@l.

\*PAR: &um the United States has a constitution with laws for our country to follow.

\*INV: ok.

\*PAR: &um and &um there are judges and court\_rooms.

\*PAR: juries.

\*PAR: the &um if somebody has been arrested for committing a <law> [//] &er a crime they can go to a jury to a court\_room to &um be found guilty or not guilty of committing that crime.

\*PAR: and &um you're <presumed innocent &um unless you are found guilty by> [//] presumed innocent until found guilty is what I'm trying to say.

\*PAR: want me to keep going &er [=! laughs]?

\*INV: sure.

\*INV: you can expand upon topics you've already mentioned or talking about.

\*PAR: &um if somebody is arrested for breaking the law &um there are miranda rights where they are &um have the right to remain silent &um.

\*INV: ok.

\*INV: can you tell me anything more about that?

\*PAR: that just means that they don't have if the police are asking questions about what they did or why they're there and that sort of thing they don't have to answer those questions without a lawyer present.

\*INV: ok.

\*PAR: &um so a lot of cases are decided in a court\_room &um before a judge and a jury.

\*PAR: it's a jury of twelve peers.

\*PAR: people who have randomly been picked to be in that court\_room.

\*PAR: &um there's a prosecutor &um who is basically trying to say this is why we think that person's guilty.

\*PAR: and the defendant is the person who is saying that &um or who has been accused of the crime.

\*PAR: and they are &um represented usually.

\*PAR: they kind of represent themselves but usually they are represented by a lawyer.

\*INV: sure.

\*PAR: &um if they cannot afford their own lawyer they can have a public defendant.

\*INV: ok.

\*PAR: &um different crimes carry different penalties.

\*PAR: penalties can be a misdemeanor.

\*PAR: they can also be a felony.

\*PAR: &um penalties can range from public service &um a fee like paying a ticket basically to spending time in jail.

\*PAR: and different crimes have sometimes they have minimum penalty that must be given to them.

\*INV: sure.

\*PAR: &um other times it's more up to the jury and the judge.

\*PAR: &um I got I'm sorry I guess that's all I have to say.

\*INV: ok.

\*INV: that sounds good.

\*INV: thank you.

@End

**Interview #22**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: ###

\*INV: so I'm interested to learn what people know about laws and legal issues so I just want +/,

\*PAR: about what?

\*INV: +, laws and legal issues.

\*PAR: ok.

\*INV: ok.

\*INV: so I just want to have a brief conversation with you on that topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's broad but you can tell me anything at all you know about laws and the legal system in the U@l S@l.

\*PAR: there's lots of laws.

\*INV: ok.

\*PAR: some of them are good.

\*PAR: some of them are bad.

\*PAR: and &hm.

\*INV: can you tell me more what you mean by bad and good?

\*PAR: I guess that some of the laws like if you do something bad the punishment <isn't> [//] should be harsher.

\*PAR: and sometimes you don't get any punishment at all.

\*PAR: and the next time you do something small and the punishment is too harsh.

\*INV: ok.

\*INV: <can you tell me more about the different> [//] or can you tell me more about those punishments?

\*PAR: like going to jail or not going to jail for something you did.

\*INV: ok.

\*PAR: yeah so sometimes you get put in jail I think for things that or and a fine that really are nothing and the next person goes free for something I think is should have a stiffer punishment.

\*INV: ok.

\*INV: can you give me an example?

\*PAR: &um (.) boy (.) no not really <I mean I just think> [//] I don't watch the news +/.

\*INV: ok.

\*PAR: +, cause it makes me mad [=! laughs].

\*PAR: so I mean I just people who do things to children or who sell drugs

or &um drunk driving get too many chances.

\*INV: ok.

\*INV: can you tell me more about how the number of chances for crimes like that is actually determined?

\*PAR: how it's determined?

\*INV: yes how it's determined.

\*PAR: oh &um I think there's <legislative laws> [/] legislative laws like for drunk driving in the state of Wisconsin differs from another.

\*PAR: the state makes the law and +/-.

\*INV: ok.

\*PAR: +, it varies from state to state.

\*PAR: is that right?

\*INV: so let's say that somebody commits one of those crimes.

\*INV: somebody assaults a child for example.

\*INV: what would happen next?

\*PAR: they would get arrested and then put in jail and have a trial.

\*INV: ok.

\*INV: can you tell me quickly a little more about that trial?

\*INV: what would happen there?

\*PAR: so at the trial there would be &um like a jury.

\*PAR: and the prosecution and the defense would each present their story.

\*PAR: and there would be witnesses.

\*PAR: and the person charged may or may not talk on their behalf.

\*INV: ok.

\*PAR: and then after everything is done the jury deliberates and makes a recommendation and then the judge listens to that and decides whether he agrees or not and may change that what they decide to do.

\*INV: ok.

\*PAR: and the person is punished.

\*INV: ok.

\*INV: after the trial is done can you tell me what happens?

\*PAR: well it depends.

\*PAR: if the person is found guilty then they're sent to jail or prison or keep in confinement.

\*PAR: or they may be released.

\*INV: ok.

\*PAR: just depending on if there's no like no charges to hold them there.

\*INV: ok.

\*INV: perfect.

\*INV: thank you very much.

\*PAR: that's it?

\*INV: yep that's it.

@End

### Interview #23

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: ###

\*INV: I know that's a broad prompt but you can tell me anything at all you know about laws and the legal system here in the U@l S@l.

\*PAR: sure.

\*PAR: I for a short time was studying to be a paralegal at M@l A@l T@l C@l.

\*PAR: and so I took on +//

\*PAR: <but I only> [/] but I only did like a semester and half so I know bankruptcy law and things like that.

\*INV: ok.

\*PAR: I'm also a fan of legal dramas and things like that so I watch a lot of that kind of stuff I think I have a pretty good grasp of the <legal system> [>].

\*INV: <absolutely> [<].

\*PAR: so.

\*INV: can you tell me more about what you know about those bankruptcy laws?

\*PAR: well I mean there's multiple different forms of bankruptcy.

\*PAR: and it's not necessarily a bad thing.

\*PAR: <it's usually> [//] it can be either you reorder your &um <re> [/] reorder <your asse> [//] your debts.

\*INV: sure.

\*PAR: or you pay it off little by little.

\*PAR: or you just declare straight bankruptcy then solvency.

\*PAR: and all those have different effects on your credit rating.

\*PAR: and it can end up &uh helping in some cases you know getchaya without losing all your things.

\*PAR: and you know being destitute.

\*INV: ok.

\*INV: can you walk me through a bankruptcy process?

\*INV: I know there's not a one size fits all formula +/.

\*PAR: that's true.

\*INV: +, but pretend that you or <I were going to declare bankruptcy> [>].

\*PAR: <this was ten years ago but &uh let's see here> [<].

\*PAR: <it would be> [//] <we would &uh file a> [//] <you would> [//] I'd ask you for the courts.

\*INV: ok.

\*PAR: and you'd have to be able to provide the courts why you wouldn't be able to pay back the debts <that you> [/] that you owe.

\*INV: sure.



- \*PAR: and then I believe it goes to an independent auditor who would go in and figure out exactly what you can pay.
- \*PAR: and what you wouldn't be able to pay.
- \*PAR: and hopefully set up a system where you would be able to slowly pay off your debts.
- \*INV: ok.
- \*PAR: or just you know say sorry I can't pay.
- \*PAR: and there's a term for it that I'm not remembering but &uh you can just say wash your hands of all your debts.
- \*PAR: but again it completely destroys your credit rating so.
- \*INV: sure.
- \*INV: so you said it has to go through a courts.
- \*PAR: &mhm.
- \*INV: or the courts.
- \*INV: can you tell me about that?
- \*INV: can you tell me more about the role that the court plays?
- \*PAR: I'm not exactly a hundred percent sure.
- \*PAR: it was only one semester.
- \*PAR: it was a while ago.
- \*INV: that's ok.
- \*INV: just whatever you want or remember.
- \*PAR: the judge would rule on whether or not they believe that you really are +//.
- \*PAR: it's more just filing legal briefs and filing.
- \*INV: ok.
- \*PAR: and filing +...
- \*PAR: you know it isn't like there's a witness and jury and stuff like that.
- \*PAR: it just has to go through the courts so it's documented.
- \*PAR: so &uh the judge would end up saying yes or no or good or bad or +...
- \*PAR: <we> [//] or you're hiding assets in the Cayman Islands.
- \*PAR: you can't you know declare bankruptcy or something like that.
- \*INV: ok.
- \*INV: sure.
- \*INV: so besides the judge, the person declaring bankruptcy, and then that independent auditor.
- \*PAR: yeah.
- \*INV: are there any other?
- \*PAR: well there'd be lawyers.
- \*INV: ok.
- \*PAR: there would be lawyers for you at least <to> [/] to help file the briefs.
- \*PAR: I don't believe there's like you know what you see on T@l V@l where it's a plaintiff defendant style &uh type of thing.
- \*PAR: it's just essentially be not unlike a (.) getting a settlement &eh

that's not exactly it either.

\*PAR: I'm trying to think of a good example of something you need to go through the courts for.

\*INV: sure.

\*PAR: just you know it's just a legal process.

\*PAR: it isn't like your know you're on trial.

\*INV: sure.

\*INV: well we just have about a minute left or so.

\*INV: tell me more about a comment you made where you said it's not like a courtroom trial.

\*INV: it's not like the things you see on T@l V@l.

\*PAR: oh yeah well it isn't you know I having calling witnesses to the stand to prove you're +//.

\*PAR: it's not even in a courtroom most likely.

\*PAR: it's mostly done in a law office in a conference room with a judge.

\*PAR: and the judge just signs off on it if the judge is even necessarily there cause you may not even have to appear before the judge.

\*INV: ok.

\*PAR: it's just stuff you have to file with the debriefs and go through it that way so.

\*INV: cool.

\*INV: alright thanks so much.

@End

**Interview #24**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

- \*INV: you can tell me anything at all you know about laws of the legal system here in the U@l S@l.
- \*PAR: it's what our democracy is based on.
- \*PAR: but sometimes it isn't has fair if that's the term to use as it could be.
- \*INV: ok.
- \*INV: could you expound on that for me?
- \*PAR: judges can be corrupt.
- \*PAR: lawyers can be corrupt.
- \*PAR: the proof of evidence might not quite be there.
- \*PAR: and if you have a jury &uh juries are subject to a lot of &um possible informaton that's incorrect.
- \*INV: ok.
- \*INV: can you tell me more about what you mean by proof of evidence?
- \*PAR: ok &uh proof of evidence.
- \*PAR: I guess it would be that &uh to go to court there has to be a case and somebody has to prove with evidence that you're either guilty or not guilty of a crime.
- \*INV: ok.
- \*PAR: some lawyers are good lawyers.
- \*PAR: some lawyers are not as well &uh are not as good as others and that could be because they aren't prepared.
- \*PAR: or they just have not worked on the case that they're &um in charge of or have been hired to work on as they not as prepared as they should be.
- \*INV: ok.
- \*INV: tell me more about the juries.
- \*INV: you mentioned them.
- \*INV: you said that they were susceptible to or could be susceptible to information that is not always correct.
- \*INV: can you tell me more about the role of the jury in that proceeding?
- \*PAR: they are supposed to listen with open minds bare in mind that they need to determine with the evidence presented to them if a person is guilty.
- \*PAR: of course there's different &uh juries get they're supposed to be able to say without a doubt that someone is guilty or not guilty.
- \*INV: ok.

\*PAR: and I think they're supposed to be &ah what's the term &um when they're selected they're supposed to go through a process.

\*PAR: some of them.

\*PAR: I don't know if all juries go through a process.

\*INV: ok.

\*PAR: of being selected &um based on some information <that they're> [//] that they're asked.

\*PAR: and they're when they're asked this information they could actually be &uh already thinking one way more than another from the get\_go.

\*INV: ok.

\*INV: can you tell me who is asking the jurors the questions at this point?

\*PAR: well if it goes like it does on T@l V@l both the prosector and the other lawyer are able to ask the potential jurist <if> [//] questions.

\*PAR: and they work together more or less to determine who the end jurists are going to be.

\*INV: sure.

\*INV: you also said that jurors are supposed to make decisions on someone's guilt without any doubt.

\*INV: can you tell me why that's the case?

\*INV: can you tell me why they're supposed to do that?

\*PAR: well let's see.

\*PAR: they are supposed to do that because the evidence put before them <is to> [//] should completely &um point to the person in question as being guilty.

\*INV: ok.

\*PAR: otherwise there could be some reasonable doubt.

\*INV: ok.

\*INV: alright that sounds good.

\*INV: thank you.

@End

**Interview #25**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant||

@ID: eng|change\_corpus\_later|INV||||Investigator||

@Media: #####

\*INV: tell me what you know about the legal system in the United States.

\*INV: I know it's a broad topic but you can tell me anything at all you know about laws or about the legal system here in the U@l S@l.

\*PAR: sure.

\*PAR: &uh well I've been personally involved in a legal case.

\*PAR: the City of Madison has been prosecuting me for three years.

\*PAR: and I was just in court last Monday.

\*INV: ok.

\*PAR: so that's been an adventure.

\*INV: ok.

\*PAR: &uh I've also been involved as an interested observer in some other cases that are going on.

\*PAR: and as a student here at the university I have taken a couple of courses in property rights which is an interesting legal area.

\*PAR: they weren't course in the law school but they had a lot to do with legal issues.

\*INV: ok.

\*INV: can you tell me more about some of those property rights?

\*PAR: &uh sure.

\*PAR: I took the version of the course that's taught over the summer section.

\*PAR: so they cram a lot of material into eight weeks.

\*PAR: and &uh I don't want to try to inflict it on you in a minute.

\*INV: that's what we're here for.

\*PAR: yeah.

\*PAR: so [x2] we talked about the history of property rights.

\*PAR: and [x2] how that was dealt with for example in Roman times.

\*PAR: and how that's come down to our current legal system but with various changes because of technological innovation and cultural advances.

\*PAR: and then we got our U@l S@l constitution which has various amendments that &uh allow for or don't allow for various laws related to property rights.

\*PAR: and this was a [x2] big deal for the supreme court several decades ago they were trying to figure out whether the government had any authority to limit people's property rights.

\*PAR: and so now we have this thing called zoning where your local

- municipality can pass all kinds of laws about what you can do with your property and then &uh prosecute you if you're violating them.
- \*INV: can you expound upon the various amendments to the constitution you mentioned <and how those affect those property rights> [>]?
- \*PAR: <sure> [<].
- \*PAR: so the fifth amendment has this thing called the takings clause which says that the government can take your private property but only if it's for a legitimate public use and if they compensate you for it.
- \*PAR: so <there> [/] there is a lot of discussion around if they're physically taking your property what is a public use they can take it for.
- \*INV: ok.
- \*PAR: and if they impose various restrictions on how you can use your property is that a taking?
- \*PAR: &uh so that's an interesting area.
- \*PAR: and then there's also the fourteenth amendment which is the one that allows for zoning +//.
- \*PAR: no actually it's the one that causes a problem for zoning.
- \*INV: ok.
- \*PAR: because the fourteenth amendment says that everyone has to be treated equally under the law.
- \*PAR: and when zoning was invented people said well you have people in different zones who now are under different regulations.
- \*PAR: and the supreme court said that's ok as long as everyone in the same zone is treated equally.
- \*INV: ok.
- \*INV: tell me more about these zones.
- \*INV: the zoning process.
- \*PAR: sure.
- \*PAR: so [x2] what the city basically does is they take a map and the divide it up into zones.
- \*PAR: and they say for example residential is going to go here and businesses are going to here and farms are going to go here.
- \*PAR: and we're going to keep all these uses far away from each other.
- \*PAR: and where that comes from is in the industrial revolution suddenly people were living next to factories which was great because you could walk to work but it was bad because all the pollution from the factory was in your house.
- \*PAR: so what cities started to say was well we're just going to have people not live near the factories.
- \*INV: ok.
- \*PAR: and they had this idea of separating uses.
- \*PAR: which we're now actually starting to move away from because people want to be able to walk to work.
- \*PAR: and most people now work in places that don't pollute and are fine

- to live near.
- \*PAR: so that's going to be interesting.
- \*INV: ok.
- \*INV: can you tell me more about your personal experiences in adjudicative proceedings?
- \*INV: and we can just focus on the facts if that's appropriate.
- \*PAR: yeah.
- \*PAR: so Madison has a whole bunch of very strange regressive laws about what kinds of plants you can have in your yard.
- \*INV: ok.
- \*PAR: and what they did forty years ago was they passed this [x2] very progressive ordinance saying you can have lots of plants in your yard +//.
- \*PAR: this is the generic version of the story.
- \*PAR: if you get a permit.
- \*PAR: so I applied for a permit as soon as I bought my house which was three years ago.
- \*PAR: and the [x2] city is required to review the application.
- \*PAR: they are virtually required to grant the permit to anyone who applies for one.
- \*PAR: but they have not made a decision on my application.
- \*PAR: and meanwhile they're prosecuting me for having plants without a permit.
- \*INV: ok.
- \*INV: so when you say they're prosecuting you what exactly has that process entailed?
- \*PAR: sure.
- \*PAR: so [x2] they come to your house very secretly.
- \*PAR: and they look and they see that you have these plants.
- \*PAR: and they send you a letter saying you have plants and this is illegal.
- \*INV: ok.
- \*PAR: &uh and then they send you a nastier letter saying you still have plants and it's illegal and we're going to go to court over it.
- \*PAR: and then you send them a letter explaining that you're not actually violating.
- \*PAR: and they ignore it.
- \*PAR: and then you go to court and explain how you're not violating the ordinance then they make some very narrow arguments that totally ignore what the purpose of the ordinance is supposed to be.
- \*PAR: and then the judge finds you in his words technically guilty.
- \*PAR: &uh and you pay a fine.
- \*INV: ok.
- \*INV: when you say the purpose of the ordinance how does one learn or discover what that purpose is?
- \*PAR: sure.

\*PAR: so [x2] the way that laws work is that governments have this thing called the police power which allows them to pass laws which are intended to protect human health, safety, welfare, or morals.

\*PAR: and of course don't like those last two cause they're very subjective and no one knows what they mean.

\*PAR: so [x2] basically laws are suppose to protect health and safety.

\*PAR: and the [x2] idea of these ordinances is to prevent people from neglecting their property because that is allegedly bad for health and safety although the evidence is questionable.

\*INV: ok.

\*PAR: the [x2] problem is that the objective conditions that they're using as a proxy for neglect are not very reliable.

\*PAR: and so they end up catching people who are trying to be environmentally responsible in their yards which is actually better for heath and safety than what the city is trying to enforce.

\*INV: ok.

\*INV: you said they a couple times.

\*PAR: yeah.

\*INV: and I'm hoping you can parse out who they is.

\*PAR: sure.

\*INV: you mentioned people passing laws.

\*INV: you mentioned the city.

\*INV: and you mentioned the zoning ordinance or the zoning board or whoever.

\*INV: so who is the actor in <these> [//] in the sort of stages you just described?

\*PAR: so [x2] these ordinances are decades old and I haven't been able to find out who originally wrote them but the people currently responsible for enforcing them is Madison's Department of Building Inspection.

\*INV: ok.

\*PAR: did that answer your question?

\*PAR: was there another part?

\*INV: no.

\*INV: no I think that's fine.

\*INV: and we will leave the interview at that.

\*INV: thank\_you very much.

@End



**Interview #26**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

\*INV: I know it's a broad topic but you can tell me anything you know about laws and the legal system here in the U@l S@l.

\*PAR: alright.

\*PAR: let's see.

\*PAR: the police act on behalf of the you know judges in sort of a theoretical fashion.

\*INV: ok.

\*PAR: they don't need to independently check with the judge before doing each thing.

\*PAR: it is understood that they act on behalf of judges who are representatives of the law.

\*INV: ok.

\*PAR: let's see.

\*PAR: you can be taken into custody without being arrested or charged.

\*INV: ok.

\*PAR: let's see.

\*PAR: you don't have to face a jury trial.

\*PAR: you can also decide to go for a judge or take a plea without facing any trial.

\*INV: ok.

\*INV: when you said that the police act on behalf of a judge and that they don't need to check in with the judge before they do everything, can you explain a bit more about what you mean't by that?

\*PAR: let's see.

\*PAR: again this is just my understanding but judges are representatives of the you know the laws of the United States.

\*PAR: the cops are understood to be acting on their behalf.

\*INV: ok.

\*PAR: they learn the laws and enforce them.

\*INV: ok.

\*PAR: if anyone questions their actions then a judge can decide whether or not they were correct.

\*INV: ok.

\*INV: can you give me an example of a situation like that?

\*PAR: alright.

\*PAR: if a cop pulls you over +/-

\*INV: ok.

- \*PAR: +, and then later takes you into custody because of illegal substances found in your car then a judge can decide that they had no reason to pull you over.
- \*INV: ok.
- \*PAR: like if they just did it randomly.
- \*PAR: and if they do so then they don't get to charge you for having illegal substances.
- \*INV: ok.
- \*INV: thank you for clarifying that.
- \*INV: so let's pretend that that has happened to me.
- \*INV: I was stopped by a police officer.
- \*INV: and the police officer is now charging me with possession of illegal drugs.
- \*INV: what do I do next?
- \*INV: or what happens to me next?
- \*PAR: well you're taken into custody.
- \*INV: ok.
- \*PAR: I tend to get the two mixed up there's either prison or jail that's like the holding cell and then you go to the other.
- \*PAR: I learned that prison and jail are two different things.
- \*PAR: I just forget which one is which.
- \*INV: sure.
- \*PAR: you are put in the holding cell.
- \*INV: sure.
- \*PAR: and let's see.
- \*PAR: depending then you might just face a fine.
- \*INV: ok.
- \*PAR: they might keep you for a while let you off with a warning.
- \*PAR: you might be told to get a lawyer or take a lawyer that the state provides.
- \*PAR: and take their advice and either plead or serve time or pay a penalty.
- \*INV: ok so it sounds like I would have a <number of couple> [//] a number of options.
- \*INV: I could make a plea like you said.
- \*INV: I could pay a fine.
- \*INV: or I could face some sort of imprisonment time.
- \*INV: how does each of those options come about?
- \*INV: can you tell me how I would acutally get from being in the holding cell to the next part of the proceeding?
- \*PAR: it is the responsibility of the detective or police officer to explain your options to you.
- \*INV: ok.
- \*PAR: and if you decide to contact a lawyer of your own you'll have to do that yourself.
- \*PAR: they do have to let you.

\*INV: ok.  
\*INV: can you tell me why they have to let me?  
\*PAR: because that's the law is all I've got.  
\*INV: ok.  
\*PAR: and you also depending on the severity have the option of just spending the night in jail or paying a fine and not involving an attorney.  
\*INV: ok.  
\*INV: ok but you said it's the law that they have to let me contact an attorney.  
\*PAR: yes.  
\*INV: can you tell me more about and again anything at all you might know about how it got to be the law that the police have to let me contact my attorney?  
\*PAR: no I don't know that part.  
\*INV: ok.  
\*INV: alright.  
\*INV: so now let's pretend I have contacted my attorney and he doesn't want me to make a plea.  
\*INV: he wants me to go to a trial.  
\*INV: <you said> [//] I believe you said I could either have a trial or go before the judge.  
\*INV: let's pretend I decided to have a trial.  
\*INV: can you tell me more about what would happen then?  
\*PAR: alright.  
\*PAR: if you go to trial by jury then there would be generally an extended period of both sides collecting evidence.  
\*PAR: the prosecution would offer you plea deals cause it's cheaper than having an actual trial.  
\*INV: ok.  
\*PAR: but in the end if you decide to go <by> [//] for trial by jury both sides the prosecution and defense present their evidence.  
\*INV: ok.  
\*PAR: and then the jury takes a vote on whether or not they believe each of them to be guilty.  
\*INV: ok.  
\*PAR: beyond a reasonable doubt.  
\*INV: ok.  
\*INV: can you tell me more about the phrase you just used guilty beyond a reasonable doubt means?  
\*PAR: yes.  
\*PAR: it means that they feel it has been demonstrated that you are guilty beyond a reasonable doubt meaning that one can still doubt your guilt it would just be unreasonable or irrational.  
\*INV: ok.  
\*PAR: they think that all of the logical bases have been covered.

\*PAR: and that though say if there's dashcam video that it could theoretically be a twin brother no one previously knew about who drove the car.

\*PAR: but since there's no record of such a brother this is unlikely.

\*INV: ok.

\*INV: so going back to our hypothetical let's pretend that the jury decided that I was guilty of this crime.

\*INV: of possession of illegal substances.

\*INV: can you tell me what would happen next?

\*PAR: well there would be the arraignment where sentencing was decided on.

\*PAR: both sides would probably make offers of probation versus actually serving time.

\*INV: ok.

\*PAR: and then they would come to an agreement on probation or time served.

\*INV: ok.

\*INV: great.

\*INV: thank you.

@End

**Interview #27**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: ###

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic but you can tell me anything at all you know about laws and the legal system here in the U@l S@l.

\*PAR: sure.

\*PAR: so &um if the police would link you to a crime that was committed then you would go through the legal process where you would have a judge and juries and a defendant.

\*PAR: and &um different items would be brought into court.

\*PAR: and then your peers would make a final decision if you were guilty or not based on reasonable doubt.

\*INV: ok.

\*INV: tell me more about the police linking me to a crime or linking someone to a crime.

\*PAR: sure.

\*PAR: so if &um something happened that the police were called or found then they would have to do an investigation and if they could find &um evidence that would have your D@l N@l A@l or somehow connecting you that you were either at the scene or involved with that situation then they questions you and start the process.

\*INV: ok.

\*INV: and can you tell me more about the next step you mentioned going in with the judge and jury and defendant.

\*PAR: sure.

\*PAR: so <you> [//] if [x2] it was placed that &um there was specific evidence that would link you to that crime then you could either be assigned a lawyer or you could pay for one.

\*INV: ok.

\*PAR: and then a court date would be set where a judge would overhear all the evidence and there might be witnesses that maybe saw what happened or again some experts that maybe were part of &um the police coming to that conclusion that you were linked to it.

\*INV: ok.

\*PAR: and so then questions would be asked of you and the other parties to figure out what happened.

\*INV: can you tell me more about that process?

\*INV: the process to which questions get asked by the two parties?

\*PAR: sure.

\*PAR: so &um if you would be represented by legal council and so primarily they would be the only one that would be allowed to ask the legal questions.

\*INV: ok.

\*PAR: and then <the defend> [//] the prosecuting team would also have one representative and they would be the only one that could ask you questions.

\*PAR: so it's two sides.

\*PAR: you would be either defending yourself on why you didn't do it or what happened and then someone else challenging you.

\*INV: and can you tell me more about what happens after that process has concluded?

\*INV: so after the questions have been asked and the evidence has been presented?

\*INV: can you tell me what happens then?

\*PAR: sure.

\*PAR: so both sides would make a closing statement where they basically put their whole hand on the table to say this is exactly what happened or didn't happen.

\*PAR: and then the jury would go back and discuss it amongst themselves.

\*PAR: and the team of twelve would try to figure out or determine without any doubt in their mind if this person would be guilty or not.

\*INV: ok.

\*PAR: then they would give their recommendations to the judge.

\*PAR: he or she would take that into account.

\*PAR: and then I believe that judge would make a final ruling on the decision and that would stand.

\*INV: ok.

\*PAR: with the only other option is to go through an appeals process if the person didn't agree with the judge.

\*INV: ok.

\*INV: can you tell me anything more about that appeals process?

\*PAR: &um I believe there's probably a waiting period or a step by step that they would have to go through.

\*PAR: you would probably have to find another lawyer.

\*PAR: and you'd have to be able to prove some type of evidence or you'd have to bring new information to the table.

\*INV: ok.

\*PAR: <on what was> [//] you can't use what was already presented and just say you want to redo it.

\*PAR: you have to present something in addition to get it over turned I believe.

\*INV: great.

@End

**Interview #28**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

\*INV: I'm interested to learn what people know about laws and legal issues.

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic.

\*INV: but you can tell me anything you know about laws and the legal system in the US@k.

\*PAR: yeah that is broad.

\*PAR: &-um well laws exist so that &-um [/] order can be maintained in communities and neighborhoods and cities &-um because if people were just doing whatever they'd want there'd be a lot of injuries and crime occurring.

\*PAR: so laws exist to protect everyone and keep things orderly.

\*INV: ok.

\*PAR: &-um now if people do something that hurts someone or harms their property or person then they can be arrested &-um, put in jail, &-uh required to go to court, needing to hire an attorney to either fight it if they were perhaps wrongly accused.

\*PAR: &-um so laws and the legal system are more or less for protecting citizens to hopefully live more cohesively together.

\*INV: ok.

\*INV: when you use the phrase wrongly@q accused@q can you tell me a little about what you mean by that?

\*PAR: yeah well someone could say someone did something and then they really didn't.

\*PAR: so then it kinda becomes a story of he\_said\_she\_said or whatever as to what [/] the truth is.

\*PAR: and then a lot of times that requires going to court then and [/] talking out the issues so that the judge and the attorneys can help decide who's [/] if the person was &-um at [/] fault for doing something of if <he was> [/] he or she was wrongly accused.

\*INV: ok.

\*INV: can you tell me a little more about what you know about what happens when people actually do go to court?

\*PAR: &-um when people go to court &-um there are two sides.

\*PAR: there's the &-um the prosecuting side and the defendant's side.

\*PAR: &-um usually &-um [/] so there are attorneys for both sides.

- \*PAR: and they're presenting the case to the judge.
- \*PAR: and &-um the judge needs to make a decision of who will win in court that day, essentially.
- \*INV: can you tell me a little more about what you mean by the prosecuting@q side@q.
- \*PAR: yeah &-um the prosecutor side is the people +//.
- \*PAR: &-er let me slow down.
- \*PAR: the prosecutors are saying that a person or a company or whatever did something wrong.
- \*PAR: they're the ones pointing the finger so to speak at the other group.
- \*PAR: and then the defendants are the one coming in to defend their [/] reputation or their business practice or [/] what have you.
- \*INV: ok.
- \*INV: you also mentioned a jury or jurors.
- \*INV: can you tell me more about them?
- \*PAR: well in [//] I'm not quite sure when it gets to a jury trial.
- \*PAR: I'm assuming things must have to go through many many stages before then it gets to a jury trial.
- \*PAR: but a jury is &-um people that are randomly selected from the community &-um and are then interviewed to see if there could be any bias to this case to make sure that they don't know the person in [/] the case obviously would be one thing they would want to know.
- \*PAR: but it's just to make sure there isn't any bias like with you \_know racial issues or gender issues or what have you.
- \*PAR: so then people are selected to be on the jury to hopefully &-um give &-um their opinion their feedback about who they believe &-um in [/] the presentation of the prosecuting side and the defendant's side.
- \*INV: ok.
- \*INV: when you say they give an opinion or feedback, can you tell me more about whom that opinion or feedback is going to or [/] being given to?
- \*PAR: &-um well that's given to the judge yeah given to the judge.
- \*PAR: and then that helps the judge you \_know make his decision.
- \*INV: ok.
- \*INV: can you tell me more about the decision that the judge makes.
- \*PAR: &-um let's see.
- \*PAR: I like to close my eyes when I'm concentrating.
- \*PAR: &-um I believe that the &-hmm +...
- \*PAR: well now that I think about it I think that it's actually the jury that determines the results and the answer.
- \*PAR: but the judge is there just to kinda help keep [/] calm in the court, keep everyone in order.
- \*PAR: so in a jury trial it's acutally the jurors who determine the decision.
- \*INV: can you tell me what happens after the jury makes a decision?



- \*PAR: after the jury makes a decision &-um then that's communicated to the judge and then that [//] the judge communicates it to [//] the court or to the prosecuting side and the defendant's side.
- \*INV: ok.
- \*PAR: fairly quickly, I'd imagine, you\_know.
- \*INV: can you tell me more about that you think some of those decisions are or what they look like?
- \*PAR: &-um whether or not someone murdered someone.
- \*PAR: &-um whether or not someone &-uh committed crimes like robbery or theft.
- \*PAR: &-um yeah, those would be the things that come to my mind.
- \*INV: ok let me ask you one final question.
- \*PAR: sure.
- \*INV: once the jury has made its decision and [//] given that to the judge and then the judge has announced it to the parties in the court, if one of the parties isn't happy with the decision, they lost the case for example, can you tell me what that party might do in that case?
- \*PAR: so meaning like the prosecuting side or the defendant's side?
- \*INV: sure.
- \*INV: one side is going to lose, let's just say.
- \*INV: if that losing side isn't happy with the decision that either the jury or the judge announced, can you tell me what they might do afterwards?
- \*PAR: &-hm (..) I suppose they could like try to come up with ways of why a retrial should be necessary.
- \*PAR: they could try to get <the judge's decision> [//] the jury's decision thrown out.
- \*PAR: they might look for something to yeah claim <it's a> [//] that it's a mistrial or something.
- \*INV: can [//] can you just quickly tell me more about what you mean by the word retrial@q?
- \*PAR: &-um like let's say they found out that a juror actually did have a connection to one of the sides
- \*PAR: or like something could be found out about a juror later on that then would mean that that juror was biased or something and could have then influenced the other jurors in [//] in the jury panel or whatever &-laughs.
- \*INV: ok well great thank you so much for participating in that conversation.
- \*PAR: &-laughs I'm gonna google this later.

**Interview #29**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

- \*INV: I'm interested to learn what people know about laws and legal issues so I'd like to have a brief conversation with you about that topic.
- \*INV: can you tell me what you know about the legal system and laws in the United States?
- \*INV: I know it's a broad topic but you can tell me anything you know about laws and the legal system in the U.S.
- \*PAR: I think I know what I know from middle school civics class, television, and occasional conversations from my husband who's a lawyer.
- \*INV: ok.
- \*PAR: do you want anything more?
- \*INV: yes.
- \*INV: yes so actual information relating to the laws and legal system in the United States.
- \*PAR: the laws and legal systems.
- \*PAR: yeah I don't know how to answer that question.
- \*PAR: I know that there are different types of lawyers.
- \*PAR: I know that <there are> [//] there's civil law, there's criminal law.
- \*INV: ok.
- \*PAR: &um I know that we have a court system that involves &um you\_know the highest courts federal courts, the state supreme court.
- \*PAR: I know we have <count> [//] district courts.
- \*INV: sure.
- \*PAR: I know that if you are &um charged with a crime then &um you have the right to a trial.
- \*INV: ok.
- \*PAR: &um I know that you+...
- \*PAR: I don't know if you always have right to representation.
- \*PAR: <I know that &uh> [/] I know that it's the prosecutors office that will choose whether to charge you with the crime or not.
- \*INV: ok.
- \*PAR: I know that sometimes you can commit a crime and not be charged with it.
- \*PAR: I know sometimes you can be charged with a crime and you can &um plead to a lesser crime.
- \*INV: ok.

- \*INV: can you tell me more about the rights you mentioned when you said individuals have a right to a trial or a right to representation?
- \*PAR: yeah I don't know if everyone who's charged with a crime has the right &um to be represented or if they have to pay for representation.
- \*PAR: &um <I> [/] I know that <they> [/] they have the right <if they're> [/] if they're charged with a crime you have the right to a trial.
- \*INV: ok.
- \*PAR: and in terms of what type of representation you have the right to I guess I just don't know how that works because I don't know if everyone that's charged with a crime gets legal advice for free.
- \*INV: sure.
- \*PAR: I feel like I should know that but +...
- \*INV: can you tell me anything else about the different types of courts you mentioned?
- \*PAR: &um I know that the the sort of there's there's like a Dane Dane County court and if you that's where you will initially have a trial.
- \*PAR: I think there's an appeals court I think if if something &um if if you feel like your rights have been violated in the process of having a trial you can appeal.
- \*PAR: and I think that there's a state appeals court.
- \*PAR: &um and I think there's a state supreme court which is different from the appeals court.
- \*PAR: &um and then ultimately if you're unhappy with &um if you feel like you're rights are still being violated you can take you can take it up to federal court or you can request to have it brought that far.
- \*INV: ok.
- \*PAR: I think there's a I think there's like regional federal courts too.
- \*INV: sure.
- \*PAR: in Wisconsin.
- \*PAR: it doesn't have to go to the actual supreme court [=! laughs].
- \*INV: can you tell me more about the crimes that people can commit?
- \*INV: you said that it's the district attorneys office that charges people with crimes and sometimes they don't charge people with crimes.
- \*INV: can you tell me anything more about those different crimes?
- \*PAR: &um well I think you can be charged with a felony or like or a lesser crime like a misdemeanor.
- \*PAR: and I think that it they carry different penalties.
- \*PAR: and &um sometimes you can have many charges associated with a case against you.
- \*INV: ok.
- \*PAR: and &um some of those charges might be easier to prove than others so I think it's possible &um if you're willing to &um plead to &um I think sometimes you can have a deal where you can plead to a crime

and not plead to others.

\*INV: ok.

\*PAR: or plead to you can plead guilty to one charge of a crime and not plead guilty to others.

\*INV: great.

\*INV: thank\_you very much.

@End

**Interview #30**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant||

@ID: eng|change\_corpus\_later|INV||||Investigator||

@Media: #####

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad question but you can tell me anything at all you know about laws and the legal system here in the United States.

\*INV: Whenever you're ready.

\*PAR: the legal system is &uh based on laws that are passed by government bodies.

\*PAR: they're enforced by police and &um and government officials.

\*INV: ok.

\*PAR: prosecuted by the state.

\*INV: ok.

\*PAR: there are civil laws that can be &um brought to court by aggrieved parties and plaintiffs and &um +...

\*PAR: the punishment for criminal convictions is often fines and jail &uh time or probation.

\*PAR: civil penalties &uh for civil cracks can be &uh monetary damages and fines.

\*PAR: &um the legal system covers people's behavior and +//.

\*INV: ok.

\*PAR: +, covers violent crimes and property crimes.

\*PAR: I think I'm going to stop.

\*INV: ok.

\*INV: earlier on you said that aggrieved parties can bring like a case to court.

\*INV: can you tell me more about that?

\*INV: can you expound on that for me?

\*PAR: if a person is injured or has &uh either personally or their reputation they can hire a lawyer and &um press a lawsuit against the party they believe has hurt them.

\*INV: ok.

\*PAR: and sue them for &uh damages.

\*INV: ok.

\*INV: and can you tell me more about the different types of laws you talked about when you talked about regulating violent behavior or sort of less violent behavior?

\*INV: can you tell me more about that?

\*PAR: I can say that there are laws that regulate people's [x2] behavior.

- \*PAR: there are things that are prohibited.
- \*PAR: assault for instance.
- \*INV: ok.
- \*PAR: fraud +//.
- \*PAR: well violent behavior though &um assault, beatings, &uh.
- \*PAR: those are things that come first to my mind.
- \*INV: sure.
- \*INV: well let's tie that back to the first things you mentioned when you said that the laws are made by you know governing bodies.
- \*INV: can you tell me more about that process?
- \*INV: can you tell me anymore specifics about that process?
- \*PAR: well for instance with state government legislatures can write laws that &uh that pertain to criminal behavior.
- \*INV: ok.
- \*PAR: those laws <are then> [//] &uh can be enforced by government agencies police for instance and brought to court if a person commits a crime violates those laws by a government attorney prosecutor.
- \*INV: ok.
- \*INV: can you walk me through the sort of timeline of how that happens from when and individual commits a crime or does something that violates a law to you know them then being in court?
- \*INV: can you tell me more about the kind of procedure that happens?
- \*PAR: well let's say there's a criminal law that's violated.
- \*PAR: a person can be arrested.
- \*PAR: if they're arrested they're generally detained.
- \*PAR: they can pay sometimes.
- \*PAR: usually they're offered an opportunity to plead.
- \*PAR: and if they plead not guilty they can most of the time be up for the opportunity to get out of jail with paying bail.
- \*INV: ok.
- \*PAR: schedule a hearing to bring the charges.
- \*PAR: and so they have the opportunity to hire a lawyer or be appointed a lawyer.
- \*INV: sure.
- \*PAR: if they aren't able to afford one.
- \*PAR: there's <a series of> [//] a process and series of appearances and &um you know proceedings that I don't really know in detail but I'm sure there's a time that a fairly &uh just months usually that may have to pass before all that proceedings are taken care of.
- \*PAR: if the [x3] crime is one that generally requires a jury trial a person's offered that that right they can take a jury trial to it's conclusion.
- \*PAR: and then they are faced with the results of that trial

guilty or not guilty.

\*PAR: you get &uh convicted or fined and possibly &uh serve a term of imprisonment.

\*PAR: I would say that can take up to a year in many cases.

\*INV: ok.

\*INV: well great.

@End

**Interview #31**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: so I'm interested to learn what people know about laws and legal issues.

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know that's a broad topic.

\*INV: but you can tell me anything at all you know about laws and the legal system here in the UW@q.

\*PAR: (..) the laws and legal system?

\*INV: &-mmhmm.

\*PAR: well they vary from county to county.

\*INV: ok.

\*PAR: what the laws are.

\*PAR: &-um (..) judges are (..) voted on by the people of the community.

\*INV: ok.

\*PAR: district attorneys are appointed by the governor.

\*INV: ok.

\*PAR: &-um (..) I guess what else &-wh +//.

\*PAR: say that again.

\*PAR: sorry.

\*INV: can you tell me anything at all you know about the legal system or laws in the United States?

\*PAR: well let's see.

\*PAR: a person can get arrested.

\*INV: ok.

\*PAR: and they can get a signature bond.

\*PAR: or they have to meet bail.

\*INV: ok.

\*INV: can you tell me what you mean when you say a signature bond?

\*PAR: a signature bond is like when they sit there and say +"/.

\*PAR: +" if you let me out of jail and I screw up I owe you five hundred dollars.

\*PAR: or there's a penalty assessed if the individual is let <out on their own> [/] (.) &-um (.) signature, on their own recognizance

\*PAR: I think it's called.

\*INV: ok.



\*PAR: and they promise to behave.  
\*PAR: but if they violate then they can be charged the assessed fee.  
\*INV: ok.  
\*INV: thank you.  
\*PAR: ok.  
\*PAR: and &-um let's see.  
\*PAR: when you're on bond.  
\*PAR: &-uh they can get a bond from the court based on the severity of the offense.  
\*INV: &-mmhmm.  
\*PAR: &-um and\_or how many times the individual's been before the courts.  
\*PAR: &-um then the [//] if they can't afford an attorney an attorney will be appointed to them <through the district attorney> [//] through the public defender's office.  
\*INV: ok.  
\*PAR: &-um but it [//] that's based on one's income.  
\*INV: ok.  
\*PAR: &-um then they have a prelim where <they generally> [//] the person will meet with their attorney.  
\*INV: ok.  
\*INV: can you +/.  
\*PAR: and that +/.  
\*INV: +, sorry.  
\*PAR: &laughs  
\*INV: can you tell me more about what you mean when you say a prelim?  
\*PAR: a preliminary hearing where they make +...  
\*PAR: I think that's what that is.  
\*PAR: where they make arrangements.  
\*PAR: they meet with the district attorney that's handling their case.  
\*PAR: and they see if they can't resolve something so it doesn't go to trial +/.  
\*INV: ok.  
\*PAR: +, saving court time +/.  
\*INV: ok.  
\*PAR: +, and money.  
\*INV: ok.  
\*PAR: and then there'll be the plea hearing after that.  
\*PAR: &-um after the preliminary if they made out a deal the DA@q the person and the person's attorney.  
\*PAR: &-um then the person pleads guilty or not guilty.  
\*PAR: and then the judge can sentence them.  
\*PAR: but the judge doesn't have to sentence them to the plea agreement that they made.  
\*PAR: the judge has discretion to <do it himself> [//] &-er sentence the individual himself.  
\*INV: ok.

- \*PAR: &-um or they can take it to trial which then if they take it to trial &-uh a jury of their peers +//.
- \*PAR: there's twelve people?
- \*INV: ok.
- \*PAR: or eleven.
- \*PAR: <it's definitely> [//] (.) &-uh I think there's twelve people on a jury.
- \*INV: &-mmhmm.
- \*PAR: and then the jury will hear everything.
- \*PAR: and then they'll decide &-um whether or not the person is guilty or not guilty.
- \*PAR: and then after that if found guilty the person can be sentenced outright or they'll order a presentence investigation +//.
- \*INV: ok.
- \*PAR: +, which is done by the department of corrections.
- \*PAR: and then the department of corrections makes a recommendation in there for what would be an appropriate sentence based on the person's history, what they found out from interviewing if there was a victim +//.
- \*INV: ok.
- \*PAR: +, the offender's family and &-um taking the criminal record into account, the severity of the offense, age, and the likelihood of the person to reoffend.
- \*INV: ok.
- \*PAR: &-um <they can get a> [/] (.) fine.
- \*PAR: they can get a fine and jail time.
- \*PAR: they can get a combination of those two plus probation.
- \*INV: &-mmhmm.
- \*PAR: or they can be sentenced to a Wisconsin state prison.
- \*INV: ok ok.
- \*INV: can you tell me more about what happens after the person's been found guilty and the judge has issued <the> &-um [/] judgment or the punishment?
- \*INV: can you tell me what happens +//.
- \*PAR: the sentence?
- \*INV: yeah.
- \*PAR: well they could get a fine.
- \*PAR: <they could get> [//] &-um a fine.
- \*PAR: they could get probation.
- \*PAR: and\_ or they could get sentence to a Wisconsin state prison.
- \*PAR: depending on the age of the individual they could also get expungement.
- \*INV: ok ok.
- \*INV: I [/] guess what I meant to say was <can you tell me what other> [//] can you tell me more about options that might be available to the person if for example they aren't happy with the sentence or if +//.

\*PAR: oh they could file an appeal.

\*INV: ok.

\*INV: can you tell me more about that?

\*PAR: &-um they can file an appeal if &-um they're not happy with the sentence based on if they didn't have adequate &-um representation from the attorney +/.

\*INV: ok.

\*PAR: +, and\_or <if> &-um [/] sentenced by a jury or found guilty by a jury that <they> &-um [//] there was tampering of the &-um jurors +/.

\*INV: ok.

\*PAR: +, or if new evidence comes to light.

\*INV: ok.

\*INV: great.

\*INV: well thank you very much.

**Interview #32**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: so whenever you are ready just go ahead.

\*PAR: ok.

\*PAR: when you get arrested they read you your rights.

\*PAR: right to an attorney.

\*PAR: I've never had any interaction with the law so [=! laughs].

\*PAR: let's see.

\*PAR: if you went to court you could have a lawyer with you or you could be your own legal representation.

\*INV: ok.

\*PAR: then there's a judge that decides.

\*PAR: there's a right and wrong side and the judge is the intermediary makes the decision regarding punishment and fault.

\*INV: can you tell me more about what you said at the beginning when you get arrested they read you your rights?

\*INV: <tell me more about> [>].

\*PAR: <you can either> [<] remain silent.

\*PAR: or you could request a lawyer.

\*INV: ok.

\*PAR: to serve as your legal aide.

\*INV: and &um [//] tell me about your they.

\*PAR: oh the police who would come to the scene of a crime who would arrest you and &um take you to the police station.

\*INV: ok.

\*PAR: or so &uh yeah (.) or solve the situation while you're there.

\*INV: sure.

\*INV: and can you tell me more about what the judge is doing.

\*INV: you said there is a right side and a wrong side and the judge is kind of intermediary.

\*INV: can you tell me more about what's happening then?

\*PAR: &mhm so &um let's say you have a person convicted of theft perhaps the store owner is on the other side presenting evidence of what you took or the details of the scenario as it occurred.

\*PAR: and you're either saying yes I did [=laughs] or you're claiming you didn't do it +/-.

\*INV: ok.

\*PAR: +, for your lawyers.

- \*PAR: and the judge has listened to all the evidence &um and deciding if he thinks that's true or <no> [//] false and how that relates to the law.
- \*INV: ok.
- \*INV: can you tell me anything else about evidence?
- \*INV: the types of evidence?
- \*PAR: <it could be> [//] evidence could be video footage, &um a store camera.
- \*PAR: it could be &um perhaps you [x2] &um intended to take something and damaged it on your way out.
- \*INV: ok.
- \*PAR: and tossed it.
- \*PAR: or [x2] perhaps it was recovered from your possession when the police arrived and <caught you> [//] found you.
- \*PAR: perhaps it was in your backpack or <on the person> [>].
- \*INV: <ok> [<].
- \*INV: can you tell me anything at all about how parties actually bring that evidence into the courtroom?
- \*PAR: yes.
- \*PAR: <the> [//]if the police had found it &um on your person at the time of arrest it perhaps would be in a bag.
- \*PAR: this is my television knowledge so [=! laughs].
- \*INV: ok.
- \*PAR: &um maybe perhaps <marked with a number or as> &um [//] each piece of evidence would <have a number> [//] relate to a number and it would have been inventoried.
- \*INV: ok.
- \*INV: can you tell me anything that happens +/-.
- \*PAR: it could be an image.
- \*PAR: could be a <video> [//] piece of video or a photograph.
- \*INV: sure.
- \*INV: can you tell me anything about what happens after both sides have finished presenting all their evidence?
- \*PAR: there might be <a qui> [//] a break where the judge would leave and have a chance to go around in their heads, collect their thoughts, come back with their response.
- \*INV: ok.
- \*PAR: of either guilty or innocent.
- \*INV: ok.
- \*PAR: and the two sides would <si> [//] I don't know what happens maybe sit in a chair [=! laughs].
- \*PAR: so then when they come back from the recess where you maybe go out into the hall for a while and come back.
- \*INV: ok sure.

- \*PAR: at a certain time.
- \*INV: can you tell me anything about people who might be involved in this trial beyond the people you've already mentioned?
- \*PAR: other people in the courtroom might involve &um the &uh court reporter typing in the dictation.
- \*INV: ok.
- \*PAR: there could be security in the room.
- \*INV: ok.
- \*PAR: and there may be &um friends and family, supporters, or other people waiting for their [=! laughs] their case that might be next.
- \*INV: ok.
- \*PAR: they could all be in the courtroom.
- \*INV: ok.
- \*INV: and after the trial has finished and the judge has determined whether or not the person is guilty, can you tell me anything about what happens then?
- \*PAR: if the person is found not guilty then you would be free to leave the courthouse.
- \*PAR: perhaps you might on your own &uh you might have to do some follow\_up at least with your lawyer.
- \*INV: ok.
- \*PAR: for closure.
- \*PAR: but if you're found guilty then &uh you would be taken into custody by the police &um and you wouldn't be free to leave.
- \*INV: sure.
- \*PAR: or you could be released with probation and then you would have &um perhaps you didn't have to go to jail but you would be given probation.
- \*PAR: and I don't know that I imagine that would happen before you left.
- \*INV: ok.
- \*INV: can you tell me anything else about probation?
- \*PAR: probation my understanding is you might have a curfew that you need to be home by.
- \*PAR: you have a probation officer whose you check\_in person.
- \*PAR: you need to make phone calls or physical visits to their office.
- \*INV: sure.
- \*PAR: it would limit your &um &uh rights as far as I think &um firearms perhaps alcohol I'm not actually sure on that.
- \*INV: ok.
- \*PAR: you may have to do volunteer work for community service.
- \*INV: sure.
- \*INV: and earlier you mentioned that sometimes the person accused of a crime has his or her own attorney but sometimes that person can act as his or her own attorney.

\*INV: can you tell me anything else about that?

\*PAR: not recommended [=! laughs] & um because you may not know all the ins and outs.

\*PAR: some people feel they can better represent themselves than someone else.

\*PAR: and I suppose if you were a lawyer coming up against the law you perhaps would be &uh knowledgeable.

\*PAR: <but other people wouldn't be> [//] they would be taking a big risk.

\*INV: ok.

\*INV: can you expound upon what sort of risk that might be?

\*PAR: yeah.

\*PAR: the risk would be not knowing all the legal ramifications of their situation.

\*PAR: they perhaps wouldn't know all the best arguments to make in support of themselves.

\*INV: ok.

\*INV: well great.

@End

**Interview #33**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@Media: #####

\*INV: I know that's a broad topic but you can tell me anything at all you know about laws or the legal system here in the U@l S@l.

\*PAR: ok.

\*PAR: like you can't speed.

\*INV: ok.

\*PAR: can't shoplift.

\*PAR: can't murder.

\*PAR: can't kidnap.

\*PAR: can't take drugs.

\*PAR: can't drink underage.

\*PAR: you have to follow the speed limit.

\*INV: can you tell me more about why you can't do those things?

\*PAR: ok.

\*PAR: like you can't speed cause you could get &um hurt yourself or hurt someone.

\*INV: ok.

\*PAR: and you can't &um can't kill anybody cause that's just the law.

\*PAR: you can't &uh do drugs cause that's the law.

\*PAR: that's about it.

\*INV: ok.

\*INV: can you tell me anything about how things like murder and doing drugs &um get to be against the law?

\*PAR: cause it makes you do bad things maybe.

\*INV: ok.

\*PAR: and &um since this country hasn't passed those laws yet really.

\*INV: ok.

\*INV: so who are the people that are passing those laws?

\*PAR: the president.

\*INV: ok.

\*INV: anybody else?

\*PAR: the governor.

\*INV: ok.

\*INV: so let's pretend that I was speeding and I got stopped by a police officer.

\*INV: what would happen to me?

\*PAR: well it depends what your record is so +//.

\*PAR: and it depends how fast you were going.



- \*PAR: and depends if you had your seatbelt on.
- \*PAR: so he might give you a warning.
- \*PAR: or he might give you a ticket.
- \*PAR: or if something else is real bad happening he might do a &um I can't remember what it's called but a search in your vehicle.
- \*PAR: and &um yeah.
- \*INV: ok.
- \*INV: let's say that I've got a history of being a bad driver and he stops me and I have to go like to court for example.
- \*INV: can you tell me about what would happen then?
- \*PAR: he's gonna give you a ticket probably.
- \*INV: ok.
- \*PAR: and depending on the situation you might get arrested.
- \*PAR: I'm just not sure.
- \*PAR: depends on the situation.
- \*INV: pretend I got arrested.
- \*INV: can you tell me what would happen then?
- \*PAR: well you'll get taken down to the police station.
- \*PAR: and you'll get booked in.
- \*PAR: and depending on your charges you'll either have to sit in jail for a long time or you can get &um bonded out.
- \*INV: ok.
- \*PAR: and then yeah you'll have to end up going to court.
- \*PAR: and if you miss your court date then that's an automatic &um something <that they'll> [//] if they find you they'll take you to jail.
- \*INV: ok.
- \*INV: so let's pretend that I am going to court.
- \*INV: can you tell me what happens then?
- \*INV: anything at all.
- \*PAR: well if you're going to court then it's your choice if you want a lawyer or not.
- \*PAR: and you'll have to get one.
- \*INV: ok.
- \*PAR: and if you don't have a lawyer then it's just not going to be good.
- \*INV: can you tell me more about why it wouldn't be good?
- \*PAR: just cause &um there's no one backing you up and helping you out so it's pretty much up to the judge and the to other person to see if you're going to go to jail.
- \*PAR: if you're going to get a ticket.
- \*PAR: or what's going to happen.
- \*INV: ok.
- \*INV: can you tell me who that other person is?
- \*PAR: defendant [=! whispered to self]
- \*PAR: like if I'm the defendant and that's the other person and they have a lawyer maybe.

\*PAR: or if I'm just there all by myself just cause of tickets maybe.

\*PAR: it's just up to the judge.

\*INV: ok.

\*INV: so let's say that the judge makes a decision and he makes that you pay a fine maybe I have to do some community service too something like that.

\*INV: I'm not happy with that decision.

\*INV: what happens then?

\*INV: is there anything I can do?

\*PAR: well <you> [//] if you really really didn't like it and you really wanted to do something you're going to have to get a lawyer.

\*PAR: if you can't afford one can't get one then hey you just have to do it.

\*INV: ok.

\*INV: great.

@End

**Interview #34**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: I'm interested to learn what people know about laws and legal issues.

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic.

\*INV: but you can tell me anything you know about laws and the legal system in the US@k.

\*PAR: ok.

\*PAR: well I don't know a whole lot.

\*PAR: &-um I honestly don't know that much.

\*INV: anything at all.

\*PAR: anything?

\*PAR: &-um I guess &-uh a lot of people get lawyers.

\*PAR: &-um so some people decide it's better to plead guilty and not be guilty because then you might be convicted otherwise.

\*PAR: &-um so maybe there's like &-uh a plea agreement.

\*PAR: and <they get> [//] you know there's some benefit to them &-um for pleading guilty.

\*INV: can you tell me more about what you mean when you say some@q benefit@q?

\*PAR: &-um yeah so maybe &-sighs

\*PAR: you know I can't even think of some examples.

\*PAR: but maybe they're gonna have a lesser sentence or something &-um in jail or prison &-um if they do something.

\*PAR: or yeah just some benefit to the person.

\*INV: ok.

\*INV: can you tell me more about what might happen to me if I were in that situation but I decided that maybe I didn't want to have a plea agreement?

\*PAR: &-um so then &-um it will go to the jury and the judge.

\*PAR: and they're gonna decide if you're guilty or not guilty.

\*PAR: &-um so <they're just> [//] it would just be <what the> however the outcome is.

\*PAR: there wouldn't be like any agreements like +"/.

\*PAR: +" oh you wouldn't have to do this or wouldn't do that.

\*INV: ok.

\*INV: can you tell me anything else about the [//] process that would

- happen in front of the judge and the jury?
- \*PAR: &-um (.) not really.
- \*PAR: &-um I guess &-um you would just say you know if you're guilty or not guilty.
- \*PAR: &-um yeah I dunno.
- \*INV: ok well <can you tell me what happens> [//] can you tell me anything about what happens after the judge and they jury have heard what I have to say and made up their minds about what they think?
- \*PAR: &-um so after they've made up their minds &-um then they have to tell you &-um what their decision is.
- \*PAR: and so you know the jury has to get together and meet and you know pretty much decide if you're guilty or not guilty.
- \*PAR: and then give you the news.
- \*INV: and can you tell me anything about what happens after they've made that decision and given you the news?
- \*PAR: &-um then I guess whatever the judge decided needs to happen.
- \*PAR: so whether you're gonna be on probation or go to jail, that would take place.
- \*INV: ok can you tell me more about what you mean by the term probation@q?
- \*PAR: &-um yeah so there's different kinds of probation.
- \*PAR: &-uh different time limits
- \*PAR: but basically like someone's kinda watching you.
- \*PAR: &-um like I've heard there's like ankle [//] something you wear on your ankle.
- \*PAR: &-um or other things where you might have to call and check in.
- \*PAR: or maybe they come check on you.
- \*PAR: I don't even know &-laughs.
- \*INV: ok.
- \*INV: well let me ask you one last question here.
- \*INV: let's say that we're back to me and I've been in front of the judge and the jury.
- \*INV: and they've decided that I'm guilty.
- \*INV: and the judge has given me some punishment.
- \*PAR: yeah.
- \*INV: if I'm not happy with that decision, can you tell me about what might happy <if I'm> [//] like I said if I don't agree with what the judge or the jury has decided?
- \*PAR: &-um yeah so I think you can +//.
- \*PAR: I don't even know what it's called.
- \*PAR: but I think you can &-um tell the judge like how you feel &-um and maybe they'll relook at it.
- \*PAR: but I'm not for sure.
- \*INV: no that's great.
- \*INV: thank you very much.

**Interview #35**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ##

\*INV: you can go ahead.

\*PAR: &um I guess there's (.) like there's people who determine &um if you may have violated a law.

\*PAR: and then there's a further process that like decides whether or not you did based on evidence.

\*INV: ok.

\*INV: can you tell me anything more about that?

\*PAR: &um &um gosh.

\*PAR: I guess if it's decided that you may have broken a law you can go through a courts system or a trial.

\*INV: ok.

\*PAR: &um where two sides &um discuss like what they think happened.

\*PAR: and then another twevle people who are on the jury decide which story they agree with more.

\*INV: ok.

\*PAR: and then based on what they decide the judge can give you a punishment of some sort.

\*INV: ok.

\*PAR: that's what I've got [=! laughs].

\*INV: can you tell me anything else about the the way in which people that may have broken the law or committed a crime are brought into courts?

\*INV: what happens to those people after the crime?

\*PAR: after the crime they're held in jail sometimes.

\*PAR: &um I think depending on the crime they may have committed.

\*PAR: and like if it's a really terrible crime they may not be allowed to be released &um but if it's not so bad they can pay a fee to get out for a while until their court date.

\*INV: ok.

\*INV: can you tell me anything else about the two sides in the courtroom that you mentioned earlier?

\*PAR: there's the prosecution which is the side that says this person did it.

\*PAR: and then there's defense which is saying this person did not do it.

\*PAR: and they're both made up of lawyers.

\*INV: ok.

\*PAR: and they have witnesses that tell their story and what they saw.

\*INV: ok.

\*INV: let's talk more about the witnesses and those stories.

\*INV: can you tell me what happens with that?

\*PAR: &uh so &um usually prosecution will have witnesses &um that were there at the time or that know bad things about the person who's accused to paint an ugly picture of them.

\*INV: sure.

\*PAR: &um and the defense has people who can say no this person was not there at that time or they're a really great person because they did this thing for me one time &um to paint a really great picture of the defendant or the person who's being accused of the crime.

\*INV: ok.

\*INV: <and after> [//] or can you tell me more about what happens after that information has been presented to the jury the twelve people?

\*PAR: then the jury goes into deliberation.

\*PAR: and they talk amongst themselves.

\*PAR: and <they> [//] I think they all have to agree &um like every single person has to say the same thing either yes they did it or not they didn't.

\*INV: ok.

\*INV: and can you tell me more about what happens after the jury has reached a decision?

\*PAR: then they tell the judge and the prosecution and the defense and the person what their decision is.

\*PAR: and then <the judge has to> [//] if it's decided that the person is guilty then that's it like they've made the decision.

\*PAR: and then if they're guilty the judge gets to give them a punishment.

\*INV: ok.

\*INV: and can you tell me anything about what happens to the defendant the person accused or found guilty of committing the crime in this case after the judge has given them a punishment?

\*INV: can you tell me anything about what happens to that person after that?

\*PAR: &um I guess that depends on their punishment.

\*PAR: if they're found guilty like they could be sentenced to prison for a long time.

\*PAR: they could have to do community service.

\*PAR: they could be sentenced to death in some places.

\*PAR: <I dont know about> [//] I don't think in Wisconsin though.

\*PAR: yeah.

\*INV: ok.

\*INV: sounds good.

@End

**Interview #36**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: you can tell me anything at all you know about laws and the legal system here in the U@l S@l.

\*PAR: there's feuds.

\*PAR: not the best system in the world.

\*PAR: often times &uh it's used to systematically oppress people.

\*PAR: there are a lot of laws.

\*PAR: all kinds of them.

\*PAR: some do good.

\*PAR: some don't.

\*PAR: they're often times used to control the public.

\*PAR: they can be good.

\*PAR: or they can be bad.

\*PAR: lawmakers make them.

\*PAR: and it's a whole process to try and get a law passed.

\*PAR: if you break a law you go to jail.

\*PAR: <or you get> [//] it's a crime if you break the law correction.

\*PAR: certain laws you do go to jail though.

\*INV: ok.

\*PAR: if you get convicted.

\*PAR: you can be accused of breaking a <law and> [>].

\*INV: <sure> [<].

\*PAR: not get convicted.

\*PAR: yeah.

\*PAR: all different kind of stuff.

\*INV: when you said that some laws are good and some laws are bad can you expand on that a little for me?

\*PAR: back in the early 1900s and basically up until the 1970s there were laws against certain groups of people like women, people of color, minorities.

\*INV: sure.

\*PAR: that were just meant to hinder them from succeeding or excelling or moving anywhere past the poverty line.

\*PAR: and it sort of goed against them.

\*PAR: yeah those laws were bad.

\*PAR: now they actually have laws that systematically just take care of the job and not outwardly so +...

\*PAR: yeah.

- \*PAR: there are some good laws though.
- \*PAR: law that offer healthcare to people.
- \*PAR: laws where you know you kill a lot of people you go to jail.
- \*INV: sure.
- \*PAR: make sure that that works and that there's not nothing to worry about out there.
- \*PAR: but then sometimes those laws can actually &hm there's laws about certain things while the trial is like in court and then sometimes people who don't you know might not have done the crime end up going to jail.
- \*INV: sure.
- \*PAR: so that's one of the bad kinds.
- \*INV: sure.
- \*INV: alright.
- \*INV: you said that sometimes if you break the law you can go to jail but sometimes if you break the law you don't have to go to jail.
- \*PAR: yeah.
- \*INV: can you explain or tell me more about the process between somebody breaking the law and then somebody ending up in jail?
- \*INV: can you tell me what happens inbetween those two events?
- \*PAR: ok.
- \*PAR: well somebody calls the police.
- \*PAR: police show up.
- \*PAR: they're like hey you're breaking a law.
- \*PAR: alright.
- \*PAR: you could even break the law with the police there and just if you mess around with them too much and that's not very good.
- \*PAR: they take you downtown and &um the D@l A@l or whoever has the option of you know taking on the case or not.
- \*PAR: and if they choose to which often times happens with minorities then like then you have to go to trial and stuff.
- \*PAR: and then oh xx or you can be like just choose to get probation and chill.
- \*INV: ok.
- \*PAR: just not taking it seriously even if they've already done the same crime.
- \*PAR: sometimes it &uh yeah cops bring you downtown.
- \*PAR: the lawyer says hey do you really want to do this?
- \*PAR: yep.
- \*PAR: alright cool.
- \*PAR: if they say yes then they go you go to trial and everything.
- \*PAR: if they say no then you're basically scot free.
- \*INV: sure.
- \*INV: and if the D@l A@l wants to go to trial what happens next?
- \*PAR: &uh they want to go to trial then a person is sitting in jail for who knows how long &um if they can't post bail.



- \*INV: ok.
- \*PAR: and then pretty much they show up for a judge.
- \*PAR: depends on what it is.
- \*PAR: yeah show up for a judge and jury.
- \*PAR: plead their case.
- \*PAR: most of the time it's not very good because you might have court appointed lawyers who don't really care.
- \*PAR: some people do though.
- \*PAR: and lawyers that are paid make sure to pay privately make sure that you know their client gets off or that they do their best.
- \*INV: ok.
- \*PAR: sometimes they don't though.
- \*PAR: yeah.
- \*PAR: but then yeah then the <judge you're> [//] if the jury has found that you're guilty then the judge would be like alright &um send me to jail for x@l amount of time depending on the crime.
- \*PAR: that's also disparities amongst that between +...
- \*INV: sure.
- \*PAR: yeah.
- \*INV: sure.
- \*PAR: and &uh yeah.
- \*PAR: if you're not guilty though you just basically you haven't actually been convicted of the crime but there might be conditions to you not going to jail like probation or having to like register or something or yeah.
- \*INV: alright.
- \*INV: so after somebody has been found guilty and sentenced to prison by a judge what happens next?
- \*PAR: goes on their record.
- \*PAR: they're in jail for an amount of time.
- \*PAR: goes on their record.
- \*INV: ok.
- \*PAR: they're going to struggle to find jobs and everything afterwards.
- \*PAR: but while they're in jail half the time they might be moved around depending on &um the nature of the crime.
- \*INV: sure.
- \*PAR: their home might be in New York they might get sent to Virginia.
- \*INV: ok.
- \*PAR: their families visit them.
- \*PAR: traveling a lot to see them.
- \*PAR: time moves past without them.
- \*PAR: yeah it's +...
- \*PAR: <there's not really any> [//] there's few programs but not much for them to do or incentives when they get out to actually do much.
- \*INV: sure.
- \*PAR: you have a probation officer and everything <who might> [//] who may

or may not care.

\*PAR: and it's up to them to make the best of what they have.

\*PAR: they have a record now.

\*PAR: and they're more than likely not going to acheive as much as they could have without it.

\*INV: ok.

\*INV: let's tie back to something you said earlier when you said making laws is done by legislative bodies that that can be a complicated process.

\*PAR: yeah.

\*INV: can you tell me more about how the making of laws by legislative bodies influences a progression through the legal system like the one you just described?

\*PAR: ok.

\*PAR: <the making of the laws> [//] the body itself is usually split and a lot of people have to agree on it.

\*INV: ok.

\*PAR: in order for it to be passed.

\*PAR: there are laws that aren't in the certain peoples best interest may get passed.

\*PAR: or even with all the data in the world they'll get passed because of corruption to be quite frank.

\*INV: sure.

\*PAR: and yeah.

\*PAR: it can affect the process because &um D@l A@ls their goal is to be like alright we're going to get you good grades.

\*INV: sure.

\*PAR: and make it seem like they're successful even at the expense of the people they're supposed to be helping.

\*INV: ok.

\*PAR: also the lawmakers also decide the nature of the prison system and the privitization of it which is xx a good thing.

\*INV: sure.

\*PAR: and all them are making good money.

\*PAR: yeah.

\*PAR: and they also decide on a max sentencing for some of the laws.

\*INV: ok.

\*PAR: and crimes that are done.

\*PAR: in some cases judges can overrule everything but +...

\*INV: sure.

\*PAR: yeah.

\*INV: alright.

\*INV: great.

@End

**Interview #37**

@Begin

@Languages: eng

@Participants: PAR Participant, INV Investigator

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@ID: eng|change\_corpus\_later|INV||||Investigator|||

Media: ###

\*INV: you can tell me anything you know about laws and the legal system here in the United States.

\*PAR: ok.

\*PAR: there's a lot of laws.

\*PAR: there are many laws.

\*PAR: the legal system <is> [//] tends to be complicated and not very complex.

\*INV: ok.

\*PAR: meaning it tends to be &uh there are many laws that after you study them they're I can't say this with any high accuracy that are &um <you don't have to> [/] <you don't have to> [//] there's a lot of material.

\*INV: sure.

\*PAR: but <none of it's particularly> [//] my impression at least none of it's particularly &uh like yeah there's a lot of material.

\*PAR: it's not very &uh complex that's the only way I can describe it.

\*INV: sure.

\*INV: I can understand what you're saying.

\*INV: can you maybe give me an example of what you would mean by that?

\*INV: of what +/.

\*PAR: so

\*INV: +, what type of +..?

\*PAR: I guess tax laws this way.

\*PAR: I know that for sure.

\*INV: ok.

\*PAR: like &uh a@l <you have to pay> [/] you have to pay one p@l cause your you know in a certain bracket in this certain little exception.

\*INV: sure.

\*PAR: but past that there's not much to know.

\*PAR: I mean you know it's not like it's not linked to ten or twelve things you know oh because you know your this you might be this you might be this.

\*PAR: just &uh it tends to be +//.

\*PAR: but that's more detail than I wanted to give.

\*PAR: I &uh so I've had some experiences with like &uh labor laws.

\*INV: sure.

\*PAR: and &uh my I mean I know our family attorney.

\*PAR: he works for the city.

\*PAR: he's been in front of the x supreme court a couple times.

\*INV: sure.

\*PAR: yeah I mean what else should I say?

\*INV: like I said in the prompt I'm just curious to know what you know.

\*INV: so anything else related to laws or legal issues.

\*PAR: yeah so I've never had any +//.

\*PAR: I have been involved in this one labor dispute.

\*PAR: past that I haven't had any real formal legal training.

\*INV: sure.

\*INV: alright can you tell me about the +//.

\*PAR: I guess I've read some books.

\*INV: +, yeah absolutely.

\*PAR: yeah.

\*INV: how about this can you tell me about some of the maybe issues in the news or the press that implicate the law or implicate the legal system?

\*PAR: like just issues today?

\*INV: sure.

\*PAR: well you know there's the whole issue of Trump and his &uh how he's overseeing his businesses and potential conflict of interest.

\*PAR: that's one example.

\*INV: ok.

\*PAR: immigration and V@l I@l S@l A@l s@l are also related to the president.

\*INV: ok.

\*PAR: so that's another issue.

\*PAR: <there's a> [//] <they're talking about raising the> [//] some states are petitioning to raise the wage to +//.

\*PAR: Seattle has already done this.

\*PAR: or Washington has already done this.

\*PAR: they have raised the minimum wage to fifteen dollars and hour.

\*INV: sure.

\*PAR: and that has &uh various implications in terms of job stability and availability.

\*INV: sure.

\*PAR: there is smaller issues but +...

\*INV: can you give me an example of just one of those?

\*PAR: yeah I mean so I'll give you the labor dispute I was involved with.

- \*INV: sure.
- \*PAR: <it was> [//] we never went to the Supreme Court or anything but &um two summers ago <I was involved> [//] I was working as a ski coach for this for x out of +/-.
- \*PAR: I shouldn't say his name.
- \*PAR: forgot that ok.
- \*INV: it's ok.
- \*INV: it's all deidentified anyways.
- \*PAR: alright.
- \*PAR: I was working for someone in some state.
- \*PAR: and I was a ski coach.
- \*PAR: I was employed as a contractor which was a wrongful unemployment.
- \*PAR: <like he> [//] a contractor does a job and then does only that job x.
- \*PAR: he gave me the tools to do it.
- \*PAR: he told me where to be and when which you cannot tell a contractor to do.
- \*PAR: so I was his employee not a contractor.
- \*INV: yes.
- \*PAR: but the issue was that &um I was using one of his tools a van.
- \*PAR: and I accidentally got into like a little fender bender.
- \*PAR: and he sent me the bill.
- \*PAR: and I was like no you can't do this.
- \*PAR: and then I had some discussion with my dad about the proper legal action to take.
- \*INV: sure.
- \*PAR: and we wound up getting a lawyer and saying &uh no you shouldn't do this.
- \*PAR: this was your tool.
- \*PAR: it should be &um a normal working expense.
- \*PAR: sorry.
- \*PAR: and by the way we noticed this other thing this wrongful unemployment.
- \*INV: ok.
- \*PAR: yeah.
- \*INV: so as you were working through that that kind of process +/-.
- \*PAR: the wrongful unemployment?
- \*INV: right just the dispute as a whole.
- \*INV: what sort of issues or themes were you concerned about?
- \*PAR: so issues or concerns about.
- \*PAR: I guess I was thinking about +...
- \*PAR: this was like three years ago so I gotta think back.

- \*PAR: at first I didn't want to take any action  
cause I was like yeah he you know I wasn't really his  
employee you know maybe I'll pay like half the van  
fee or something.
- \*INV: sure.
- \*PAR: or I don't know it was two thousand dollars  
so I don't have half of it but +/-.
- \*INV: sure I understand what you're saying.
- \*PAR: +, but not very much.
- \*PAR: and I don't want to take any action on the  
wrongful unemployment cause I was like no it's  
business he can do whatever he wants x.
- \*PAR: <I've since> [//] after talking to my dad and he  
has some he owns a business so he's used to  
this stuff.
- \*PAR: you know he would be in this this head coach position he  
understands what that is.
- \*PAR: like this head coach didn't x me even though I was on skis working  
for his business.
- \*PAR: he should have x me.
- \*PAR: I should have been a full I mean +...
- \*PAR: if something happen to me it was well I was doing it for  
him so you should have realized that.
- \*INV: ok.
- \*PAR: it was after I talked to my dad about issues like  
this it was like no he's in the wrong he should I'd  
like him to go out of business.
- \*PAR: I don't believe he's running his business correctly.
- \*PAR: he's cutting on costs.
- \*INV: yeah absolutely.
- \*PAR: yeah.
- \*INV: great.
- @End

**Interview #38**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: alright let's get started.

\*INV: I'm interested to learn what people know about laws and legal issues.

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know it's a broad topic.

\*INV: but you can tell me anything you know about laws and the legal system here in the US@k.

\*PAR: oh ok well I had &-uh business law in school.

\*INV: ok.

\*PAR: so I know about how &-um certain laws apply to business practices.

\*INV: ok.

\*PAR: and I also know that the court system &-uh is set up for &-uh civil and judicial court cases.

\*PAR: so if you break the law you go before the judge for certain things as simple as a speeding ticket.

\*PAR: now you have &-uh the right to go to court to appeal that or have <your case> your defense presented before a judge.

\*INV: ok.

\*PAR: &-uh you can be represented by an attorney.

\*PAR: &-uh for instance if you're arrested by the police they give you Miranda rights which says you can be &-um represented by counsel before a judge and if you don't have a you\_know a counsel one will be appointed for you.

\*PAR: so &-uh then you are on the &-uh docket of the local court.

\*PAR: you appear before a judge.

\*PAR: you [/] appeal &-uh with your defense.

\*PAR: and the judge will decide &-uh whether or not &-uh your defense is sufficient enough to waive the &-uh charges against you or whether or not you're &-uh found guilty.

\*PAR: if you're found guilty the you &-uh [/] pay a fine or <you send> [/] you spend a certain amount of time in jail.

\*PAR: and that applies to all violations from traffic tickets all the way up to &-uh using a gun in a robbery or murdering somebody.

\*INV: ok, thank you.

\*INV: when you said earlier that the courts were set up for I think you

- said civil and judicial cases, can you tell me what you mean when you say civil cases or judicial cases?
- \*PAR: yeah I'm not always that sure about that because <if you> [/] violate a law <you are> [//] you can have problems, <you can> [/] violate someone else's right or civil laws on the books.
- \*INV: ok.
- \*PAR: so <that's kinda the difference that I> [//] so you can be liable even if you're found not guilty of beating somebody up, &-er you can be found guilty of violating a [/] civil law that says you can't carry a gun or you have to have a permit for that and you have to pay monetary damages.
- \*INV: I see.
- \*INV: can you give me an example of what you mean by somebody@q else's@q rights@q?
- \*PAR: ok well let's see &-um (.) well somebody else's right &-um.
- \*PAR: let's go back to the life and liberty and pursuit of happiness.
- \*PAR: they have their right to walk on the streets and be safe from harm, from [/] me or another perpetrator.
- \*PAR: or &-um <I can't> [//] they have their rights to be safe in their homes.
- \*PAR: I can't break in.
- \*PAR: and I can't steal something.
- \*PAR: &-um they have their rights to drive their car and follow the rules of the road.
- \*PAR: and if I violate the rules of the road and I harm them then I am &-uh liable for &-uh breaking the law and causing damage or [/] injury to that person.
- \*INV: ok great thank you very much.
- \*INV: you walked me through a hypothetical situation in which somebody had &-uh sped while driving and then went before a judge and presumably had been found guilty and then had been ordered to pay a fine or something like that.
- \*INV: can you tell me what you know about what might happen after that's all been done but the person who received that fine isn't happy with what the judge decided?
- \*PAR: oh you're talking about an appeal process.
- \*INV: ok.
- \*PAR: so <if you> [//] &-uh if you're not happy with the &-uh decision made by the court you can appeal &-uh that [/] decision.
- \*PAR: but <you have to provide some other> [//] there'd have to be a reason why the court would take an appeal.
- \*PAR: so you'd have to provide some additional evidence that wasn't found in the original case, wasn't brought out.
- \*PAR: so you might think "+".
- \*PAR: "+ oh yeah wait a minute I had somebody that saw that [/] crime.
- \*PAR: "+ and [/] <they would> [//] they could be on my defense and show



- that hey I didn't have a gun I just kinda went like this  
&=pointsfinger or I you\_know I didn't have a gun when I  
threatened somebody.
- \*PAR: so that's the appeal process.
- \*PAR: and it can go &-uh to a different court, an appellate court, which  
would rule &-um against the original verdict from the original judge.
- \*INV: ok let's [//] let me follow up on [/] that briefly and then try to  
connect it back to something you said earlier.
- \*PAR: alright.
- \*INV: earlier you said that when somebody breaks one of these laws they go  
to court in a local court.
- \*INV: and now you just told me about the sort of original court and then  
the appellate court.
- \*INV: can you expound upon what you mean when you are describing these  
courts?
- \*PAR: oh ok.
- \*PAR: well I would say &-uh here in Madison <we have a> we would go the  
[/] local court downtown on Hamilton street.
- \*PAR: that's where our local cases are heard.
- \*PAR: and &-uh of course you can always try and waive <to get to a court  
in a different> [//] if you feel this court is prejudiced against  
you or if it goes to a jury and you think the jury would be  
predisposed against you or the case has got too much publicity, you  
can appeal to have the &-uh case heard by a jury in another  
jurisdiction, alright?
- \*PAR: so &-uh but you\_know as far as I know you go to the local court  
unless you have reason to believe <you can file> [/] to go somewhere  
else.
- \*PAR: and then the appellate courts though cover a larger district because  
you\_know <the court> [//] they have different geographical districts  
that are larger.
- \*PAR: and they [//] handle appeals against multiple courts in their  
geographical district.
- \*INV: ok great thank you very much.

**Interview # 39**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: ###

- \*INV: in this task I'm interested to learn what people know about laws and legal issues so I'd like to have a brief conversation with you about that topic.
- \*INV: can you tell me what you know about the legal system in the United States?
- \*INV: I know it's a broad topic but you can tell me anything you know about laws and the legal system in the United States.
- \*PAR: oh boy [=! laughs]
- \*PAR: &uh laws.
- \*PAR: well the government has rules.
- \*PAR: and &uh you're supposed to follow the rules.
- \*PAR: and if you don't follow the rules they have penalties.
- \*PAR: and &uh (.) so <if you> [//] if they think you broke one of the laws they can take you to court.
- \*INV: ok.
- \*PAR: and then you can try and defend yourself against the accusations.
- \*PAR: and &um if somebody thinks you're a liar and they did theirs and &um.
- \*PAR: go before a judge.
- \*PAR: and sometimes you get a choice of having a jury &um sometimes not (.) depending on <what the> [/] what the &uh crime you're accused of is.
- \*INV: ok.
- \*PAR: and then they have various penalties and they can +...
- \*PAR: then after &uh they've decided whether you're guilty or not if you're not guilty you go free and <if you're not> [//] if you're guilty then they just decides some penalty which is probably usually not mandatory but sometimes is.
- \*INV: ok.
- \*INV: can you tell me anything else about the penalties?
- \*PAR: the penalties.
- \*PAR: I don't know a whole lot.
- \*PAR: &um they can be as severe as the death penalty in some states.
- \*INV: ok.
- \*PAR: and then you can get off on with a fine or probation of various lengths.
- \*PAR: I don't know.
- \*PAR: it just depends on the crimes.

- \*PAR: whatever the society or the government decided was more severe they usually get larger penalties.
- \*PAR: and smaller crimes have smaller penalties.
- \*INV: ok.
- \*INV: anything else?
- \*PAR: [=! laughs] X topic.
- \*INV: anything else about laws or the system in general?
- \*PAR: about the system in general?
- \*PAR: &uh I don't know.
- \*PAR: well there's a lot of laws in general <th> [/] there's a lot of laws and most people don't know what the laws are or penalties.
- \*PAR: it's just a <pile of> [/] pile of books with lots of laws in them.
- \*INV: ok.
- \*PAR: and so you just sort of go through your life and sometimes you know things and the bigger things you know you aren't supposed to do or whatever but <you're not always> [/] you don't always know how that penalty will be but other stuff you do or so trivial you don't even know there's a law against it.
- \*INV: can you give me an example of one of the first types of laws you talked about the bigger laws where most people have an idea that there may be laws about that?
- \*PAR: &uh well if you kill somebody, if you rob a bank, if you're dealing drugs &uh on a large scale.
- \*INV: ok.
- \*PAR: then you tend to think of &uh planning X.
- \*INV: sure.
- \*PAR: things were you intentionally are doing really bad things to people.
- \*INV: ok.
- \*PAR: or planning on doing really bad things to people.
- \*PAR: and I guess now\_a\_days the government has more &uh unbeknowst to most of us they can spy on us more [=! laughs]
- \*PAR: and people seem to think that's ok these days for the most part.
- \*INV: ok can you tell me more about the other category of laws then?
- \*PAR: the little ones?
- \*INV: where people may not be aware of them.
- \*INV: yes.
- \*PAR: &uh those are like jay\_walking.
- \*INV: ok.
- \*PAR: you can walk across the street and <you're not in a> [/] you're not in a crosswalk.
- \*PAR: that's probably an illegal thing.
- \*PAR: nobody cares.
- \*PAR: nobody enforces it so nobody really thinks about it.
- \*INV: right.
- \*PAR: until you go to some little town somewhere or Milwaukee whatever and then they decide that <that's> [/] that's one thing they want to

pick on [=! laughs].

\*PAR: I don't know.

\*PAR: it's probably like you cut through somebody's yard it's probably  
trespassing but nobody really thinks anybody's gonna enforce that  
you walked out across some X or walked into someone's  
front\_yard a little bit.

\*INV: ok.

\*INV: great.

@End

**Interview #40**

@Begin

@Languages: eng

@Participants: INV Investigator, PAR Participant

@ID: eng|change\_corpus\_later|INV||||Investigator|||

@ID: eng|change\_corpus\_later|PAR||||Participant|||

@Media: #####

\*INV: I'm interested to learn what people know about laws and legal issues.

\*PAR: &mmm ok.

\*INV: I'd like to have a brief conversation with you about this topic.

\*INV: can you tell me what you know about the legal system in the United States?

\*INV: I know that's a broad topic +/.

\*PAR: yeah.

\*INV: +, but you can tell me anything at all you know about laws and the legal system here in the United States.

\*PAR: well there are a lot of different laws.

\*INV: ok.

\*PAR: and &uh (.) there are many laws.

\*PAR: rule things &um from &uh I don't know &uh.

\*PAR: well basically laws keep people from doing the incorrect things.

\*INV: ok.

\*PAR: and &um that is in traffic or interpersonal relations with people and +...

\*INV: sure.

\*PAR: and &um owning property and so on and so forth so some (.) regulation.

\*INV: ok.

\*INV: when you say that laws can stop people from doing the incorrect thing <can you tell me what you what> [//] can you tell me more excuse me about what you mean when you say the incorrect thing?

\*PAR: well like in a car speeding.

\*PAR: you can't kill somebody else.

\*INV: ok.

\*PAR: I don't know what else.

\*PAR: laws.

\*PAR: excuse me.

\*PAR: what was your question?

\*PAR: I'm sorry.

\*INV: no problem.

\*INV: I can ask you another question.

\*PAR: &oh.

\*INV: can you tell me what you know about how the laws you just described to me you said you can't kill somebody you can't speed how those

- laws actually get to be laws.
- \*INV: can you tell me anything about that?
- \*PAR: well it goes &uh through &um governmental (.) +/-
- \*INV: ok.
- \*PAR: +, procedures that makes these laws.
- \*INV: ok.
- \*PAR: <and> [/] &um and there are different state laws.
- \*PAR: federal laws.
- \*INV: ok.
- \*PAR: laws.
- \*INV: can you tell me anything about what makes state laws and federal laws different?
- \*PAR: well the state laws &um are laws that are enforced in that state.
- \*INV: ok.
- \*PAR: and the federal laws are throughout the whole country.
- \*INV: ok.
- \*PAR: and sometimes they conflict.
- \*INV: can you tell me more about what you mean by that?
- \*PAR: well &um when you have a federal law that &um I don't know &um the state does not recognize or +...
- \*INV: ok.
- \*PAR: I don't know.
- \*PAR: this is [=! sigh] +...
- \*INV: can you tell me anything about how that issue might be resolved?
- \*INV: and by that issue I mean if there's a conflict between a federal law and a state one.
- \*PAR: well the law could be changed.
- \*INV: ok.
- \*PAR: in either way.
- \*INV: sure.
- \*INV: ok let's pretend that I have broken one of those laws.
- \*INV: either a state law or a federal one I don't really mind which one.
- \*INV: can you tell me anything about what would happen to me at that point?
- \*PAR: well you could get arrested and go to court.
- \*INV: ok.
- \*PAR: and &um pay a fine or go to jail.
- \*INV: ok.
- \*PAR: or prison.
- \*INV: and when I get arrested can you tell me anything that happens in between the time I get arrested and the time I go to court?
- \*INV: can you tell me anything about what happens in there?
- \*PAR: depends on what you get arrested for.
- \*PAR: you could be put <in> [x2] jail until you go to court.
- \*INV: ok.
- \*PAR: and &um (.) pay fines.
- \*PAR: that's about it.

\*INV: ok.  
\*INV: and once I've gotten to court can you tell me anything about what happens in there?  
\*PAR: well you put in a plea.  
\*PAR: and &uh the &uh court decides if you're guilty or not.  
\*PAR: and &um well obviously if they decide your not guilty (.) +/-  
\*INV: ok.  
\*PAR: +, you get set free.  
\*PAR: if you're guilty you can get punished.  
\*INV: ok.  
\*PAR: one way or another.  
\*INV: when you say I can put in a plea can you tell me more about what you mean by that?  
\*PAR: guilty or not guilty.  
\*INV: ok.  
\*PAR: and then it's not guilty for reason of insanity.  
\*INV: ok.  
\*INV: can you tell me anything more about that?  
\*PAR: well that &um half the time you did the crime (.) <you were not saying it> [//] you were not &um in control of your mental <fa> [//] facilities.  
\*INV: ok.  
\*INV: one more question for you.  
\*INV: so after the judge has accepted my plea let's say that he decides that I'm guilty.  
\*INV: can you tell me about what happens after that?  
\*PAR: <well (.) you &um> [//] <well you> [//] your punished in some way.  
\*PAR: it's either a fine.  
\*PAR: or you get sent to prison.  
\*INV: ok.  
\*PAR: or something of that nature.  
\*INV: sure.  
\*PAR: I'm not sure what else to say.  
\*INV: well that's fine.  
\*INV: thank you.  
\*INV: that all sounds really good.  
\*INV: I appreciate that.  
@End

## **Appendix B**

### **Policy and Law Publications**



**Target Article**

# Ethical and Legal Concerns Associated With the Comprehension of Legal Language and Concepts

Joseph Wszalek, University of Wisconsin–Madison

Because numerous standards and ethics rules underscore the importance of language and communication within the legal process, the inability to successfully comprehend legal language is a pressing concern, particularly because many populations that are overrepresented within legal systems typically show problems with language and communication. In order to better describe the nexus between language comprehension and the law, therefore, I identify four hierarchical aspects of legal language and concepts that may challenge the language-comprehension processes and impede comprehension: (1) the challenge to “lower level” cognitive functions; (2) the demand for inferences; (3) the need for complex situation models; and (4) the idiosyncratic nature of legal language’s text “genre.” Using common examples of black-letter law, I examine how these four aspects might create legal problems and ethical concerns for both the adjudicated individual and the representing attorney. This analysis should be a valuable first step in allowing the neurolaw and bioethics fields to better identify and research these important ethical dilemmas.

**Keywords:** language, language comprehension, neuroethics, neurolaw

As challenging as legal language can be for the average person (Payne, Time, and Gainey. 2006; Rogers et al. 2012; Rogers et al. 2013), it can be even more incomprehensible for people with language and communication impairments. Scholarship from numerous academic fields now suggests that legal-language comprehension is impacted in many classes of persons, including adolescents (Helms 2007; Rogers et al. 2008; Rogers et al. 2012), populations with speech and language disorders (Rost and McGregor 2012; Snow, Powell, and Sanger 2012), psychiatric patients (Cooper and Zapf 2008), and individuals with traumatic brain injury (TBI) (Wszalek and Turkstra 2015). Perhaps unsurprisingly, these populations are overrepresented within the criminal justice system (Williams et al. 2010; Farrer and Hedges 2011; Fazel et al. 2011; Snow and Powell 2011; Fazel and Seewald 2012), and the alarming frequency at which these individuals become involved in adjudicative systems suggests a relationship between language abilities, including language comprehension, and desirable legal outcomes (LaVigne and Van Rybroek 2014; Wszalek and Turkstra 2015).

Even though the “Neurolaw” field has generated a considerable amount of scholarship and discussion about challenging issues that lie near the intersection of science,

ethics, and law, a consideration of the legal and ethical consequences that stem from the inability to effectively comprehend legal language is generally absent from Neurolaw’s purview. In order to begin to resolve this quandary, I briefly attempt to synthesize applicable laws and guidelines with the scientific research on language and discourse comprehension. I propose that legal language and concepts (LLCs) are particularly, and perhaps uniquely, challenging within the cognitive framework of text and discourse comprehension, and I argue that impairments in LLC comprehension present a risk of ethical harm within the framework of applicable laws and ethical guidelines.

## THE LEGAL AND ETHICAL FRAMEWORK RELEVANT TO LANGUAGE COMPREHENSION

Language comprehension is a fundamentally important component of meaningful participation in the U.S. legal system, and the U.S. Supreme Court has established this importance by including language and communication requirements in a number of specific constitutional standards. For example, competency to undergo criminal proceedings requires that the individual have “a rational as well as factual understanding of the proceedings” and the ability to

Address correspondence to Joseph Wszalek, J.D, Neuroscience and Public Policy Program, University of Wisconsin–Madison, 462 Good-night Hall, 1975 Willow Dr, Madison, WI 53706, USA. E-mail: josephwszalek@uwalumni.com

“communicate effectively with counsel” (*Dusky v. United States* 1960; *Cooper v. Oklahoma* 1996). Related constitutional standards, such as the standard for waiving rights or entering pleas, use a “knowingly, willingly, and intelligently” standard (*Miranda v. Arizona* 1966; *Godínez v. Moran* 1993; *Brady v. United States* 1970), which necessarily requires that the individual have language-comprehension skills that allow him<sup>1</sup> to understand his legal rights (Wszalek 2015).

Effective language comprehension is an equally important consideration for civil-law matters. Legal competency to make a contract or other binding legal transaction requires language skills necessary to understand the nature of the transaction (Guardianship of O’Brien 2014), and similar understanding is generally required for creating wills or entering marriage (Wisconsin Statutes 853.01 2015–2016; Estate of Laubenheimer 2013). Finally, language and communication skills will be necessary for other nonjudicial aspects of the legal system, such as interacting with law-enforcement officers (Wszalek and Turkstra 2015) or maintaining an effective attorney–client relationship (LaVigne and Van Rybroek 2011). Because these legal standards underscore the importance of language comprehension within the U.S. legal system, they portend ethical quandaries if LLC-comprehension problems preclude an individual from meeting them.

Professional rules for practicing attorneys also expose the importance of language comprehension. The American Bar Association’s Model Rules of Professional Conduct (which have been adopted by 49 of the 50 U.S. states) indicate that a lawyer has a duty to communicate with his client so that the client can participate in the legal matter (ABA Rules 2014). The Model Rules also require a lawyer to provide reasonably competent legal representation and to make reasonable efforts to maintain a normal lawyer–client relationship with clients who have a “diminished capacity” to make decisions about the matter (ABA Rules 2014). In combination, the Model Rules suggest that competent lawyering requires a reasonable effort to ensure successful language comprehension on the part of the client. They also suggest that problems with LLC comprehension could jeopardize the attorney–client relationship and hinder the client’s ability to participate in his own representation, both of which are serious ethical concerns. Additionally, because violations of the professional rules can result in professional disciplinary proceedings, the ethical concerns associated with language-comprehension problems affect not just clients but also their representing lawyers. To summarize, U.S. legal standards and ethics rules, which explicitly identify communication requirements, provide a well-defined legal framework against which potential ethical issues related to language comprehension can be assessed.

1. For consistency and readability, this article uses “his/him” to refer to the individual comprehending the LLC (the client and/or defendant) and “she/her” to refer to the lawyer. This choice of pronouns is arbitrary and is in no way intended to imply gender/sex roles or biases.

## PARTICULAR CHALLENGES FOR LANGUAGE COMPREHENSION IN LEGAL CONTEXTS

Relying on the computational models used to define language comprehension,<sup>2</sup> I propose that four aspects of LLCs make them particularly challenging for language comprehension’s cognitive and modeling processes. These aspects are (1) the degree to which LLCs require cognitive functions assumed to underlie comprehension; (2) LLCs’ inherent and heightened demand for inferences; (3) the requirement for particularized situation models; and (4) LLCs’ unique nature as a hybrid of multiple text genres. These aspects will demonstrate how LLCs can pose potential ethical dilemmas at each successive stage of the language-comprehension process for individuals who attempt to enter and navigate legal contexts. For each of these four aspects, I present an example of legal text that illustrates the challenge for language comprehension, and I identify particular ethical concerns that may result from impaired or improper comprehension.

Before I begin the analysis, however, I want to define the aims of this article in order to delineate its proper scope. I recognize that in real-world contexts LLCs do not exist as language samples in a vacuum, and that it is difficult to separate language from communication; resolving the incredibly complex problem that is communication challenges within the law, however, is far beyond the scope of this single article. My goal, therefore, is to use findings from language-comprehension research to identify features of black-letter legal language that may implicate the legal and ethical standards based on language understanding. In doing so, I hope to identify features of legal language that could frustrate comprehension based solely on the linguistic characteristics of the LLC itself. In setting such a narrow focus, the conclusions I reach are (1) independent of any of the other myriad factors that influence communication within legal contexts and (2) applicable to all persons who encounter LLCs, regardless of their cognitive capabilities or status. Consequently, my analysis, even with its limitations, should be a valuable tool for expanding the nexus between scientific inquiry and legal concerns and for identifying discreet features of legal language that could be easily operationalized for further research, policy, and professional guidance.

### LLCs and the Underlying Cognitive Functions Within Language Comprehension Models

I need to, first of all, advise you that if you are not a citizen of the United States of America, you are advised that a plea of guilty or no contest for any criminal offense can result in your deportation, the exclusion from admission to this country, or the denial of naturalization under federal law.

2. For an excellent summary of these computational models, see McNamara and Magliano (2009). I rely on terminology from the Construct-Integration Model (Kintsch 1988).

The first aspect of LLCs that raises ethical concerns is their potential to challenge the cognitive processes that subservise language comprehension. Certain automatic cognitive functions, such as working memory, attentional resources, and lower level language processing, such as word and morpheme decoding, all affect language comprehension (McNamara and Magliano 2009). If LLCs stress, impair, or challenge any of these automatic or unconscious processes, then they risk impeding comprehension and impairing the subsequent legal outcome.

Consider our first LLC: the so-called Padilla Warning, a necessary component of many criminal proceedings and a typical example of LLCs that occur in legal hearings (*Padilla v. Kentucky* 2010). Despite being a common LLC, however, it contains many challenging linguistic features that could frustrate automatic cognitive processing. First, it has a relatively short independent clause with multiple subordinate, embedded clauses, one of which is a conditional clause and two of which are noun clauses. Additionally, a clunky passive verb (“you are advised”) frames the noun clause that contains the Padilla Warning language. In order to understand this text, the comprehender would need the working memory and grammar-processing abilities necessary to work through this long, complicated style of syntax (McElree, Foraker, and Dyer 2003; Constable et al. 2004; Chen, Gibson, and Wolf 2005; McKoon and Ratcliff 2007). Next, the LLC contains a list of abstract nominalizations (deportation, exclusion, denial, etc.), most of which are low-frequency and context-dependent in meaning, and an overlapping set of specialized legal vocabulary (naturalization, admission, etc.). In order to understand this feature of the text, the comprehender would need both the semantic knowledge and the working memory to manipulate these words’ meaning in context (Hoffman et al. 2012). Of particular concern are this LLC’s difficult abstract words, which likely require higher memory capacity (Loiselle et al. 2012; Jackson, Lambon Ralph, and Pobric 2015) and specialized neural representation (Guan et al. 2013; Wilson-Mendenhall et al. 2013; Vigliocco et al. 2014). Even before the listener could consciously comprehend this language, then, he would need enough working memory to hold and remember the sentence and its subordinate clauses, the semantic and lexical knowledge necessary to process the syntactic structure and semantic content, and the attentional and inhibitory control necessary to focus on the discourse itself (Keitel et al. 2011; Archibald, Levee, and Olinio 2015).<sup>3</sup> Accordingly, optimal LLC

comprehension is predicated upon cognitive functioning that is robust, proficient, and accurate.

This predication, however, raises a very real risk of ethical complications. If an individual has any cognitive deficit that affects automatic cognition, language comprehension might be impaired, slowed, or compromised even under ideal circumstances. When faced with language as complex and stylized as LLCs, however, the working-memory, attentional, and automatic language demands may translate into unsuccessful comprehension. If this unsuccessful comprehension precludes the individual’s “rational and factual” understanding or “knowing, willing, and intelligent” behavior, then he may not meet the legal standard required by due-process rights, and any subsequent involvement in the legal system could raise constitutional violations. Additionally, unsuccessful language comprehension may attenuate the comprehenders’s ability to consult with his attorney; if this precludes his ability to “effectively consult” with his attorney, as required by law, then he again may risk due-process concerns. Because these legal questions would need to be resolved by the court, however, whether or not such a comprehender would ultimately meet the various legal standards is unclear; what is more clear, however, is that if the individual has problems with lower level cognition that affect his ability to comprehend LLCs, then his ability to participate in his own legal proceedings—the hallmark of due process rights—is called into question.

This scenario creates ethical quandaries from the lawyer’s perspective as well. Because “effective communication with counsel” is a defining feature of legal competency, and because a lawyer has an ethical duty to (at least attempt to) communicate in a way that allows her client to participate in the legal proceeding, the lawyer would need to speak and communicate in a way that would accommodate this impaired comprehension. Doing so, however, might be impossible or impractical for a host of reasons. The impairments might not be identified, or they might present as a behavioral or personality “issue” instead (LaVigne and Van Rybroek 2011). The lawyer may be unable to simplify the problematic LLCs: For example, the abstract concepts “deportation” and “naturalization” are difficult to simplify into less abstract phrasings, and the procedural rules of the lawyer’s court or jurisdiction may specify that these exact terms must be used. Additionally, time and resource pressures may limit access to interventional services such as more rigorous clinical or psychological assessments (LaVigne and Van Rybroek 2011). The cognitive impairments may be due to issues beyond the lawyer’s ability to realistically accommodate, such as injury, educational levels, or genetics. Finally, the client’s language-comprehension problems may simply be beyond the lawyer’s ability to recognize or look for, since most lawyers have little formal knowledge of communication and language impairments (LaVigne and Van Rybroek 2011; LaVigne and Van Rybroek 2014). In these scenarios, then, the lawyer may find herself in a catch-22: The same LLCs she needs to explain and present to her

3. Note also that (as is likely the case for almost all legal contexts) the stress and pressure of the setting itself can place additional demands on memory and attention (Lupien, Maheu et al. 2007; Lucassen and Oomen 2016). Additionally, the power dynamic between the comprehender and the attorney/judge may create unequal speaker rights, which brings a set of additional concerns, including suggestibility and acquiescence (Wilson 1989). While these additional considerations may not be a linguistic quality of LLCs per se, they undoubtedly influence LLC comprehension for the average individual in average legal contexts.

client in order to fulfill her role as advocate and consul may ultimately frustrate the attorney–client relationship.

To summarize, LLCs often contain complex syntax and vocabulary and abstract ideas that represent particular challenges for the lower level cognitive functions that subserve language comprehension. For individuals with impairments in these functions, the attempt to comprehend LLCs may be analogous to an attempt to construct a building on a base of sand: Without a firm cognitive foundation to underlie LLC comprehension, the comprehension will quickly collapse. Given that many populations within the legal system have conditions or disorders that are associated with impairments in these cognitive processes, the risk of ethical harms as a result of LLC comprehension is a real one.

### LLCs and the Demand For Inferences

A bankruptcy discharge does not discharge an individual debtor from any debt for an obligation to repay funds received as an educational benefit, scholarship, or stipend, unless excepting such debt from discharge would impose an undue hardship on the debtor and the debtor's dependents.

The second aspect of LLCs that raises potential ethical concerns is their need for inferences. Inferences are the process by which an individual integrates current information with noncurrent information to resolve gaps in meaning or coherency (Friese et al. 2008; McNamara and Magliano 2009). Because LLCs often represent novel and unique language samples, the ability of an individual to use inferences to bridge any meaning gaps may be limited, and this limitation may present ethical ramifications.

Our second example LLC, from the U.S. Bankruptcy code (11 U.S.C. § 523), illustrates the need for effective inference making during LLC comprehension. The comprehender of this LLC would need to make a number of different kinds of inferences. First, he would need to make automatic or minimal inferences to resolve the explicit textual ambiguity (Swinney and Osterhout 1990; McKoon and Ratcliff 1992; Moran and Gillon 2005). These inferences would allow the comprehender to understand that “such debt” means “any debt for an obligation to repay funds received as an educational benefit, scholarship, or stipend” and that “the debtor” means “an individual debtor.” Second, the comprehender would need to make elaborative or controlled inferences. These inferences are inferences that facilitate causal, predictive, and other gist-level aspects of comprehension (Virtue, van den Broek, and Linderholm 2006); to paraphrase, these inferences go beyond the literal words to allow the comprehender to deduce what the LLC is actually “saying” (Swinney and Osterhout 1990; McKoon and Ratcliff 1992; Moran and Gillon 2005). Elaborative inferences are particularly important: The ability to sacrifice literal meaning in order to derive implications appears to be associated with language competency (Noveck 2001; Pijnacker et al. 2009), but it also appears to require more effortful cognition (Bott and

Noveck 2004; Breheny, Katsos, and Williams 2006) and be limited by the comprehender's background knowledge and social-cognitive abilities<sup>4</sup> (Johnson and Turkstra 2012). By making causal and predictive inferences, then, the comprehender would infer that, at the “gist” level, “any debt for an obligation to repay funds received as an educational benefit, scholarship, or stipend” effectively means “school loans,” that other types of debt are discharged during a bankruptcy discharge, and that “undue hardship” likely means that “normal” hardship is insufficient. Even in this relatively simple example, therefore, successful LLC comprehension requires nontrivial automatic and elaborative inferences.

LLCs' inference-level demands again raise the risk of ethical concerns. The inference-level demands share the same broad risks associated with deficits in lower level cognition: Because successful comprehension will be predicated on the ability to make both automatic and elaborative inferences, any disruption in the inference-making process could slow or preclude comprehension. If this impeded or unsuccessful comprehension ultimately prevents an individual from meeting the necessary legal standard of understanding, then he may not be a fit subject for that particular legal proceeding. Additionally, if this unsuccessful comprehension precludes the individual from effectively communicating with his counsel, then the language comprehension problems may strain both the legal standards and the ethical rules of the attorney–client relationship.

Inference-level demands present at least two additional ethical risks. First, problems with inference making may be even more difficult for the attorney to accommodate. Not only might the attorney need to account for the working-memory and social cognition aspects, the attorney might need to overcome any gaps in the background-knowledge or vocabulary bases from which inferences are constructed; in effect, then, the lawyer would need to somehow compensate for the lifetime's worth of personal experiences that (ideally) would have given her client these abilities and knowledge. For example, the lawyer may be able to explain what the word “bankruptcy” means, but it may be an entirely different, much more difficult task for the lawyer to explain what the concept of “bankruptcy” is: Without the necessary elaborative inference skills, the client might simply be unable to aggregate the information needed to make the inferences that form this LLC's “gist” meaning of bankruptcy. Consequently, because these important elaborative inferences may also be the most difficult, the attorney may again be in a paradoxical situation in which the concepts she needs to advise

4. Social cognition is an umbrella term referring to the cognitive functions that encode and decode social stimuli. Generally included within social cognition are emotion recognition, theory of mind, perspective taking, and moral-based cognition (Beer and Ochsner 2006; Adolphs 2009).

her client on are the most challenging for her client to understand.

Second, problems with inference making may jeopardize the traditional role assignment within an attorney–client relationship. One of the most fundamentally important characteristics of the attorney–client relationship is its assignment of authority: The client chooses the goals or objectives of the legal representation, while the lawyer chooses the means or actions (ABA Rules 2014). In order for the client to choose goals or objectives, however, he will need to understand not just the literal meaning of the black-letter laws but also the broader implications of those laws, a task for which inferences will be essential. For example, the client who wants to file for bankruptcy will need to know not only what this and related LLCs say but also what the implicatures of “bankruptcy” signify. For example, the client needs to be able to infer that “bankruptcy” does not necessarily include other states of being without money; that is, the comprehender needs to be able to infer that “bankruptcy” and “being broke,” though quite similar, are not synonymous concepts. Similarly, the comprehender will need to infer that “bankruptcy” is not necessarily a permanent state; other aspects of the comprehender’s financial life, such as spending habits and financial literacy, may also impact his financial situation. If the client struggles with the inferences necessary to do this, however, he may not be able to choose a realistic or appropriate legal goal. This outcome could put the attorney in a difficult ethical quandary: If the attorney ignores her client’s proffered goals, then the attorney risks overstepping her authority even though she may be following a more sensible or appropriate legal course of action. If the attorney respects the client’s goals, however, she may risk pursuing legal goals that are frivolous, inappropriate, or otherwise discouraged. Accordingly, the balance between respecting the client’s wishes and providing competent, effective legal representation (often a difficult balance under optimal conditions) may be even more precarious if the client struggles to make the inferences required for LLC comprehension.

The complex conceptual nature of LLCs creates a clear need for inference making so that the comprehender can untangle the coherence gaps and implied meanings. For individuals who struggle with inferences, however, the ability to grasp the gestalt significance of LLCs may be compromised: While they may have a solid foundation upon which to build their comprehension, they may not be able to access the material needed to construct the comprehension “edifice.” Because LLC comprehension likely demands multiple inferential components, and because these demands are likely challenging for many populations, the risk of troublesome ethical outcomes as a result of LLC comprehension is genuine.

### LLCs and the Need For Accurate Situation Models

The parties in an action for an annulment, divorce, or legal separation may, subject to the approval of the court, stipulate

for a division of property, for maintenance payments, for the support of children, for periodic family support payments, or for legal custody and physical placement, in case a divorce or legal separation is granted or a marriage annulled.

The third aspect of LLCs that could create ethical implications is the requirement for a situation model that accurately captures the contextual factors in which LLCs generally occur. A situation model, or mental representation of the comprehended text, represents the cumulative endpoint of the language comprehension process, incorporating information from the current text or discourse, background information, and inferences (McNamara and Magliano 2009). Situation models have five dimensions: space, time, causation, intentionality, and protagonist (Zwaan and Radvansky 1998). The interaction between these dimensions, and the various weights they carry, however, are not fixed; they can differ based on the nature of the task and the nature of the individual (Zwaan and Radvansky 1998). The model itself is not static, either; the comprehender continually updates inferences and prior knowledge in order to create a situation model that “best fits” the text or discourse (Kintsch et al. 1990; Radvansky and Copeland 2001; Friese et al. 2008; Perez et al. 2015). Because LLCs often occur in legal contexts, which are complex social situations with a unique set of expectations and standards, the degree to which an individual can accurately create a “correct” situation model may vary tremendously,<sup>5</sup> and this variability might lead to incorrect or inappropriate understanding. Therefore, LLCs’ particularized situation models also present the risk of ethical concerns associated with language comprehension.

This third LLC, from a state law concerning divorce (Wisconsin Statutes 767.34 2015–2016), exemplifies the complex scenarios that a comprehender’s situation models need to capture. This LLC effectively says that the couple in a divorce can agree on what the terms of the divorce will be as long as the judge agrees. The mental representation necessary to accurately comprehend this, however, requires the aggregation of the various dimensions that characterize a divorce stipulation. The comprehender’s situation model for this LLC will contain a protagonist dimension (“the parties,” “the court”), a causal dimension (stipulation is predicated on the court’s approval and on the divorce being granted), an intentionality dimension (the comprehender’s desire to reach some stipulation), a spatial dimension (the physical depiction of the courtroom), and a time dimension (the literal temporal qualities of the stipulation and the relative temporal qualities of the stipulation as part of a the overall legal proceeding). The law’s assumption, however, is that the comprehender can manipulate both the prior knowledge and the inferences necessary to make

5. As a thought exercise, consider these two very simple sentences: “I was in the office today” and “I was in court today.” I suspect that the second sentence poses a much, much steeper challenge for constructing an accurate situation model than the first.

these five dimensions. The complex, artificial nature of LLCs may make this assumption impossible, leaving the comprehender with a situation model that fails due to lack of knowledge base or inference accuracy. Consequently, what the comprehender pictures in his head may not match what his judge and his lawyer think he should or expect him to, and this discrepancy could precipitate worrisome consequences.

Two aspects of situation-model construction stand out as particularly difficult for LCC contexts. First, there is a very real likelihood that the comprehender's situation model will diverge from the expected outcome. When reading or hearing this LLC, both the lawyer and the judge will almost certainly create mental representations that are accurate. Both have legal training and expertise, both have practical experience, and both have working knowledge of other areas of law. As a result, they can make a situation model that is not only complete and coherent but also, and more importantly, realistic and representative of the legal context that the dimensional aspects describe. The client, on the other hand, likely does not have any of these prior experiences. His situation model, therefore, will be "built" from whatever related background knowledge he has. For example, he may have information from television programs about legal proceedings, secondhand knowledge of an acquaintance's divorce, or general knowledge about how divorces usually happen. Using all of these for his inferences and situation model, then, the client will reach a mental representation that, while "best fitting," may not be contextually accurate or that may under- or overrepresent one of the model's dimensional aspects. Consequently, the client's ability to make informed or appropriate decisions based on his situation model may be limited, biased, or impaired.

Unfortunately, the client's capacity to simply correct his situation model may be limited as well. Even though comprehenders can generally incorporate new information into their situation model, the updating process is cognitively demanding (Radvansky and Copeland 2001) and is particularly challenging when a situation model must account for conflicting information (Rapp and Kendeou 2007, 2009). This inability to complete revisions is associated with difficulty replacing outdated information (O'Brien, Cook, and Gueraud 2010; Kendeou, Smith, and O'Brien 2013). As an example, the client's situation model may represent the causal and spatial aspects of "subject to the approval of the court" as a formal trial proceeding. Because trials are often long and expensive undertakings, the client's situation model may include these characteristics as well. Consequently, he may be less willing to consider a divorce stipulation because in his mental representation it will be colored as time- and money-consuming. If the lawyer or judge provides correct information (for example, explaining that "approval of the court" generally means a simple courtroom hearing or a review of paperwork), the client may not be able to easily or quickly update his situation model to overwrite his previous representations. Therefore, simply acquiring correct

information does not guarantee that the comprehender will be able to correct his comprehension model.<sup>6</sup>

Second, it is possible that the comprehender will bias some dimensional aspects of the situation model. It is important to remember that LLCs generally involve actual people in actual legal proceedings. In this example, the comprehender of this LLC would be one of the parties to the divorce. Being emotionally and personally invested in the LLC's context, the comprehender will almost certainly create a mental representation in which the protagonist and intention dimensions are given particular weight. For example, the comprehender might feel especially cheated or betrayed by other party. If he seeks to be retributive or uncompromising, then his situation model will be colored by these intentions (e.g., his comprehension of a "successful" divorce stipulation will reflect a one-sided outcome); this may put his mental representation at odds with the correct, "unbiased" representation. While this bias is inevitably human, it may also be impossible to remove from the comprehender's situation model. Consequently, any mental representation he has will bear this idiosyncratic influence, which may be incompatible with an LLC's "correct" situation model.

LLCs' demand for a complex situation model presents a more subtle risk for ethical problems. Assuming that the comprehender can physically construct a situation model, of whatever quality, his language and communication abilities are probably sufficient to let him communicate with his attorney and the judge, thereby satisfying the constitutional standards (LaVigne and Van Rybroek 2011). When the situation model is built from inaccurate or inappropriate information, or when the situation model's dimensional aspects are skewed, however, then the comprehender might not truly "comprehend" the LLC even though he can mentally represent it. This is particularly troublesome when the comprehender's external behavior based on that comprehension is indistinguishable from behavior based on more accurate comprehension. In this example, the comprehender might understand what a divorce stipulation is, and he might be able to explain it in his own words, but his situation modal, lacking formal legal expertise and individualized experience, likely creates a mental representation of a divorce stipulation that is cobbled together from knowledge and inferences he can pull together. Thus, when the comprehender model responds "yes" to the question "Do you understand what will happen in this stipulation?" both the judge and the lawyer may have little reason not to take that answer at face value even though the comprehender's understanding

---

6. Relatedly, the comprehender may likely be unable to monitor his own situation model. The need for cognitive self-monitoring, or metacognition, is a critical component of comprehension (Waggoner 1983; Singer 2013; Perez, Cain et al. 2015), and any sort of metacognitive regulation is likely to be difficult when the comprehender doesn't know what he doesn't know. Metacognition (or lack thereof) likely affects all steps of language comprehension, so its role in LLC comprehension should not be understated.

may be dimensionally skewed or incomplete. It is certainly true that everyone forms unique mental representations of any particular language sample. In legal contexts, however, where rights are at stake and where accurate comprehension is necessary for meaningful participation and fair outcomes, incomplete or inaccurate mental representations may lead an individual to make choices, goals, or expectations that he would not have made if his representation were more accurate.

As was the case for inference-level risks, however, the nature of the lawyer–client relationship may make the ethical dilemmas difficult to resolve. Because the client dictates his own legal goals, and because protagonist- and goal-oriented dimensions compose parts of the situation model, the lawyer’s attempt to “correct” these dimensions of her client’s model in order to improve his comprehension may stretch the permissibility of the attorney–client relationship. Suppose the client’s mental representation of this LLC is “a meeting with the judge where we do everything we can to make sure my soon-to-be-ex-wife gets as little money out of me as possible.” Should the lawyer attempt to “improve” the client’s comprehension? Or suppose the client’s brother and two best friends all went through and “lost” messy, combative divorce proceedings, and the client is convinced that all divorce judges always find in favor of the wife. Should the lawyer try to “correct” this belief and experience in order to increase the situation model’s accuracy? Answering these questions (which are, at least to me, not at all clear) would be left to the lawyer and the court, and whether or not these hypothetical clients’ comprehensions ultimately meet the necessary legal standards would also be a legal question. The ethical evaluations within these questions, however, appear to be very much debatable.

LLCs’ legal contexts create the need for a complex, accurate mental representation to achieve comprehension. Producing such a mental representation, however, likely requires cognitive ability and conceptual knowledge that many people, especially individuals with cognitive difficulties, may not have. Consequently, their ability to create a situation model may be questionable; even with a solid foundation and material with which to build their model, the finished product may simply be inappropriate. Because this mental representation will serve as the basis for both the comprehender’s conscious comprehension and subsequent behaviors, there is an obvious ethical need to ensure that this mental representation is as accurate and appropriate as possible; if it is not, then ethical issues may arise.

### **LLCs and the Idiosyncratic Nature of Legal Language in Context**

A will must be: in writing; signed by the testator or in the testator’s name by some other individual in the testator’s conscious presence and by the testator’s direction; and either signed by at least two individuals, each of whom signed within a reasonable time after the individual witnessed either

the signing of the will or the testator’s acknowledgement of that signature or acknowledgement of the will or acknowledged by the testator before a notary public or other individual authorized by law to take acknowledgements.

The fourth aspect of LLCs that could raise ethical concerns is the nature of legal language as a hybrid of multiple text genres. Because one of language’s primary functions is to convey information for a social purpose, context plays a significant role in shaping language form and content (Armstrong and Ferguson 2010). These contexts are defined as “genres,” which include narrative, exposition, and procedure. The narrative genre, which is the traditional genre used for language comprehension tasks (Ferstl, Rinck, and von Cramon 2005; Burin et al. 2014), is readily apparent in LLCs; because LLCs also fill procedural and administrative roles, however, a single-genre classification does not accurately reflect the multifaceted characteristic of most LLCs. It may be more appropriate, therefore, to view legal language as an amalgamation of traditional genre classifications. Despite being more accurate and realistic, however, this hybrid classification also presents potential ethical concerns because it may make LLCs even more difficult to comprehend.

This final example LLC, taken from the Uniform Probate Code (National Conference of Commissioners of on Uniform State Laws 2010), is representative of LLCs’ multigenre nature. The LLC details the various requirements of a legally valid will, and because it gives instructions on how to create a specific legal document within the larger societal context, it falls within a number of different text genres. First, it is a procedural text: It gives specific instructions that the reader must obey if he wants to make a valid will. In parallel, it is also an expository text: It describes what attributes constitute an official will. Finally, it is a narrative text: Because the reader of this text would by necessity be a potential testator, the text (as the reader comprehends it) exists within the narrative framework of the reader’s goal to create a will. Put another way, the text describes not only the procedural guidelines of writing a will but also the narrative progression of the reader as he goes through that procedure. Successful comprehension, therefore, would require a mental representation that is able to capture and to integrate these complementary text genres.

Consequently, the comprehender of this example LLC should have a situation model that contains representations for each of the multiple genre elements. For example, the comprehender’s situation model will contain a representation of “testator” (i.e., the protagonist dimension), that is, the comprehender in relation to the family members or friends whom he intends to include in his will (narrative); the comprehender in relation to the attorney and judge, with whom he is physically writing and enacting the will (procedural); and the comprehender as a legally recognized “testator” who is disposing of his estate in accordance with a set of legal rules (expository). The situation model, therefore, will be a composite of these various

representations, each of which exists simultaneously and each of which characterizes one aspect of the LLC in its real-world context.<sup>7</sup>

LLCs' hybrid nature creates perhaps the subtlest risks of ethical implications. As was true for the previous three examples, any impairment that compromises the client's ability to meet the controlling legal standard could call the validity of the legal decision or action into question. As was true for the situation model-level demands, however, it is likely that the ethical risks for this aspect of LLCs concern less the letter of the law and more the spirit. For example, this section's example LLC about writing a will spans narrative, procedural, and expository genres. It is not clear which of these genres should form the basis of the comprehender's understanding before the law can conclude that the comprehender understands the "nature" of this legal transaction as required by the legal standards. Because wills are legal documents used to perform predefined legal acts, the procedural side is arguably the most important. Because wills are also formulaic descriptions of certain legally recognized outcomes, however, the expository side may be most important. From the comprehender's perspective, however, the will is a part of his estate-planning or family goals, so the narrative side is arguably the most important. Theoretically, if the comprehender can build a situation model for at least one of these genres, then he may "understand" the LLC within the strict letter of the law; I would argue, however, that the spirit of the law, with its underlying protection of autonomy and due process, requires that the client understand all genre dimensions simultaneously because that understanding fully captures the LLC's actual meaning. Because this gestalt comprehension may be difficult for many individuals, any discrepancies between the client's actual comprehension and expected or ideal comprehension that influence his decisions or actions may be problematic.

The dynamic of the lawyer-client relationship again raises ethical risks. Because the lawyer's ethical guidelines mandate that she provide competent representation and that she handle the means of the legal outcomes, the lawyer's focus for our will-writing example may justifiably be on the LLC's procedural side: the lawyer would naturally want the will to be legally valid. Consequently, the lawyer may emphasize, explicitly or implicitly, the procedural dimensions of the LLC in her conversations with her client, and this emphasis may bias the client's situation model toward the procedural side. I doubt that this would violate black-letter ethics rules, but it does illustrate how

understated the ethical considerations can be for LLC comprehension.

To summarize, LLCs' composite genre nature runs the risk of creating ethical harm. Given the cognitive demands inherent in situation model-level comprehension, the need for a multigenre, integrated situation model may demand comprehension modes and processing capabilities that many individuals lack. It may not be enough to build a single construct out of proper materials on a firm foundation; the construct might require multiple facades, all of which are built around the same foundation and framework. Because a fully formed and integrated situation model is essential to ensure that the client understands the full extent of his legal goals and circumstances, however, any disruption or impediment in this model may defeat this understanding, and the law's safeguards should anticipate this risk.

In conclusion, there are four aspects of LLCs that present particular challenges for individuals who attempt to comprehend them. First, LLCs generally contain vocabulary, concepts, and syntax that challenge the lower level cognitive functions required for successful comprehension. Second, LLCs generally demand a high degree of inferential processing in order to resolve meaning gaps. Third, LLCs generally require a particularized situation model that overlaps with the correct or anticipated legal meaning. Fourth and finally, LLCs generally represent a hybrid of text genres that require additional mental representations. Taken together, these aspects likely make LLCs especially difficult to comprehend, and the resulting ethical concerns convincingly demonstrate that a suite of subtle and complex ethical issues falls within language comprehension's penumbra.

## ADDITIONAL CONSIDERATIONS

Although LLCs have numerous properties that make them problematic from a language-comprehension standpoint, the arguments I present here account for only a fraction of challenges that exist within modern-day legal systems. Again, while it is beyond the scope of this article to adequately identify and address these challenges, I next briefly mention additional factors that Neurolaw should consider as it attempts to resolve the complex interactions between law, ethics, cognition, and language.

First, it is essential to remember that language comprehension is only one part of language use. There are myriad other aspects of communication that will likely affect an individual's ability to navigate the contexts in which LLCs exist. These include, but are certainly not limited to, speech production, social cognition, native language/dialect, and auditory processing. These additional aspects likely bring their own ethical considerations, and since many of them tend to be comorbid, they may increase the risk of ethical problems exponentially. While language comprehension can explain a portion of this variance, it behooves Neurolaw to recognize that for individuals who actually encounter LLCs, language comprehension does not exist in a vacuum.

7. It is further possible that optimal comprehension of LLCs requires a dedicated comprehension "mode": Scholarship suggests that the brain is able to prime comprehension for various language genres, such that one genre of text is preferentially comprehended (Mesulam 2002; Powers et al. 2012). Consequently, an LLC comprehender may need to be able to use a dedicated "legal language" mode of comprehension that can facilitate the creation of these complicated, multigenre situation models.



Second, it is important to remember that the legal standards discussed in this essay are applicable only within the United States. Nevertheless, language and communication impairments affect humans all around the world (Hyter 2014). While the specific ethical concerns that arise from the U.S. legal standards are generally salient only within the United States, many of the underlying ethical notions (e.g., fairness, due process, the proper role of the lawyer, etc.) are equally important in other legal jurisdictions (The United Nations General Assembly 1966; European Union 2000). Therefore, while Neurolaw should be mindful of the specific ethical concerns that arise from the legal standards in the United States, Neurolaw should be equally willing to consider similar ethical concerns in other legal jurisdictions as well (Wszalek 2015).

Finally, it is important to note that LLCs are as variable and diverse as other types of language. I picked the four examples in this article because they represent relatively conventional legal scenarios that the average person is likely to encounter throughout the course of his or her life. Nevertheless, there are countless other legal contexts and situations, some more difficult and some less difficult. Consequently, the relative challenge presented by each of the comprehension-level demands (lower level, inference level, situation model level) will also vary, so strategies to reduce language demand that are applicable to some situations (e.g., reducing syntax or semantic complexity) may be less applicable in others.

## CONCLUSION

With their linguistic and conceptual complexity and their need for sophisticated inferences and specialized situation models, LLCs are a language phenomenon that characterizes modern law. These same properties, however, raise ethical concerns in the framework of legal standards and ethics rules that implicate language and communication. The challenging nature of LLCs, the dynamics of the attorney–client relationship, the prevalence of cognitive conditions that can impair language comprehension in populations within the legal system, and the general inability of the legal system to detect and accommodate language impairments all suggest that these ethical concerns are not mere conjectures but rather pressing problems that can directly affect legal outcomes. Because of the enormous societal costs associated with legal proceedings (Wszalek and Turkstra 2015), and because of the fundamental importance of the legal rights that are implicated, Neurolaw should not overlook language comprehension as it seeks to study issues that have value not just as academic discussion but also as societal advancement.

## ACKNOWLEDGMENTS

This work was supported in part by the National Center for Medical Rehabilitation Research (NCMRR) of the Eunice Kennedy Shriver National Institute of Child Health

and Human Development (NICHD) under Grant R01 HD071089 (PI L. Turkstra). The author would like to acknowledge and thank Dr. Lyn Turkstra and the Communication and Cognition Lab, the University of Wisconsin–Madison’s Neuroscience Training Program, and the University of Wisconsin–Madison’s Neuroscience and Public Policy Program. ■

## REFERENCES

- Adolphs, R. 2009. The social brain: Neural basis of social knowledge. *Annual Review of Psychology* 60:693–716.
- American Bar Association, Center for Professional Responsibility. 2014. *Model Rules of Professional Conduct*. Chicago, IL: ABA Publishing.
- Archibald, L. M., T. Levee, and T. Olino. 2015. Attention allocation: Relationships to general working memory or specific language processing. *Journal of Experimental Child Psychology* 139:83–98.
- Armstrong, E., and A. Ferguson. 2010. Language, meaning, context, and functional communication. *Aphasiology* 24(4):480–496.
- Beer, J. S., and K. N. Ochsner. 2006. Social cognition: A multi level analysis. *Brain Research* 1079(1):98–105.
- Bott, L., and I. A. Noveck. 2004. Some utterances are underinformative: The onset and time course of scalar inferences. *Journal of Memory and Language* 51(3):437–457.
- Brady v. United States. 1970. (U.S. Supreme Court, 1970).
- Breheny, R., N. Katsos, and J. Williams. 2006. Are generalised scalar implicatures generated by default? An on-line investigation into the role of context in generating pragmatic inferences. *Cognition* 100(3):434–463.
- Burin, D. I., L. Acion, J. Kurczek, M. C. Duff, D. Tranel, and R. E. Jorge. 2014. The role of ventromedial prefrontal cortex in text comprehension inferences: Semantic coherence or socio-emotional perspective? *Brain and Language* 129:58–64.
- Chen, E., E. Gibson, and F. Wolf. 2005. Online syntactic storage costs in sentence comprehension. *Journal of Memory and Language* 52(1):144–169.
- Constable, R. T., K. R. Pugh, E. Berroya, W. E. Mencl, M. Westerveld, W. Ni, and D. Shankweiler. 2004. Sentence complexity and input modality effects in sentence comprehension: An fMRI study. *Neuroimage* 22(1):11–21.
- Cooper, V. G., and P. A. Zapf. 2008. Psychiatric patients’ comprehension of *miranda* rights. *Law and Human Behavior* 32:390–405.
- Cooper v. Oklahoma. 1996. (U.S. Supreme Court, 1996).
- Dusky v. United States. 1960. (U.S. Supreme Court, 1960).
- European Union. 2000. *Charter of fundamental rights of the European Union*. Official Journal of the European Communities 2000/C 364/01.
- Farrer, T. J., and D. W. Hedges. 2011. Prevalence of traumatic brain injury in incarcerated groups compared to the general population: A meta-analysis. *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 35(2):390–94.

- Fazel, S., P. Lichtenstein, M. Grann, and N. Langstrom. 2011. Risk of violent crime in individuals with epilepsy and traumatic brain injury: A 35-year Swedish population study. *PLOS Medicine* 8(12): e1001150.
- Fazel, S., and K. Seewald. 2012. Severe mental illness in 33,588 prisoners worldwide: Systematic review and meta-regression analysis. *The British Journal of Psychiatry* 200(5):364–73.
- Ferstl, E. C., M. Rinck, and D. Y. von Cramon. 2005. Emotional and temporal aspects of situation model processing during text comprehension: An event-related fMRI study. *Journal of Cognitive Neuroscience* 17(5):724–39.
- Friese, U., R. Rutschmann, M. Raabe, and F. Schmalhofer. 2008. Neural indicators of inference processes in text comprehension: An event-related functional magnetic resonance imaging study. *Journal of Cognitive Neuroscience* 20(11):2110–24.
- Godinez v. Moran. 1993. (U.S. Supreme Court, 1993).
- Guan, C. Q., W. Meng, R. Yao, and A. M. Glenberg. 2013. The motor system contributes to comprehension of abstract language. *PLoS One* 8(9):e75183.
- Helms, J. 2007. Analysis of the components of the miranda warning. *Journal of Forensic Psychology Practice* 7(3):59–76.
- Hoffman, P., E. Jefferies, S. Ehsan, R. W. Jones, and M. A. Lambon Ralph. 2012. How does linguistic knowledge contribute to short-term memory? Contrasting effects of impaired semantic knowledge and executive control. *Aphasiology* 26(3–4):383–403.
- Hyter, Y. D. 2014. A conceptual framework for responsive global engagement in communication sciences and disorders. *Topics in Language Disorders* 34(2):103–20.
- In re Estate of Laubenheimer. 2013. (Wisconsin Supreme Court, 2013).
- In re Guardianship of O'Brien. 2014. (Minnesota Supreme Court, 2014).
- Jackson, R. L., M. A. Lambon Ralph, and G. Pobric. 2015. The timing of anterior temporal lobe involvement in semantic processing. *Journal of Cognitive Neuroscience* 27(7):1388–96.
- Johnson, J. E., and L. S. Turkstra. 2012. Inference in conversation of adults with traumatic brain injury. *Brain Injury* 26(9):1118–26.
- Keitel, C., E. Schroger, K. Saupe, and M. M. Muller. 2011. Sustained selective intermodal attention modulates processing of language-like stimuli. *Experimental Brain Research* 213(2–3):321–27.
- Kendeou, P., E. R. Smith, and E. J. O'Brien. 2013. Updating during reading comprehension: Why causality matters. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 39(3):854–65.
- Kintsch, W. 1988. The role of knowledge in discourse comprehension: A construction-integration model. *Psychological Review* 95(2):163–82.
- Kintsch, W., D. Welsch, F. Schmalhofer, and S. Zimny. 1990. Sentence memory: A theoretical analysis. *Journal of Memory and Language* 29:133–59.
- LaVigne, M., and G. J. Van Rybroek. 2011. Breakdown in the language zone: The prevalence of language impairments among juvenile and adult offenders and why it matters. *UC Davis Journal of Juvenile Law & Policy* 15(1):37–124.
- LaVigne, M., and G. J. Van Rybroek. 2014. 'He got in my face so I shot him': How defendants' language impairments impair attorney–client relationships. *CUNY Law Review* 17:69–121.
- Loiselle, M., I. Rouleau, D. K. Nguyen, F. Dubeau, J. Macoir, C. Whatmough, F. Lepore, and S. Joubert. 2012. Comprehension of concrete and abstract words in patients with selective anterior temporal lobe resection and in patients with selective amygdalo-hippocampectomy. *Neuropsychologia* 50(5):630–39.
- Lucassen, P. J., and C. A. Oomen. 2016. Stress, hippocampal neurogenesis and cognition: Functional correlations. *Frontiers in Biology* 11(3):182–92.
- Lupien, S. J., F. Maheu, M. Tu, A. Fiocco, and T. E. Schramek. 2007. The effects of stress and stress hormones on human cognition: Implications for the field of brain and cognition. *Brain and Cognition* 65(3):209–37.
- McElree, B., S. Foraker, and L. Dyer. 2003. Memory structures that subserve sentence comprehension. *Journal of Memory and Language* 48:67–91.
- McKoon, G., and R. Ratcliff. 1992. Inference during reading. *Psychological Review* 99(4):440–66.
- McKoon, G., and R. Ratcliff. 2007. Interactions of meaning and syntax: Implications for models of sentence comprehension. *Journal of Memory and Language* 56(2):270–90.
- McNamara, D. S., and J. Magliano. 2009. Toward a comprehensive model of comprehension. *Psychology of Learning and Motivation* 51:297–384.
- Mesulam, M. 2002. The human frontal lobes: Transcending the default mode through contingent encoding. In *Principles of frontal lobe function*, ed. D. Stuss and R. Knight, 8–30. New York, NY: Oxford University Press.
- Miranda v. Arizona. 1966. (U.S. Supreme Court, 1966).
- Moran, C., and G. Gillon. 2005. Inference comprehension of adolescents with traumatic brain injury: A working memory hypothesis. *Brain Injury* 19(10):743–51.
- National Conference of Commissioners of on Uniform State Laws. 2010. *Uniform Probate Code*. Chicago, IL: Uniform Law Commission.
- Noveck, I. A. 2001. When children are more logical than adults: Experimental investigations of scalar implicature. *Cognition* 78:165–88.
- O'Brien, E. J., A. E. Cook, and S. Gueraud. 2010. Accessibility of outdated information. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 36(4):979–91.
- Padilla v. Kentucky. 2010. (U.S. Supreme Court, 2010).
- Payne, B. K., V. Time, and R. R. Gainey. 2006. Police chiefs' and students' attitudes about the miranda warnings. *Journal of Criminal Justice* 34(6):653–60.
- Perez, A., K. Cain, M. C. Castellanos, and T. Bajo. 2015. Inferential revision in narrative texts: An ERP study. *Memory & Cognition* 43(8):1105–35.
- Pijnacker, J., P. Hagoort, J. Buitelaar, J. P. Teunisse, and B. Geurts. 2009. Pragmatic inferences in high-functioning adults with autism and Asperger syndrome. *Journal of Autism and Developmental Disorders* 39(4):607–18.

- Powers, C., R. Bencic, W. S. Horton, and M. Beeman. 2012. Hemispheric inference priming during comprehension of conversations and narratives. *Neuropsychologia* 50(11):2577–83.
- Radvansky, G. A., and D. E. Copeland. 2001. Working memory and situation model updating. *Memory & Cognition* 29(8):1073–80.
- Rapp, D. N., and P. Kendeou. 2007. Revising what readers know: Updating text representations during narrative comprehension. *Memory & Cognition* 35(8):2019–32.
- Rapp, D. N., and P. Kendeou. 2009. Noticing and revising discrepancies as texts unfold. *Discourse Processes* 46(1):1–24.
- Rogers, R., H. L. Blackwood, C. E. Fiduccia, J. A. Steadham, E. Y. Drogin, and J. E. Rogstad. 2012. Juvenile Miranda warnings: Perfunctory rituals or procedural safeguards? *Criminal Justice and Behavior* 39(3):229–49.
- Rogers, R., C. E. Fiduccia, E. Y. Drogin, J. A. Steadham, J. W. Clark III, and R. J. Cramer. 2013. General knowledge and misknowledge of Miranda rights: Are effective Miranda advisements still necessary? *Psychology, Public Policy, and Law* 19:432–52.
- Rogers, R., L. L. Hazelwood, K. W. Sewell, D. W. Shuman, and H. L. Blackwood. 2008. The comprehensibility and content of juvenile Miranda warnings. *Psychology, Public Policy, and Law* 14(1):63–87.
- Rost, G. C., and K. K. McGregor. 2012. Miranda rights comprehension in young adults with specific language impairment. *American Journal of Speech-Language Pathology* 21:101–8.
- Singer, M. 2013. Validation in reading comprehension. *Current Directions in Psychological Science* 22(5):361–66.
- Snow, P. C., and M. B. Powell. 2011. Oral language competence in incarcerated young offenders: Links with offending severity. *International Journal of Speech-Language Pathology* 13(6):480–89.
- Snow, P. C., M. B. Powell, and D. D. Sanger. 2012. Oral language competence, young speakers, and the law. *Language, Speech, and Hearing Services in Schools* 43:496–506.
- Swinney, D. A., and L. Osterhout. 1990. Inference generation during auditory language comprehension. In *Inferences and text comprehension*, ed. A. C. Graesser and G. H. Bower, 17–32. San Diego, CA: Academic Press.
- The United Nations General Assembly. 1966. International Covenant on Civil and Political Rights. *Treaty Series* 999 (December): 171.
- Vigliocco, G., S. T. Kousta, P. A. Della Rosa, et al. 2014. The neural representation of abstract words: The role of emotion. *Cerebral Cortex* 24(7):1767–77.
- Virtue, S., P. van den Broek, and T. Linderholm. 2006. Hemispheric processing of inferences: The effects of textual constraint and working memory capacity. *Memory & Cognition* 34(6):1341–54.
- Wagoner, S. A. 1983. Comprehension monitoring: What is it and what we know about it. *Reading Research Quarterly* 18(3):328–46.
- Williams, W. H., G. Cordan, A. J. Mewse, J. Tonks, and C. N. Burgess. 2010. Self-reported traumatic brain injury in male young offenders: A risk factor for re-offending, poor mental health and violence? *Neuropsychological Rehabilitation* 20(6):801–12.
- Wilson, J. 1989. *On the boundaries of conversation*. New York, NY: Pergamon Press.
- Wilson-Mendenhall, C. D., W. K. Simmons, A. Martin, and L. W. Barsalou. 2013. Contextual processing of abstract concepts reveals neural representations of nonlinguistic semantic content. *Journal of Cognitive Neuroscience* 25(6):920–35.
- Wisconsin Statutes. 2015–2016. Chapter 853.01 (2015–2016).
- Wisconsin Statutes. 2015–2016. Chapter 767.34 (2015–2016).
- Wszalek, J. A. 2015. Soziale kompetenz: A comparative examination of the social-cognitive processes that underlie legal definitions of mental competency in the United States, German, and Japan. *Fordham International Law Journal* 29:102–32.
- Wszalek, J. A., and L. S. Turkstra. 2015. Language impairments in youths with traumatic brain injury: Implications for participation in criminal proceedings. *Journal of Head Trauma Rehabilitation* 30(2):86–93.
- Zwaan, R. A., and G. A. Radvansky. 1998. Situation models in language comprehension and memory. *Psychological Bulletin* 123(2):162–85.

# Language Impairments in Youths With Traumatic Brain Injury: Implications for Participation in Criminal Proceedings

Joseph A. Wszalek, BS; Lyn S. Turkstra, PhD

As many as 30% of incarcerated juveniles have a history of traumatic brain injury (TBI). Moderate or severe TBI is associated with a high risk of impairment in language comprehension and expression, which may have profound effects on juveniles' ability to understand and express themselves in criminal proceedings. In this article, we review common language impairments in youths with TBI and discuss potential effects of these impairments on 3 stages of US criminal proceedings: (1) initial encounter with law enforcement; (2) interrogation and Miranda rights; and (3) competence to undergo trial proceedings. We then describe language assessment tools and procedures that may be helpful in legal contexts. Our aim was to inform clinicians and legal staff working with juvenile defendants with TBI, with the long-term goal of developing empirically based guidelines to ensure that juvenile defendants with TBI can fully and effectively participate in criminal proceedings. **Key words:** *adolescent, brain injury, child, criminal proceedings, juvenile crime, language*

**T**HE COSTS OF criminal justice in the United States are staggering. In 2011, total government spending on the criminal justice system exceeded \$261 billion.<sup>1</sup> By the end of 2012, more than 6.9 million individuals were supervised by adult correctional systems, nearly 1 of every 35 adults.<sup>2</sup> Perhaps, unsurprisingly, the criminal justice system supervises a comparably large population of youths: in 2007, the youth detention rate was 336 per 100 000, approximately 10 times the rates in other first-world countries,<sup>3</sup> and the arrest rate for youths aged 10 to 17 years exceeds 4000 per 100 000.<sup>4</sup> It is well established that rates of traumatic brain injury (TBI) are significantly higher in these correctional populations than in the general population, and an estimated 30% of incarcerated youths have a preincarceration his-

tory of TBI.<sup>5–7</sup> For youth offenders, this percentage may approach 50%.<sup>8</sup>

Moderate or severe TBI in childhood or adolescence can cause a host of behavioral and cognitive deficits.<sup>9</sup> Among these deficits, one with significant potential effects on legal interactions is impairment in language comprehension and production.<sup>10</sup> Because criminal justice proceedings are complex social interactions that require high-level cognitive abilities, these proceedings have the ready potential to present significant challenges for youths with TBI. Possible links between language impairments and criminal behavior have been discussed in the legal and social science literature since the 1920s,<sup>11</sup> yet there are no uniform guidelines for managing juvenile defendants with language impairments.

In this article, we review common language impairments in youths with TBI and discuss implications for 3 phases of criminal proceedings: (1) initial encounter with law enforcement; (2) interrogation and Miranda rights; and (3) competence to undergo trial proceedings. We then consider methods of language assessment that could inform legal proceedings for juvenile defendants with TBI. Our aim was to inform clinicians and legal staff working with juvenile defendants and ultimately to develop empirically based guidelines to ensure that juvenile defendants can fully and effectively participate in criminal proceedings. The article is based on proceedings in the United States, which has the highest rate of

**Author Affiliations:** *Department of Communicative Disorders, University of Wisconsin–Madison.*

*This work was supported in part by Fellowship Award P015B100189 to the first author through the Center for European Studies. The authors thank UW–Madison Law Professor David Schultz, for information related to pretrial procedures, and Drs Elena Plante and Laida Restrepo, for assistance with assessment recommendations.*

*The authors have no conflicts of interest to report.*

**Corresponding Author:** *Lyn S. Turkstra, PhD, Department of Communicative Disorders, University of Wisconsin–Madison, 1975 Willow Dr, Madison WI 53706 (lyn.turkstra@wisc.edu).*

DOI: 10.1097/HTR.0000000000000130

youth incarceration in the world<sup>12</sup>; however, although criminal proceedings in other countries can differ significantly from those in the United States, the basic language challenges are likely to be similar because of their underlying reliance on the same set of language and cognitive abilities.

## **COMMON LANGUAGE IMPAIRMENTS IN YOUTHS WITH TBI**

Aphasia is rare after TBI, unless there is focal damage to the left hemisphere, but problems in language comprehension and expression are common after moderate or severe TBI in childhood or adolescence and are consequences of deficits in cognitive functions such as attention,<sup>13</sup> speed of thinking,<sup>14</sup> working memory,<sup>15</sup> declarative learning,<sup>16</sup> and executive functions.<sup>17</sup> In the following section, we summarize 2 broad categories of language problems reported in children and adolescents with TBI: problems in understanding spoken and written language, and problems in expression (speaking and writing). We then consider how these impairments can affect participation in criminal proceedings. For the purposes of this article, we are focusing specifically on language rather than overall communication. It is important to recognize, however, that justice system interactions can be profoundly affected by other aspects of communication such as auditory processing disorders<sup>18</sup> and disorders of speech production.<sup>19</sup>

### **Language comprehension**

Juvenile defendants who sustained a TBI early in development may have poor basic language decoding skills and slow information processing speed,<sup>20</sup> which, combined with verbal learning problems that affect vocabulary acquisition, can result in poor reading and listening comprehension.<sup>21</sup> While children with TBI generally improve in their abilities as they develop, there is evidence that the earlier the injury, the greater the effects on language later in life.<sup>22</sup> The most significant deficits are in comprehension of complex language forms (eg, sentences with embedded clauses)<sup>23</sup>; comprehension of abstract language, such as idioms, sarcasm, and humor<sup>24–28</sup>; deriving the gist or main meaning of discourse<sup>29</sup>; and understanding long or rapidly spoken sentences that tax working memory.<sup>23</sup> Language comprehension in youths with TBI also may be affected by impairments in emotion recognition (eg, recognizing the difference between an irritated facial expression and anger) and theory of mind (appreciating that others have thoughts and these thoughts influence their actions). Facial expressions and vocal tone, in particular, can be critical cues to a speaker's intent, and failing to understand these cues can lead to misunderstandings and inappropriate reactions. Likewise,

what we believe about others thoughts and intentions influences how we understand what they say and write, and the inability to take another's perspective can lead to problems not only in understanding what that person is saying (eg, if you know something about how police officers think, you can understand that "What are you kids up to?" might refer to illegal activities) but also in understanding why they say it (eg, that the police officer is not making social chit-chat).

### **Language expression**

Children and adolescents with TBI may have impairments in specific language functions such as vocabulary<sup>21</sup> or verbal fluency,<sup>30,31</sup> but the most debilitating problems may be deficits in pragmatic language.<sup>32</sup> Pragmatic language impairments include producing less information than peers,<sup>33</sup> poor organization of discourse,<sup>34</sup> and difficulty using language for social functions such as explaining one's actions or negotiating for privileges.<sup>26</sup> As with language comprehension, language expression can be affected by impairments in emotion recognition and theory of mind, particularly in saying something in a way that will meet the needs of a listener (eg, adding details to your story because you recognize that the listener did not see what you saw).

## **THE LEGAL FRAMEWORKS OF THE CRIMINAL JUSTICE SYSTEM**

A basic understanding of the US legal framework is necessary to fully appreciate the challenges youths with TBI can face within the criminal justice system. The United States is a federalist nation in which governmental authority is divided between the various states governments and the unifying federal government.<sup>35</sup> The powers of the federal government are defined by the US Constitution, and all remaining government powers are reserved for the state governments. One of the most important and historic state powers is the so-called "police power," which gives a state the power to pass laws that concern the welfare and safety of the state's citizens.<sup>36,37</sup> This police power is the basis for the state's abilities to define and punish criminal behavior.<sup>36,37</sup> Therefore, each of the 50 states passes and enacts its own criminal statutes. This is significant in that (1) one state may have different criminal laws than those of another; and (2) the federal government generally lacks the ability to create a national legal definition for any given crime. The police power is not limitless, however; under the US Constitution's Fourteenth Amendment, state laws must comply with the Bill of Rights. This has allowed the US Supreme Court, which determines whether or not laws are constitutionally valid, to define many important rights related to different stages of criminal proceedings. These basic rights (right to notice and counsel, and right against

self-incrimination) apply both to standard criminal justice proceedings and to juvenile court proceedings.<sup>38</sup> In the following sections, we consider a number of the most important stages in the criminal procedure process and the potential challenges that these contexts could create for youths with TBI.

### **INITIAL ENCOUNTER WITH LAW ENFORCEMENT**

A youth's first encounter with the language demands of the criminal justice system would most likely be an encounter with police. Initial encounters with police are exceedingly common: at least 20 million traffic stops alone occur in the United States every year.<sup>39</sup> Such an encounter presents the opportunity for 2 possible legal outcomes. The first would be either a "seizure" or an arrest. The second would be a brief detention, commonly referred to as a "Terry stop," after the name of the US Supreme Court case in which such detentions were described.<sup>40</sup> In a Terry stop, a law enforcement officer may stop a person for a brief time and take additional steps to further investigate the matter.<sup>41</sup> Both of these outcomes fall under the US Constitution's Fourth Amendment, which protects an individual against unreasonable searches and seizures, but there is an important and significant distinction between these 2 outcomes. To make a constitutionally valid arrest, a law enforcement officer must have probable cause of criminal activity.<sup>40</sup> To make a valid Terry stop, however, a law enforcement officer must have reasonable suspicion of criminal activity. Because Terry stops are "less infringing" on an individual's Fourth Amendment rights, they require "less" justification.<sup>40</sup> Ultimately, both outcomes must be reasonable: did the law enforcement officer, based on the circumstances and his or her own rational inferences, have reasonable justification to make the encounter and reasonable justification to make the arrest or the Terry stop? The standard for reasonableness is an objective one. The court considers whether or not a normal person of "reasonable caution" would have acted the same way under the circumstances.<sup>40</sup> Therefore, we can conclude that, to optimally cooperate with law enforcement individuals during these encounters, a youth must have the language capabilities necessary to effectively communicate in a way that would satisfy a reasonably objective perspective.

Unfortunately, however, the language deficits often exhibited by youths with TBI can detrimentally affect this required level of communication. For example, poor basic language skills and slower processing speed could impair a youth's ability to follow and answer a line of questions. Law enforcement questioning during these encounters is almost always a series of specific questions designed to elicit closed answers,<sup>42</sup> so a youth with

TBI-related language impairment might not be able to quickly and accurately respond. These linguistic deficits could (reasonably and objectively) appear to be hesitation, defiance, or obstinacy; indeed, language competence problems are often perceived as a behavioral or conduct issue.<sup>8</sup> Difficulty in comprehending implied speech could lead a youth with TBI to answer questions inappropriately, thereby providing the wrong impression and affecting the law enforcement officer's viewpoint and rational inferences. For example, the question, "You and your friends having a good time tonight?" does not imply a literal answer, so a youth who answers literally might invite further questioning and suspicion. Impairments in emotion recognition and comprehension of nonverbal cues could compound the youth's ability to effectively communicate. For example, "You and your friends having a good time tonight?" means one thing when asked with a neutral tone of voice and deadpan expression and another when asked with a cheerful tone of voice and a smile. If a youth with TBI fails to recognize the difference in communicative intent, his or her interaction with the officer will be ineffective. Finally, impaired language could hinder a youth's ability to produce succinct, meaningful answers to law enforcement questions. Because the law enforcement questioning will be of an interview nature, a youth must be able to decide what questions are most important and what answers are most appropriate. If TBI impairs this process, then the youth's answers may be inappropriate: they may reveal too little or too much information, and the information may or may not be relevant.

In initial encounters, what ultimately matters is how a law enforcement official reasonably perceives the situation; thus, youths with TBI-related language impairments may face additional difficulties in what is an already-challenging communication setting. If a language impairment causes the youth to respond or act inappropriately, this could lead to a negative perception that influences the law enforcement officer's course of action. A Terry stop could become a full arrest, or an arrest could lead to an additional charge for failing to comply with the officer's requests. Therefore, youths with TBI-related language impairments are at a real risk of legal consequences if their impairments prevent them from effectively communicating under a reasonably objective standard.

### **INTERROGATION AND MIRANDA RIGHTS**

Perhaps, the most widely recognized language-based component of the US criminal justice system is the Miranda rights. Miranda warnings are a series of warnings that law enforcement officers must give to an individual who is in custody and subject to interrogative questioning.<sup>43</sup> The US Supreme Court established the

Miranda warnings to ensure that an individual who is interrogated by law enforcement officers is aware of his or her constitutional rights against self-incrimination. According to the Supreme Court, Miranda warnings must contain 3 components. First, the warnings must, “in clear and unequivocal terms,”<sup>43(pp467–468)</sup> inform the individual of his or her right to remain silent. Second, the warnings must explain that anything the individual said could be used against him or her in court. Third, the warnings must inform the individual that he or she has a right to a lawyer.<sup>43</sup> Anyone who wishes to waive these rights must do so knowingly and willingly or else the waiver is invalid.

Miranda warnings serve as a basis for subsequent Supreme Court decisions, and youths now enjoy expanded legal protection. For example, law enforcement officials must now take the age of the individual into consideration when administering Miranda warnings.<sup>44</sup> However, the US Supreme Court affirmed that no “formulaic” or specific language was required when delivering Miranda warnings and that Miranda warnings did not need to be delivered in any particular order.<sup>45</sup> Therefore, each state or lower jurisdiction is free to develop its own Miranda warnings and procedures as long as they are equivalent to the Supreme Court’s rulings. This has resulted in considerable variation among Miranda warnings. Rogers et al<sup>46,47</sup> analyzed hundreds of Miranda warnings and found significant variability in terms of reading level, overall length, and even content.

Competent comprehension of Miranda warnings presents a clear challenge for youths with TBI. Even for healthy adults, comprehension of Miranda warnings and the underlying concepts is hugely variable,<sup>48</sup> and research has shown that individuals with mental illness or intellectual disabilities show poorer understanding of Miranda warnings.<sup>47,49,50</sup> Miranda warnings hinge on an ability to understand abstract concepts (eg, legal rights, self-incrimination), to consider the effects of current actions on future events (eg, if I tell this police officer certain things, those things might be used against me later on), and to use theory of mind to make predictions about others’ behavior (eg, the police officer does not know exactly what I know, so if I tell him something, he might interpret it differently than I do), all of which could be impaired in youths with TBI. In a linguistically challenging context such as this, there is a risk that a youth with TBI will resort to minimal or “filler” responses such as “yeah,” “no,” “sure,” or “uh-huh.”<sup>8</sup> Not only do responses such as these seriously undermine the legal significance of Miranda warnings but the responses might also be interpreted in a way that reflects poorly on the youth. Miranda warnings that are given orally might be especially difficult for youths with TBI who have impaired comprehension and processing speed and the fact that the warnings are almost always given in a distracting

and emotionally stressful environment could further tax a youth’s linguistic abilities.

Miranda warnings serve an important constitutional and procedural role in the criminal justice system. If youths with TBI-related language impairments cannot comprehend the warnings, then doubts arise over whether that role is adequately fulfilled. Because the language of Miranda warnings is already exceptionally difficult, in both substance and form, youths with TBI-related language impairments are likely to find the language challenging to process. Such challenges could both compromise a youth’s immediate predicament (eg, failing to remain silent, or revealing self-incriminating information) and prevent him or her from receiving the constitutional protections to which he or she is entitled.

## **COMPETENCE TO UNDERGO TRIAL PROCEEDINGS**

Trial proceedings and interactions with lawyers also create potential challenges for juvenile defendants with TBI. The US Constitution guarantees criminal defendants the right to representation by a lawyer.<sup>51</sup> To be competent to stand trial, an individual must have “sufficient present ability to consult with his lawyer with a reasonable degree of rational understanding” and a “rational and factual understandings of the proceedings against him.”<sup>52</sup> This same legal standard is used for a guilty plea or a plea waiving the right to be represented by a lawyer.<sup>53</sup> Scripts for these pleas are generally created at a state level and implemented throughout the state, and they consist of a dialogue between the defendant and the judge in which the judge attempts to ensure that the defendant is acting knowingly and willingly (D. Schultz, JD, Oral communication, 2013). As was the case for Miranda, however, the US Supreme Court explicitly declined to require a standard procedure for determining competency, instead, leaving that task to the individual states.<sup>53</sup> Competency standards for juveniles vary considerably but are often centered on intelligence testing and psychiatric screening.<sup>54</sup> These broad guidelines, combined with the considerable degree of discretion that judges normally have in ruling on a defendant’s competency (D. Schultz, personal communication, 2013), mean that judges will not necessarily consider a defendant’s language ability as competency is decided.<sup>55</sup>

Both interacting with a defense lawyer and understanding the various pleas in trial proceedings pose heavy language demands. In addition to the demands mentioned earlier, interacting with a lawyer to understand trial proceedings and to provide facts and narratives relevant to the defense relies heavily on pragmatic language skills such as knowing how much and what to say in this particular context.<sup>11,56</sup> Although

lawyer-client interviews should ideally be more relaxed and accommodating than an encounter with law enforcement personnel, the extent to which the lawyer accommodates the defendant's language impairments will depend, first, on whether the lawyer actually knows the impairments exist, second, on his or her knowledge about how language impairments manifest in that specific context, and, third, on the lawyer's skill in making accommodations. In addition, the questioning necessary to produce the required facts may include the sort of closed-answer questions that can impair comprehension and impede a youth's ability to effectively communicate.<sup>42</sup> Language impairments can also lead lawyers and other justice personnel to make negative judgments about the defendant. As LaVigne and Van Rybroek stated:

Pragmatics is especially significant for juvenile and criminal justice practitioners, not to mention the defendants themselves, because deficits in this aspect of language and language use are common among those who come under the jurisdiction of juvenile and criminal court. At the same time many of the personal judgments the legal system makes about defendants are actually rooted in pragmatics.<sup>11(p56)</sup>

Language problems undoubtedly affect competency determinations as well. Significantly, a survey of National Register-listed juvenile forensic assessment experts<sup>54</sup> revealed that formal or informal language evaluation was not included in the battery of most common competency screenings. While language tests may be administered as part of a standard forensics assessment, the fact that language is generally not a standard component of competency testing could indirectly affect the validity of the screenings. With this in mind, we next discuss language assessment for youths with TBI that might be implemented within the criminal justice system.

### LANGUAGE ASSESSMENT IN JUVENILE DEFENDANTS WITH TBI

The following discussion has several caveats. First and most important, to our knowledge, there are no standard guidelines for either language screening or full language evaluation for youths in the criminal justice system. Ideally, given the high estimated prevalence of poor language and literacy skills among juvenile defendants as a whole,<sup>8</sup> every youth would be screened at first contact with the justice system. This would inform all subsequent legal proceedings and indicate when there is a need for extra efforts to ensure that the defendant completely understands all proceedings and can express him-self or herself effectively. Language evaluation also could identify youths who would benefit from approaches such as the response-to-intervention framework recently proposed for youths in the criminal justice system.<sup>57</sup> Absent standard guidelines, the following sec-

tion describes tests that are commonly used by speech-language pathologists in English-speaking countries and have features that lend themselves to the criminal justice context. We focus here on assessment for a specific purpose: to determine whether the defendant is able to meet the language demands of pretrial proceedings. This is not assessment for the purpose of *diagnosing* language impairment. In contexts such as school evaluations, a diagnosis of language impairment often is made if the total score on a test meets a certain criterion (eg, is 1 or 2 SDs below the mean of the standardization sample). Here, we are less concerned with diagnosis and more concerned with characterizing language comprehension and expression.

A second caveat is that standardized language tests are constructed to reflect typical language demands at a given age, not specific language content, form, and use in criminal proceedings. Most standardized language tests are not structured to allow examination of specific language structures (eg, whether the defendant understands passive construction or embedded noun-phrase clauses in specific legal text in a noisy courtroom under time pressure), so scores from a standardized language test might not predict how well a defendant will understand and use written and spoken language in actual criminal proceedings.

A third caveat is that, at the time of writing, there are no standardized language tests that explicitly consider youths with TBI (eg, that factor TBI-related cognitive impairments into test construction include youths with TBI in the standardization sample). Lack of TBI-specific tests is not a trivial issue, as language impairments may be easily over- or underestimated if test stimuli do not control for nonlanguage cognitive impairments that can affect test performance (eg, presenting stimuli in a distracting background or in a way that increases working memory load).<sup>58,59</sup>

With those caveats in mind, 2 widely used comprehensive language assessments might be helpful in evaluating juvenile offenders: the Comprehensive Assessment of Spoken Language<sup>60</sup> and the Clinical Evaluation of Language Fundamentals (CELF-5),<sup>61</sup> along with its sibling, the CELF-5 Metalinguistics test.<sup>62</sup> Both test batteries are normed for children aged 5 to 21 years, and both are a collection of tests that can be administered individually to test specific aspects of language function (eg, following directions, comprehension of spoken paragraphs). The benefit of using a battery of individually standardized tests is that assessment can be tailored to the individual needs and characteristics of the defendant. For example, if the defendant has to understand making inferences, the inference comprehension test can be given alone; likewise, if understanding paragraph-length spoken material is a concern. While administration of the full battery can take more



than 60 minutes, most individual tests take only 10 or 15 minutes to administer and thus might be feasible when assessment time is limited.

An earlier version of the CELF is available in Spanish,<sup>63</sup> and a Spanish version of CELF-5 likely will appear in the future. Both test language functions that are common in legal settings, such as understanding figurative language, making inferences, interpreting ambiguous statements, and deriving meaning from context. Standardization samples included children and adolescents with a wide range of abilities and standardization samples were large; however, age bands contained unequal numbers of examinees. For example, the CELF-5 Metalinguistics test was normed on 100 children at each of 5 to 12 years of age and only 100 individuals aged 17 to 21 years. Although neither test included youths with TBI, the authors of both tests described attempts to structure tests and items to minimize cognitive demands.

A third comprehensive language test to be published in 2015 is the Test of Integrated Language and Literacy Skills (TILLS).<sup>64</sup> The TILLS might be of particular interest for legal purposes because it evaluates spoken and written language, includes tests of connected language (eg, discourse), and integrates language testing with testing of immediate and delayed verbal memory, which commonly are impaired in youths with TBI.<sup>16</sup> Two of the TILLS authors previously published the Pediatric Test of Brain Injury<sup>65</sup> and that perspective informed TILLS construction. As with the Comprehensive Assessment of Spoken Language and the CELF, subparts of the TILLS were normed as individual tests and thus can be given alone.

A critical consideration in interpreting standardized test scores is that scores may be lower in youths from low-income populations, independent of whether the adolescent has a TBI, and these populations are over-represented in the criminal justice system. Also, bilingual children and youths may have lower standardized test scores that do not indicate language impairment but rather typical language abilities in bilingual speakers. Regardless of the underlying cause of test differences, however, youths with low language test scores are at risk for the problems described earlier in this article.

The most helpful language assessment in criminal proceedings may be systematic evaluation of comprehension of actual court documents and spoken language, supplemented by results of any standardized language and neuropsychological tests that have been administered. Test data should be considered in the context of educational, social, and medical history information from parents, teachers, or other service providers and results of any previous testing (eg, tests done to obtain support services in school).

## LOOKING AHEAD

Despite the potential difficulties that the criminal justice system can present to adolescents, there are clear indications that the law is beginning to recognize the value and utility of scientific information in the development of youth-oriented justice. For example, in recent decisions to abolish the death penalty and mandatory life imprisonment for adolescent offenders, the US Supreme Court noted that the decisions were based in part on biological and social science findings.<sup>66</sup> At the state level, governments are using research evidence to create comprehensive, community-based programs designed to optimize outcomes for at-risk youths,<sup>67,68</sup> including several programs designed specifically to identify and accommodate youths with TBI.<sup>69,70</sup> Finally, state-level judicial advisory committees make considerable efforts to update language used in judicial colloquies and other courtroom language, to accommodate individuals with language impairments (D. Schultz, personal communication, 2013). Significant though these advances are they do not obviate the language demands within the criminal justice system, particularly in the context of extraordinarily high rates of poor language skills among youth defendants in general.<sup>8</sup> Systematic language assessment, tailored to specific characteristics of legal proceedings, would inform law enforcement individuals, lawyers, and judges and would help juveniles with TBI navigate the complex and challenging legal language of the criminal justice process. Not only would this change help mediate the additional difficulties that youths with TBI-related language impairments face, but it would also move criminal justice one step closer to a system in which the legal rights of all youths are fully and faithfully protected.

## REFERENCES

1. Kyckelhahn T. *Justice Expenditure and Employment Extracts. Justice Expenditure and Employment Extracts Program*. Washington, DC: Bureau of Justice Statistics; 2014.
2. Glaze LE, Herberman EJ. *Correctional Populations in the United States, 2012*. Washington, DC: Bureau of Justice Statistics; 2013:1–13. NCJ 24396.
3. Mendel RA. *No Place for Kids: The Case for Reducing Juvenile Incarceration*. Baltimore, MD: The Annie E. Casey Foundation; 2011:1–49.
4. National Center for Juvenile Justice. *Juvenile Arrest Rates by Offense, Sex, and Race (1980-2011)*. Washington, DC: Department of Justice, Office of Juvenile Justice and Delinquency Program; 2014.

5. Davies RC, Williams WH, Hinder D, Burgess CN, Mounce LT. Self-reported traumatic brain injury and postconcussion symptoms in incarcerated youth. *J Head Trauma Rehabil.* 2012;27(3):E21–E27.
6. Farrer TJ, Frost RB, Hedges DW. Prevalence of traumatic brain injury in juvenile offenders: a meta-analysis. *Child Neuropsychol.* 2013;19(3):225–234.
7. Farrer TJ, Hedges DW. Prevalence of traumatic brain injury in incarcerated groups compared to the general population: a meta-analysis. *Prog Neuropsychopharmacol Biol Psychiatry.* 2011;35(2):390–394.
8. Snow PC, Powell MB. Oral language competence in incarcerated young offenders: links with offending severity. *Int J Speech Lang Pathol.* 2011;13(6):480–489.
9. Williams WH, Evans JJ. Brain injury and emotion: an overview to a special issue on biopsychosocial approaches in neurorehabilitation. *Neuropsychol Rehabil.* 2003;13(1/2):1–11.
10. Turkstra LS. Should my shirt be tucked in or left out? The communication context of adolescence. *Aphasiology.* 2000;14(4):349–364.
11. LaVigne M, Van Rybroek GJ. Breakdown in the language zone: the prevalence of language impairments among juvenile and adult offenders and why it matters. <http://ssrn.com/abstract=1663805>. Published 2011. Accessed January 22, 2015.
12. Neal H. *Cross-National Comparison of Youth Justice*. Salford, England: Youth Justice Board, The University of Salford; 2008.
13. Catroppa C, Anderson VA, Morse SA, Haritou F, Rosenfeld JV. Children's attentional skills 5 years post-TBI. *J Pediatr Psychol.* 2007;32(3):354–369.
14. Jonsson CA, Catroppa C, Godfrey C, Smedler AC, Anderson V. Cognitive recovery and development after traumatic brain injury in childhood: a person-oriented, longitudinal study. *J Neurotrauma.* 2013;30(2):76–83.
15. Roncadin C, Guger S, Archibald J, Barnes M, Dennis M. Working memory after mild, moderate, or severe childhood closed head injury. *Dev Neuropsychol.* 2004;25(1/2):21–36.
16. Hanten G, Chapman SB, Gamino JF, et al. Verbal selective learning after traumatic brain injury in children. *Ann Neurol.* 2004;56:847–853.
17. Levin HS, Hanten G. Executive functions after traumatic brain injury in children. *Pediatr Neurol.* 2005;33(2):79–93.
18. Moncrieff DW, Demarest BS, Morner ER, Littlepage R. Prevalence and severity of auditory processing deficits in adjudicated adolescents screened with dichotic listening tests: implications for diagnosis and intervention. *Semin Hear.* 2014;35(1):39–50.
19. Togher L, Balandin S, Young K, Given F. Development of a communication training program to improve access to legal services for people with complex communication needs. *Top Lang Dis.* 2006;26(3):199–209.
20. Ewing-Cobbs L, Barnes M. Linguistic outcomes following traumatic brain injury in children. *Semin Pediatr Neurol.* 2002;9(3):209–217.
21. Zetterqvist B, Jennische M. Linguistic difficulties in children and adolescents after acquired brain injury: a retrospective study. *J Pediatr Rehabil Med.* 2010;3(4):251–258.
22. Ewing-Cobbs L, Prasad MR, Kramer L, et al. Late intellectual and academic outcomes following traumatic brain injury sustained during early childhood. *J Neurosurg.* 2006;105(4)(suppl):287–296.
23. Turkstra LS. The effect of stimulus presentation rate on syntax test performance in brain-injured adolescents. *Aphasiology.* 1998;12(6):421–433.
24. Dennis M, Barnes MA. Knowing the meaning, getting the point, bridging the gap, and carrying the message: aspects of discourse following closed head injury in childhood and adolescence. *Brain Lang.* 1990;39:428–446.
25. Dennis M, Purvis K, Barnes MA, Wilkinson M, Winner E. Understanding of literal truth, ironic criticism, and deceptive praise following childhood head injury. *Brain Lang.* 2001;78(1):1–16.
26. Turkstra LS, McDonald S, Kaufmann PM. Assessment of pragmatic communication skills in adolescents after traumatic brain injury. *Brain Inj.* 1996;10(5):329–345.
27. Docking K, Murdoch BE, Jordan FM. Interpretation and comprehension of linguistic humour by adolescents with head injury: a group analysis. *Brain Inj.* 2000;14(1):89–108.
28. Towne RL, Entwisle LM. Metaphoric comprehension in adolescents with traumatic brain injury and in adolescents with language learning disability. *Lang Speech Hear Serv Sch.* 1993;24:100–107.
29. Chapman SB, Sparks G, Levin HS, et al. Discourse macrolevel processing after severe pediatric traumatic brain injury. *Dev Neuropsychol.* 2004;25(1/2):37–60.
30. Brookshire BL, Chapman SB, Song J, Levin HS. Cognitive and linguistic correlates of children's discourse after closed head injury: a three-year follow-up. *J Int Neuropsychol Soc.* 2000;6(7):741–751.
31. Hanten G, Xiaoqi L, Newsome MR, et al. Oral reading and expressive language after childhood traumatic brain injury: trajectory and correlates of change over time. *Top Lang Dis.* 2009;29(3):236–248.
32. Yeates KO, Swift E, Taylor HG, et al. Short- and long-term social outcomes following pediatric traumatic brain injury. *J Int Neuropsychol Soc.* 2004;10(3):412–426.
33. Vu JA, Babikian T, Asarnow RF. Academic and language outcomes in children after traumatic brain injury: a meta-analysis. *Except Child.* 2011;77(3):263–281.
34. Morse S, Haritou F, Ong K, Anderson V, Catroppa C, Rosenfeld J. Early effects of traumatic brain injury on young children's language performance: a preliminary linguistic analysis. *Pediatr Rehabil.* 1999;3(4):139–184.
35. *National Federation of Independent Business v Sebelius* (US Supreme Court 2012).
36. *Chicago, Burlington, & Quincy Railway Company v People of the State of Illinois* (US Supreme Court 1906).
37. *Bond v United States* (US Supreme Court 2011).
38. *In re Gault* (US Supreme Court 1967).
39. Stuntz WJ. The political constitution of criminal justice. *Harv Law Rev.* 2006;119:780–851.
40. *Terry v Ohio* (US Supreme Court 1968).
41. *Hibel v Sixth Judicial Dist Court of Nevada Humboldt County* (US Supreme Court 2004).
42. Snow PC, Powell MB, Sanger DD. Oral language competence, young speakers, and the law. *Lang Speech Hear Serv Sch.* 2012;43(4):496–506.
43. *Miranda v Arizona* (US Supreme Court 1966).
44. *J.D.B. v North Carolina* (US Supreme Court 2011).
45. *California v Prysock* (US Supreme Court 1981).
46. Rogers R, Hazelwood LL, Sewell KW, Shuman DW, Blackwood HL. The comprehensibility and content of juvenile Miranda warnings. *Psychol Public Policy Law.* 2008;14(1):63–87.
47. Rogers RH, Kimberly S, Hazelwood LL, Sewell KW. Knowing and intelligent: a study of Miranda warnings in mentally disordered defendants. *Law Hum Behav.* 2007;31(4):401–418.
48. Rogers R, Rogstad JE, Gillard ND, Drogin EY, Blackwood HL, Shuman DW. Everyone knows their Miranda rights: implicit assumptions and countervailing evidence. *Psychol Public Policy Law.* 2010;16(3):300–318.
49. O'Connell MJ, Garmoe W, Goldstein NE. Miranda comprehension in adults with mental retardation and the effects of feedback style on suggestibility. *Law Hum Behav.* 2005;29(3):359–369.
50. Grisso T. Juveniles' capacities to waive Miranda rights: an empirical analysis. *Calif Law Rev.* 1980;68(6):1134–1166.

*Language and Criminal Proceedings in Juvenile Defendants With TBI*

51. *Gideon v Wainwright* (US Supreme Court 1963).
52. *Dusky v United States* (US Supreme Court 1960).
53. *Godinez v Moran* (US Supreme Court 1993).
54. Ryba NL, Cooper VG, Zapf PA. Juvenile competence to stand trial evaluations: a survey of current practices and test usage among psychologist. *Prof Psychol Res Pract.* 2003;34(5): 499–507.
55. *State v Garfoot* (Wis Supreme Court 1997).
56. LaVigne M, Van Rybroek G. “He Got in My Face So I Shot Him”: How Defendants’ Language Impairments Impair Attorney-Client Relationships. Madison, WI: University of Wisconsin. <http://ssrn.com.ezproxy.library.wisc.edu/abstract=2314546>. Accessed August 22, 2013.
57. Snow PC, Sanger DD, Caire LM, Eadie PA, Dinslage T. Improving communication outcomes for young offenders: a proposed response to intervention framework [published online ahead of print July 28, 2014]. *Int J Lang Commun Disord.* doi:10.1111/1460-6984.12117.
58. Turkstra LS. Language testing in adolescents with brain injury: a consideration of the CELF-3. *Lang Speech Hear Serv Sch.* 1999;30:132–140.
59. Turkstra LS, Holland AL. Assessment of syntax after adolescent brain injury: effects of memory on test performance. *J Speech Lang Hear Res.* 1998;41(1):137–149.
60. Carrow-Woolfolk E. *Comprehensive Assessment of Spoken Language*. Circle Pines, MN: American Guidance Service Inc; 1999.
61. Semel W, Wiig EH, Secord WA. *Clinical Evaluation of Language Fundamentals*. 5th ed. San Antonio, TX: Pearson Assessments; 2013.
62. Semel W, Wiig EH, Secord WA. *Clinical Evaluation of Language Fundamentals–Metalinguistics*. 5th ed. San Antonio, TX: Pearson Assessments; 2014.
63. Wiig EH, Semel W, Secord WA. *Clinical Evaluation of Language Fundamentals–Spanish*. 4th ed. San Antonio, TX: Pearson Assessments; 2006.
64. Nelson NW, Helm-Estabrooks N, Hotz G, Plante E. *Test of Integrated Language and Literacy Skills*. Baltimore, MD: Brookes; 2015.
65. Hotz G, Helm-Estabrooks N, Wolf-Nelson N. *Pediatric Test of Brain Injury*. Baltimore, MD: Brookes; 2002.
66. *Miller v Alabama* (US Supreme Court 2012).
67. Wisconsin Legislative Fiscal Bureau. *Juvenile Justice and Youth Aid Programs*. Madison, WI: Wisconsin Legislative Fiscal Bureau; 2013:1–47. Informational Paper No. 57.
68. Williams WH, Evans JJ. Brain injury and emotion: An overview to a special issue on biopsychosocial approaches in neurorehabilitation. *Neuropsychol Rehabil.* 2003;13(1/2):1–11.
69. *Virginia Collaborative Policy Summit on Brain Injury and Juvenile Justice: Proceedings Report*. Culpeper, VA: Virginia Department for Aging and Rehabilitative Services; 2013.
70. Beckworth BP. *TBI Juvenile Justice Partnership Pilot Project*. Austin, TX: Texas Health and Human Services Commission, National Association of State Head Injury Administrators; 2013.

SOZIALE KOMPETENZ: A  
COMPARATIVE EXAMINATION  
OF THE SOCIAL-COGNITIVE  
PROCESSES THAT UNDERLIE  
LEGAL DEFINITIONS OF  
MENTAL COMPETENCY IN THE  
UNITED STATES, GERMANY,  
AND JAPAN

Joseph Alan Wszalek

## ARTICLE

SOZIALE KOMPETENZ: A COMPARATIVE  
EXAMINATION OF THE SOCIAL-COGNITIVE  
PROCESSES THAT UNDERLIE LEGAL  
DEFINITIONS OF MENTAL COMPETENCY IN THE  
UNITED STATES, GERMANY, AND JAPAN

*Joseph Alan Wszalek\**

INTRODUCTION .....	102
I. LEGAL DEFINITIONS OF MENTAL COMPETENCE .....	105
A. The United States.....	106
1. Competency Under <i>Dusky</i> .....	107
2. Competency Under <i>Clark</i> .....	108
B. Germany .....	109
1. Competency Under German Private Law .....	110
2. Competency Under German Criminal Law .....	111
C. Japan .....	113
1. Competency Under Japanese Civil Law .....	113
2. Competency Under Japanese Criminal Law .....	114
II. UNDERLYING COGNITIVE FUNCTIONS.....	115
A. Competency as a Function of Social-Cognitive Processes .....	116
1. Competency as a Function of Context-Driven Cognition.....	116
2. Competency as a Function of Social Moral Judgment.....	120

---

\* JD cum laude, University of Wisconsin Law School; PhD Candidate, Neuroscience and Public Policy Program, University of Wisconsin-Madison. The author would like to thank the following actors for their invaluable help and support: law faculty at the Justus Liebig Universität Gießen, in particular Dr. Prof. Marietta Auer, for their assistance with German sources; Csanád Siklos, University of Wisconsin's Center for European Studies, and University of Wisconsin's Center for German and European Studies, all of whom facilitated financial support; the Communication and Cognition Lab; the Neuroscience and Public Policy Program; and finally, Dr. Lyn Turkstra and Dr. Ron Kalil, for their zealous advocacy.

3. Competency as a Function of Normal Adult Cognition.....	123
III. POTENTIAL IMPROVEMENTS TO THE US	
DEFINITIONS OF COMPETENCY .....	126
CONCLUSION.....	131

### INTRODUCTION

Twenty-first century society has achieved an understanding of the human mind that would have been unthinkable even a decade ago. Revolutionary advances in scientific methods,<sup>1</sup> computational technology,<sup>2</sup> and medical practices<sup>3</sup> have all fueled the production of an overwhelming amount of data about the structure and function of the human brain.<sup>4</sup> Perhaps of greater significance to the legal context, scientific research has helped us understand the mental processes that underlie social interactions and that allow us to meaningfully engage with others' feelings, emotions, and thoughts.<sup>5</sup> Scientific inquiry has even begun to explain the biological and psychological bases for conscious thought and experience,<sup>6</sup> bringing us one step closer to understanding what it truly means to be human. These breakthroughs, which have created many exciting new opportunities for research and scholarship and have inspired a considerable amount of discussion,<sup>7</sup> are generating increasingly complex profiles of the human mental condition.

---

1. For an overview of current methods, see MATT CARTER & JENNIFER C. SHIEH, GUIDE TO RESEARCH TECHNIQUES IN NEUROSCIENCE XIX (2010).

2. See *Will Technology Deliver for "Big Neuroscience"?*, 10 NATURE METHODS 271 (2013); see also Erika Pastrana, *Bring on the Neuro Tools*, 11 NATURE METHODS 28 (2014).

3. Reffaella Zanardi et al., *New Perspectives on Techniques for the Clinical Psychiatrist: Brain Stimulation, Chronobiology and Psychiatric Brain Imaging*, 62 PSYCHIATRY & CLINICAL NEUROSCIENCE 627 (2008); Edward W. Lempinen, *Advances in Neuroscience Raise Medical Hopes, Social Questions*, 333 SCI. 1108 (Aug. 26, 2011).

4. See, e.g., NEUROSCIENCE (Dale Purves eds., 4th ed. 2008).

5. For an excellent summary of social cognitive processes, see Ralph Adolphs, *The Social Brain: Neural Basis for Social Knowledge*, 60 ANN. REV. PSYCHOL. 693 (2009) [hereinafter Adolphs 2009].

6. Jonathan Smallwood & Jonathan W. Schooler, *The Science of Mind Wandering: Empirically Navigating the Stream of Consciousness*, 66 ANN. REV. PSYCHOL. 31.1 (forthcoming 2015); Adrian M. Owen, *Detecting Consciousness: A Unique Role for Neuroimaging*, 64 ANN. REV. PSYCHOL. 109 (2013).

7. See, e.g., THE OXFORD HANDBOOK OF PHILOSOPHY AND NEUROSCIENCE (John Bickle eds., 2013).

2015]

## SOZIALE KOMPETENZ

Perhaps unsurprisingly, these scientific developments have caught the attention of legal actors throughout the world. In 2013, US President Barack Obama announced a comprehensive federal research initiative to fund research of the human brain,<sup>8</sup> with similar initiatives adopted within the European Union,<sup>9</sup> Japan,<sup>10</sup> and China.<sup>11</sup> US Supreme Court decisions on the applicability of severe forms of punishment to young offenders explicitly referenced scientific findings about the behavioral and biological differences between adults and adolescents;<sup>12</sup> these decisions have been cited in numerous academic writings about the new-found role of scientific evidence about the human brain in the court system,<sup>13</sup> and scholars now debate the potential of science to resolve difficult social and legal questions, such as detecting lies<sup>14</sup> and improving witness memory.<sup>15</sup> Finally, high-profile cases in popular recreational sports<sup>16</sup> and the military<sup>17</sup> have turned the nation's attention towards the profound impacts that injuries to the human brain can have and have stressed the importance of a robust nervous system in healthy, productive lifestyles.<sup>18</sup>

---

8. John Markoff & James Gorman, *Obama to Unveil Initiative to Map the Human Brain*, N.Y. TIMES, April 2, 2013, at A12.

9. James Kanter, *2 Science Projects to Receive Award of 1 Billion Euros*, N.Y. TIMES, Jan. 28, 2013, at A3.

10. David Cyranoski, *Marmosets are Stars of Japan's Ambitious Brain Project*, 514 NATURE 151 (2014).

11. Cai Wenjun, *China to Build "Brain Database,"* XINHUA NEWS, (June 29, 2012, 18:45:18), [http://news.xinhuanet.com/english/china/2014-06/29/c\\_133447030.htm](http://news.xinhuanet.com/english/china/2014-06/29/c_133447030.htm).

12. *Miller v. Alabama*, 132 S.Ct. 2455, 2464–65 n.5 (2012); *Graham v. Florida*, 130 S.Ct. 2011, 2026–27 (2010); *Roper v. Simmons*, 543 U.S. 551, 570 (2005).

13. See, e.g., Owen Jones et al., *Neuroscientists in Court*, 14 NATURE REV. NEUROSCI. 730 (2013); Laurence Steinberg, *The Influence of Neuroscience on US Supreme Court Decisions about Adolescents' Criminal Culpability*, 14 NATURE REV. NEUROSCIENCE 513 (2013).

14. Kamila E. Sip et al., *Detecting Deception: the Scope and Limits*, 12 TRENDS IN COGNITIVE SCI. 48 (2007); Frederick Schauer, *Neuroscience, Lie-Detection, and the Law*, 14 TRENDS IN COGNITIVE SCI. 101 (2010).

15. Daniel L. Schacter & Elizabeth F. Loftus, *Memory and Law: What Can Neuroscience Contribute?*, 16 NATURE NEUROSCIENCE 119 (2013); Joyce W. Lacy & Craig E. L. Stark, *The Neuroscience of Memory: Implications for the Courtroom*, 14 NATURE REV. NEUROSCIENCE 649 (2013).

16. Ken Belson, *Brain Trauma to Affect One in Three Players, N.F.L. Agrees*, N.Y. TIMES, Sept. 12, 2014, at A1.

17. Thom Shanker & Richard A. Oppel Jr., *War's Elite Tough Guys, Hesitant to Seek Healing*, N.Y. TIMES, June 6, 2014, at A1.

18. For a brief glimpse of the profound effects that these disorders can have on both the affected individual and society as a whole, see Barbara Bottalico & Tommaso Bruni, *Post Traumatic Stress Disorder, Neuroscience, and the Law*, 35 INT'L J.L. & PSYCHIATRY 112 (2012); Thomas J. Farrer & Dawson W. Hedges, *Prevalence of Traumatic-Brain Injury in*

Although our scientific understanding still has far to go,<sup>19</sup> our ability to define and pinpoint mental and cognitive states has never been more refined, and it is fundamentally altering the way we view ourselves and our surroundings.

Long before these scientific advances, however, legal systems recognized the need to interpret and describe mental states. From the Justinian Codes of Ancient Rome<sup>20</sup> to the laws of Imperial China,<sup>21</sup> legal systems have been using their own language to create and define concepts related to mental states for at least two millennia. These concepts, such as competency, guilt, intent, and insanity, are critically important in basic legal frameworks, and are a provocative example of how legal systems employ language to define concepts rooted in human cognition. Language relating to “competency,” or “mental competency,” is particularly relevant for three reasons: (1) it generally applies to both criminal and private law; (2) it generally overlaps with concepts of liability and insanity; and (3) it relates directly to our fundamental perceptions about human autonomy and basic human rights.<sup>22</sup> It should be apparent that the use of legal language to define mental states can have profound effects on individuals, and now, as our scientific understanding continues to improve, it behooves us to examine our country’s legal language and consider what, if any, improvements could be made. Comparative law presents a unique opportunity to aid such an examination, especially given the global scale of the scientific and legal inquiries.<sup>23</sup> Accordingly, a comparative examination of legal language related to mental competency is essential for an informed understanding of comparable

---

*Incarcerated Groups Compared to the General Population: A Meta-Analysis*, 35 PROGRESS IN NEURO-PSYCHOPHARMACOLOGY & BIOLOGICAL PSYCHIATRY 390 (2011); Seena Fazel & John Danesh, *Serious Mental Disorder in 23,000 Prisoners: A Systematic Review of 62 Surveys*, 350 LANCET 545 (2002).

19. Though far beyond the scope of this article, the statistics behind these research findings are an interesting topic in their own right. See Katherine S. Button et al., *Power Failure: Why Small Sample Size Undermined the Reliability of Neuroscience*, 14 NATURE REV. NEUROSCIENCE 365 (2013).

20. Dig. 47.10.3.1 (Ulpian, Ad Edictum 56).

21. Vivien W. Ng, *Homicide and Insanity in Qing China, as reprinted in Scraps of History: Insane Offenders in Qing*, 5 H. K. J. PSYCHIATRY 38, 38 (1995).

22. See, e.g., Michael L. Perlin, *International Human Rights Law and Comparative Mental Health Law: The Universal Factors*, 34 SYRACUSE J. INT’L L. & COM. 333, 354-55 (2006); David Kingdon et al., *Protecting the Human Rights of People with Mental Disorder: New Recommendations Emerging from the Council of Europe*, 185 BRIT. J. PSYCHIATRY 277, 278 (2005).

23. See *supra* notes 8-11, 21.



2015]

*SOZIALE KOMPETENZ*

language in the United States, and it can educate any attempts to improve these languages in order to better reflect the prevailing scientific and medical standards and to promote and maintain fundamental human dignity.

Part I of this Article will examine plain-text selections of legal language concerning mental competency from the constitutions, codes, or relevant decisions by the highest national courts, of three countries: the United States, Germany, and Japan. As three of the biggest economic powers on the planet,<sup>24</sup> these countries merit consideration not just for their contrasting cultural and legal frameworks but also for their relative influence within the international arena during the latter half of the twentieth century. Part I's examination will focus on constitutional and code language for two important reasons: (1) these sources of law form the basis of the country's legal system, and serve as the foundation for other, more specific forms of legislation; (2), as the highest form of the country's primary law, they serve as the legal standard against which all the other laws are evaluated. Next, Part II will examine the relevant language and argue that a certain set of cognitive functions, social-cognitive functions, most likely underlie these strictly legal definitions. Finally, Part III will briefly examine how effectively these definitions convey the prevailing scientific standard and consider what changes, if any, could be made to the current definitions of mental competency in the United States to better reflect both these prevailing scientific standards and the foreign definitions.

### I. LEGAL DEFINITIONS OF MENTAL COMPETENCE

As briefly discussed in the Introduction,<sup>25</sup> legal concepts of mental competency are generally both an ancient and a fundamental component of legal systems.<sup>26</sup> Innate notions of fairness and humanity may underlie the notion that an individual must be mentally competent before he can be subject to the rule of law.<sup>27</sup> Despite a

---

24. WORLD BANK, *World Development Indicators Database*, Sep. 2014, <http://databank.worldbank.org/data/download/GDP.pdf>.

25. *See supra* note 20 and accompanying text.

26. *See supra* note 20 and accompanying text.

27. *Drope v. Missouri*, 420 U.S. 162, 172 (1975) (noting that a requirement of competency is "fundamental to the adversarial process"); *Youtsey v. United States*, 97 F. 937, 940 (6th Cir. 1899) ("It is fundamental that an insane person can neither plead to an arraignment, be subjected to a trial, or, after trial, receive judgment, or, after judgment, undergo punishment."); 4 WILLIAM BLACKSTONE, *COMMENTARIES*, \*24 [hereinafter

likely biological basis for these morals-based notions,<sup>28</sup> each of the three legal systems has developed a seemingly unique set of language with which it defines mental competence. That being said, however, there is a certain amount of overlap among the linguistic themes within the various legal definitions,<sup>29</sup> and these similarities and differences will be important in the comparative analysis.

#### A. *The United States*

With its common law tradition and relatively old Constitution, the United States offers little in the way of codified or constitutional language related to mental competency.<sup>30</sup> Beginning in the 1960s, however, the US Supreme Court started to incorporate the various protections of the Bill of Rights into the Fourteenth Amendment.<sup>31</sup> The US Supreme Court's review of legal questions salient to due process and criminal procedure rights established legal language at the level of the US Constitution that defined the standard of competency<sup>32</sup> and affirmed the notion that common-law notions of competency<sup>33</sup> fall within the due process protections of the Constitution.<sup>34</sup> Even though such decisions were (and are)

---

BLACKSTONE] (noting that the "rule of law" for dealing with "idiots and lunatics" is that "*furiosus furore solum punitur*" [A madman is punished only by madness]); Harvard Law Review Association, Note, *Incompetency to Stand Trial*, 81 HARV. L. REV. 454, 454 (1967).

28. The evidence to support a biological basis in humans for moral and ethical thought and action is by now quite compelling. See Debra Lieberman et al., *Does Morality Have a Biological Basis? An Empirical Test of the Factors Governing Sentiments Relating to Incest*, 270 PROC. FOR ROYAL SOC'Y LONDON 819 (2003); Jorge Moll et al., *The Neural Basis of Human Moral Cognition*, 6 NATURE REV. NEUROSCIENCE 799 (2005); Liane Young et al., *The Neural Basis of the Interaction Between Theory of Mind and Moral Judgment*, 104 PROC. NAT'L ACAD. SCI. 8235 (2007); see also *infra* Part II.A.2.

29. See *infra* Part I.B, C.

30. Ostensibly, the founding fathers would have viewed the legal authority to define competency as falling within the purview of the various states as an application of the so-called police power. See U.S. CONST. amend. X; see also *Chi., Burlington & Quincy Ry. Co. v. Illinois*, 200 U.S. 561, 584 (1906).

31. See generally Akhil Reed Amar, *The Bill of Rights and the Fourteenth Amendment*, 101 YALE L.J. 1193 (1992).

32. *Drope v. Missouri*, 420 U.S. 162, 162 (1975); *Dusky v. United States*, 364 U.S. 402 (1960) (per curiam).

33. See *supra* note 27.

34. *Cooper v. Oklahoma*, 517 U.S. 348 (1996) ("The test for incompetence is also well settled. A defendant may not be put to trial unless he has sufficient present ability to consult with his lawyer with a reasonable degree of rational understanding and a rational as well as factual understanding of the proceedings against him.") (citation omitted); *Medina v. California*, 505 U.S. 437, 439 (1992) ("It is well established that the Due Process Clause of the Fourteenth Amendment prohibits the criminal prosecution of a defendant who is not competent

2015]

## SOZIALE KOMPETENZ

infrequent,<sup>35</sup> they have established specific legal definitions of mental competency for the purposes of the US Constitution's due process protections.

1. Competency Under *Dusky*

The legal language defining mental competency was first developed in *Dusky v. United States*. In determining that the lower court had not properly determined that the defendant was competent to stand trial, the US Supreme Court held that the appropriate test for mental competence was the "sufficient present ability to consult with his lawyer with a reasonable degree of rational understanding" and "a rational as well as factual understanding of the proceedings against him."<sup>36</sup> The per curiam opinion is conspicuously short, and contains nothing to hint at the reasoning (scientific or otherwise) that led the Court to unanimously adopt this particular language as the controlling definition of mental competency.<sup>37</sup>

Despite *Dusky's* brevity, however, subsequent holdings have expounded its definition of mental competency. When the US Supreme Court reaffirmed the *Dusky* language in *Godinez v. Moran*,<sup>38</sup> it provided some additional clarification of its competency definition. Noting that "the crucial component of the [*Dusky*] inquiry is the defendant's possession of a reasonable degree of rational understanding," the Court explained that this definition of mental competency refers to "a particular level of mental functioning, which the ability to consult counsel helps identify."<sup>39</sup> The Court also suggested that "rational understanding" is synonymous with the ability to make "reasoned choices."<sup>40</sup> When the Court again reaffirmed the *Dusky* language in *Cooper v. Oklahoma*,<sup>41</sup> it

---

to stand trial."); *Pate v. Robinson*, 383 U.S. 375, 378 (1966) ("The State concedes that the conviction of an accused person while he is legally incompetent violates due process.").

35. In the latter half of the twentieth century, the Court averaged two decisions on the subject of criminal mental health law per decade. Christopher Slobogin, *The Supreme Court's Recent Criminal Mental Health Cases: Rulings of Questionable Competence*, 22 CRIM. JUST. 8, 8 (2007).

36. *Dusky v. United States*, 364 U.S. 402, 402 (1960).

37. Legal scholars have noted the opinion's absence of justification. See Robert F. Schopp, *Involuntary Treatment and Competence to Proceed in the Criminal Process: Capital and Noncapital Cases*, 24 BEHAV. SCI. & L. 495, 497 (2006).

38. *Godinez v. Moran*, 509 U.S. 389, 396 (1993).

39. *Id.* at 404 (Kennedy, J., concurring).

40. *Id.* at 397.

41. *Cooper v. Oklahoma*, 517 U.S. 348, 354 (1996).

emphasized the role that the “ability to consult with his lawyer” plays in determining a defendant’s competency. The Court indicated that the ability to “communicate effectively with counsel” is necessary to exercise rights deemed essential to a fair trial, and, more fundamentally, to the basic fairness of the trial itself.<sup>42</sup> Though these subsequent decisions have created a more complex legal definition of mental competency, the *Dusky* language remains the basic standard for mental competency under the due process protections of the US Constitution.

## 2. Competency Under *Clark*

Legal definitions of insanity offer a parallel set of definitions of mental competency under the due process rights of the US Constitution.<sup>43</sup> Unlike the *Dusky* language, however, the US Supreme Court has not created or affirmed a specific legal definition of insanity for the purposes of due process. Quite the contrary, in *Clark v. Arizona*, the Court instead held that the Constitution “imposes no single canonical formulation of legal insanity.”<sup>44</sup> Consequently, each of the fifty states imposes its own legal standard, resulting in a patchwork distribution of legal language used to define insanity.<sup>45</sup>

These standards are not fully disparate, however: four major themes underlie the legal definitions of insanity within the United States as discussed in *Clark*. According to the US Supreme Court, these themes are “the cognitive incapacity, the moral incapacity, the volitional incapacity, and the product-of-mental-illness tests.”<sup>46</sup> The first two themes are a product of the so-called *M’Naghten* rule, named after the English case in which the rule was first described.<sup>47</sup> These two standards preclude a defendant from criminal culpability either if he suffers from a mental disease or defect as not to know the nature and quality of the act (cognitive incapacity) or if he suffers from a mental disease or defect as not to know that the act was wrong (moral incapacity).<sup>48</sup> The third theme, volitional incapacity, precludes a defendant from culpability if he was so lacking in volition due to a

---

42. *Id.* at 364.

43. Historically, there might not have been a clear distinction between general mental incompetence and insanity. See BLACKSTONE, *supra* note 27.

44. *Clark v. Arizona*, 548 U.S. 735, 753 (2006).

45. *Id.* at 750-52.

46. *Id.* at 749.

47. *M’Naghten’s Case*, 8 Eng. Rep. 718, 10 Cl. & Fin. 200 (1843).

48. *Clark*, 548 U.S. at 747-48 (citations omitted).

2015]

## SOZIALE KOMPETENZ

mental defect or illness that he was unable to control his own actions.<sup>49</sup> The final theme precludes a defendant from criminal liability if his action was the product of a mental illness or deficit.<sup>50</sup> Moral incapacity, whether alone or in conjunction with another theme, is the most frequent standard in insanity laws.<sup>51</sup> These *Clark* tests, then, require a two-pronged analysis. First, there must be a “mental disease or defect,” and second, there must be the moral, volitional, or cognitive incapacity.<sup>52</sup> Even though none of the four tests creates a controlling definition of insanity for the purposes of the US Constitution’s due process protections, they will serve as a suitable proxy for official constitutional definitions.

It is important to note at this point that these insanity standards are a different type of legal definition for mental competency than the *Dusky* standard. *Dusky* defines mental competency in a positive sense (i.e., by the presence of certain abilities or characteristics – namely, the ability to consult with counsel and the ability to understand the proceedings). The *Clark* standards, on the other hand, define mental competency in a negative sense (i.e., by the absence of certain abilities or characteristics – namely, the inability to recognize right from wrong).<sup>53</sup> While this distinction may appear trivial, it will become more important in subsequent analysis. In conclusion, the US Supreme Court has affirmed certain definitions of mental competency for the purposes of the US Constitution’s due process protections, definitions which describe mental competency strictly within a legal context.

## B. Germany

With its civil law tradition<sup>54</sup> and extensive codifications,<sup>55</sup> German’s national laws present a somewhat more accessible sample

---

49. *Id.* at 749.

50. *Id.* at 749-50.

51. By the Supreme Court’s calculations, forty-four States and the federal government use the moral incapacity test in their insanity statutes. *Id.* at 750-51.

52. *Id.* at 749-50.

53. This distinction should not be confused with the (more common) distinction between positive rights and negative rights, which concerns the presence or absence of affirmative legal duties. See David P. Currie, *Positive and Negative Constitutional Rights*, 53 U. CHI. L. REV. 864 (1986).

54. See GERHARD ROBBERS, AN INTRODUCTION TO GERMAN LAW 15-27 (4th ed. 2006); see also Reinhard Zimmermann, *An Introduction to German Legal Culture*, INTRODUCTION TO GERMAN LAW 1 (Werner F. Ebke & Matthew W. Finkin, eds., 1996).

of legal language with which it defines mental competency in legal contexts. To a certain extent, the codified language may permit a less ambiguous examination of the legal definitions of mental competency, and they are compelling definitions both in their own right and as a counterpart to the legal definitions used within the United States.

### 1. Competency Under German Private Law

The German Civil Code (Bürgerliches Gesetzbuch, or “BGB”) contains legal definitions of competency that form the basis of mental competency descriptions throughout German private substantive law. The first such definition is the concept of “*Geschäftsunfähigkeit*,” or incapacity to contract.<sup>56</sup> Section 104 of the BGB defines incapacity to contract as “a state of pathological mental disturbance which prevents the free exercise of will, unless the state is by its nature a temporary one.”<sup>57</sup> Like the United States’ various definitions of insanity,<sup>58</sup> the BGB’s definition of mental competency is a negative one, so that mental competency is defined not by the presence but by the absence of certain abilities (i.e., the ability to freely exercise one’s will).<sup>59</sup>

This definition is repeated verbatim in two subsequent sections of the BGB. Section 827, which defines loss and reduction of legal liability in tort,<sup>60</sup> states that a person is not liable for damages if he is “in a state of pathological mental disturbance precluding free exercise of will.”<sup>61</sup> The identical language<sup>62</sup> helps effect a more consistent

55. See generally TRADITION, CODIFICATION AND UNIFICATION: COMPARATIVE-HISTORICAL ESSAYS ON DEVELOPMENTS IN THE CIVIL LAW (J.M. Milo et al. eds. 2014).

56. BÜRGERLICHES GESTZBUCH [BGB] [CIVIL CODE], BUNDESGESETZBLATT [BGBl.], as amended, § 104, para. 2, translation at [http://www.gesetze-im-internet.de/englisch\\_bgb/index.html](http://www.gesetze-im-internet.de/englisch_bgb/index.html) (Ger.) [hereinafter BGB].

57. *Id.* para. 2. For the purposes of consistency, all English translations of the codified laws are taken from the English versions provided by the German Ministry of Justice, unless otherwise noted.

58. See *supra* Part I.A.2.

59. Official commentaries to the BGB define “capacity to contract” (*Geschäftsfähigkeit*), in the positive sense, as “the ability to be able to make generally permissible legal transactions independently and fully effectively,” MÜNCHENER KOMMENTAR, ZUM BÜRGERLICHEN GESETZBUCH, 1222 (Mathias Habersack eds., 6th ed. 2013), or “the ability to independently and fully effectively make legal transactions,” PALANDT, BÜRGERLICHES GESETZBUCH, 82 (C.H. Beck München ed., 72nd ed. 2013).

60. Commentaries call this legal liability “*Deliktsfähigkeit*,” “*Verschuldensfähigkeit*,” or “*Zurechnungsfähigkeit*.” MÜNCHENER KOMMENTAR, *supra* note 59, at 2370; PALANDT, *supra* note 59, at 1381.

61. BGB, *supra* note 56, § 827.

2015]

## SOZIALE KOMPETENZ

legal definition within the German private law context. Finally, section 1304 further reinforces this definition of mental competency in the context of family law, stating that “a person who is incapable of contracting may not enter into a marriage.”<sup>63</sup> These three provisions of the BGB establish a consistent and specific legal definition of mental competency within the sphere of German private substantive law.

In the realm of German private procedural law, the German Code of Civil Procedure (“Zivilprozessordnung”, or “ZPO”) ties mental competency back to the definition established in the BGB. Section 52 of the ZPO defines procedural competency (“*Prozessfähigkeit*”):<sup>64</sup> “A person shall have the capacity to sue or be sued insofar as he can be obligated by agreements.”<sup>65</sup> Although it is interesting to note the different phrasing, especially since the related provisions of the BGB (§§ 104, 827, 1304) all use language that is more or less identical,<sup>66</sup> commentaries indicate that mental competency in the procedural context overlaps with mental competency in the substantive private law context.<sup>67</sup> By relying on the BGB’s definitions of mental competency, the ZPO reinforces a specific legal definition of mental competency within the German private law.

## 2. Competency Under German Criminal Law

Unlike US criminal law, German substantive criminal law (Strafgesetzbuch, or “StGB”) contains codified language to define mental capacity within the criminal law context.<sup>68</sup> First, Section 20 of the StGB creates an exemption from criminal liability, or

---

62. The subtle difference in the English phrasing is a translation artifact. In the original German, both sections use identical language (“*einem die freie Willensbestimmung ausschließenden Zustand krankhafter Störung der Geistestätigkeit*”) to describe the absence of legal competency. BGB, *supra* note 56, §§ 104, 827.

63. BGB, *supra* note 56, § 1304.

64. ZIVILPROZESSORDNUNG [ZPO] [CODE OF CIVIL PROCEDURE], as amended, § 52, *translation at* [http://www.gesetze-im-internet.de/englisch\\_zpo/code\\_of\\_civil\\_procedure.pdf](http://www.gesetze-im-internet.de/englisch_zpo/code_of_civil_procedure.pdf) (Ger.) [hereinafter ZPO].

65. *Id.*

66. *See supra* note 62 and accompanying text.

67. “Procedural competency is procedural capacity to contract” (“*Prozessfähigkeit ist die prozessuale Geschäftsfähigkeit*”), BECK’SCHES KURZ KOMMENTARE, 135 (C.H. Beck München eds., 50th ed. 1992).

68. STRAFGESTZBUCH [StGB] [PENAL CODE], as amended, § 20, *translation at* [http://www.gesetze-im-internet.de/englisch\\_stgb/](http://www.gesetze-im-internet.de/englisch_stgb/) (Ger.) [hereinafter StGB].

“*Schuldunfähigkeit*.” Section 20 indicates “any person who at the time of the commission of the offence is incapable of appreciating the unlawfulness of their actions or of acting in accordance with any such appreciation due to a pathological mental disorder, a profound conscious disorder, debility, or any other serious mental abnormality.”<sup>69</sup> As was the case for the *Clark* tests in the United States, the language in Section 20 requires a two-pronged analysis in order to determine mental competency in the case of insanity.<sup>70</sup> First, there must be one of the four listed psychopathologies.<sup>71</sup> If the first prong is met, then there must be a finding that, because of the psychopathology, the individual could not appreciate the unlawfulness of the act or could not control his own actions.<sup>72</sup> Finally, note that, like the BGB’s definition of mental competency, the definition in Section 20 is a negative definition of mental competency, so that competency is described by the absence of the various mental capabilities described within the code.<sup>73</sup> This definition forms the basis not just of complete exculpation but also of partial exculpation as well. Section 21 of the StGB notes that a person may be eligible for reduced culpability if his capacity to appreciate the unlawfulness of his actions or to act in accordance with the appreciation is substantially diminished by one of the reasons listed in Section 20.<sup>74</sup> Because the definition established in Section 20 is repeated in Section 21,<sup>75</sup> the StGB suggests that the distinction between full mental incompetency and partial mental incompetency is a quantitative one, not a qualitative one, and that the two are on the same spectrum of mental abilities.

Despite the similarity between the definitions of mental competency in German private and criminal law, note that there is one

---

69. *Id.* § 20.

70. “The § 20 determination is built on two parts.” ROXIN, STRAFRECHT, 886(1), (C.H. Beck München eds., 4th ed. 2006).

71. *Id.* For a more detailed description of the four psychopathologies, *see id.* at 889(II).

72. *Id.* at 886(1); *see also* *Clark v. Arizona*, 548 U.S. 735, 749 (2006). These converging definitions are not entirely surprising, given that the sort of mental disorders described in both are universal human phenomena. However, it is interesting that the German and American definitions are so similar even though up until the mid-twentieth century, German criminal law had relatively little influence on the development of criminal law in common law countries. Markus Dirk Dubber, *Theories of Crime and Punishment in German Criminal Law*, 53 AM. J. COMP. L. 679, 679 (2005).

73. StGB, *supra* note 68, § 20.

74. *Id.* § 21.

75. *Id.* §§ 20-21. The phrase “das Unrecht der Tat einzusehen oder nach dieser Einsicht zu handeln” appears in both sections.



2015]

## SOZIALE KOMPETENZ

important difference. In the criminal context, competency can be precluded not only by the “pathological mental disorder” but also by the other three pathologies,<sup>76</sup> whereas in the private law context, competency can be precluded only by “a state of pathological mental disturbance.”<sup>77</sup> Ostensibly, then, mental competency in the criminal context is a more difficult standard to meet, as it could be precluded not just by a pathological mental disorder but also by mental conditions that are technically not pathological, such as a low I.Q.<sup>78</sup> In summation, German private and criminal codes have specific legal definitions for mental competency that both compare and contrast to the definitions in the United States.

## C. Japan

Heavily influenced by both US and German legal philosophies and practices, modern Japanese law is something of a hybrid between the US common law and German civil law traditions.<sup>79</sup> However, the Japanese legal system retains a strong commitment to traditional cultural notions, creating a unique societal context in which these laws are enforced. It is against this backdrop that this Article examines Japan’s legal language of mental competency.

## 1. Competency Under Japanese Civil Law

In the civil law context, the Japanese civil code (民法, “Minpō”) contains language that creates a specific legal definition of mental competency. Article 713 of the Minpō states that a person is not liable for civil damages if he causes those damages “while he/she lacks the capacity to appreciate his/her liability for his/her own act due to mental disability.”<sup>80</sup> This language is reminiscent of both the German and the American equivalents. First, the wording suggests a two-step inquiry as was seen in both the German StGB<sup>81</sup> and the US *Clark*<sup>82</sup>

---

76. *Id.* § 21.

77. BGB, *supra* note 56, § 104.

78. The word translated as “debility” in section 21 of the StGB, “*Schwachsinn*,” literally means “imbecility” or “idiocy.” As used in section 21, the term signifies “an innate intellectual deficit without an apparent cause.” ROXHIN, *supra* note 70, at 896(22).

79. Elliot J. Hahn, *An Overview of the Japanese Legal System*, 5 NW. J. INT’L L. & BUS. 517, 521-22 (1983).

80. MINPŌ [MINPŌ] [Civ. C.] 1896, art. 713 (Japan), *translation at* <http://www.moj.go.jp/content/000056024.pdf>. All English translations of the Japanese codes are taken from the English versions promulgated by the Japanese Ministry of Justice.

81. StGB, *supra* note 68, § 20.

standards for determining criminal culpability. Second, the phrasing of this standard suggests a variant of the “moral incapacity” test,<sup>83</sup> a condition for mental competency that appears in both the US<sup>84</sup> and the German<sup>85</sup> definitions of mental competency as well. Interestingly, however, whereas the United States and Germany use moral incapacity to define mental competency in the criminal context, Article 713 employs the moral incapacity standard within the civil law context.

## 2. Competency Under Japanese Criminal Law

The Japanese criminal codes also contain legal definitions for mental competency. Article 39 of the penal code (刑法, “Keihō”) defines mental competency for the purposes of exculpation: “An act of insanity is not punishable.”<sup>86</sup> Similarly, “an act of diminished capacity shall lead to the punishment being reduced.”<sup>87</sup> This language is interesting because, unlike the German and US equivalents, it does not specify what sort of behavior or deficits indicate legal insanity or inculpability. Whereas both German and US criminal law generally define mental incapacity as the inability to control or appreciate one’s behavior due to a mental pathology,<sup>88</sup> the Keihō simply states that mental incapacity is the state of being insane.<sup>89</sup> Relatedly, whereas German criminal law defines full legal incapacity and diminished legal capacity with the same legal language,<sup>90</sup> the Keihō creates a separate, although related, definition for partial mental incapacity altogether.<sup>91</sup>

The language put forth in the Keihō is repeated in the Japanese code of criminal procedure (刑事訴訟法, “Keisōhō”)<sup>92</sup> in three separate procedural contexts, and this repetition helps clarify the language’s meaning by providing greater context. First, Article 314 of

---

82. *Clark v. Arizona*, 548 U.S. 735, 747-48 (2006) (citations omitted).

83. *Id.* at 747-48; StGB, *supra* note 68, § 20.

84. *Clark*, 548 U.S. at 747-48.

85. StGB, *supra* note 68, § 20.

86. KEIHŌ [KEIHŌ] [Pen. C.] 1907, art. 39, para. 1.

87. *Id.* para. 2.

88. *Clark*, 548 U.S. at 747-48 (citations omitted); StGB, *supra* note 68, § 20.

89. 心神喪失 (*shinshinsōshitsu*), “unsound mind.” KEIHŌ, *supra* note 86, para. 1.

90. *See supra* note 75 and accompanying text.

91. 心神耗弱 (*shinshinmōjaku*), “weakened or diminished mind.” KEIHŌ, *supra* note 86, para. 2.

92. KEIJI SOSHŌHŌ [KEISŌHŌ] [C. Crim. Pro.] 1948.

2015]

## SOZIALE KOMPETENZ

the Keisōhō establishes that insane individuals cannot be prosecuted, indicating that “when the accused is in a state of insanity,<sup>93</sup> the proceedings shall be suspended while the accused is in such a state.”<sup>94</sup> Second, Article 37-4 establishes that insane individuals or individuals with diminished mental capacity may have lawyers assigned to them.<sup>95</sup> Finally, Article 439, which concerns the request of a retrial, indicates that a retrial may be requested by “the spouse, lineal relative, brother, or sister of the person who has been found guilty, in the event that said person is deceased or is in a state of insanity.”<sup>96</sup> The specific repetition of the Keihō’s definition of insanity suggests a more unified legal conceptualization of mental competency, and is a compelling counterexample to the German and US definitions, in which varying language is used for different legal contexts.

## II. UNDERLYING COGNITIVE FUNCTIONS

While the legal definitions of mental competency examined in Part I are purely legal constructs,<sup>97</sup> the people who are adjudicated (and who adjudicate) under them are not; consequently, the legal definitions are fundamentally tied to the cognitive functions with which humans act and interact, and to scientific and medical information about these functions.<sup>98</sup> It should be possible, therefore, to define a certain set of scientifically recognized cognitive functions

---

93. 心神喪失の状態 (*shishishōshitsu no jōtai*), “a state of insanity.” *Id.* art. 314, para. 1. Note that the word for insanity is identical to that used in the Keihō. *See supra* note 89.

94. KEISŌHŌ, *supra* note 92, art. 314, para. 1.

95. *Id.* art. 37-4.

96. *Id.* art. 439(1)(iv).

97. *See, e.g.,* Mae C. Quinn, *Reconceptualizing Competence: An Appeal*, 66 WASH. & LEE L. REV. 259, 265 (2009) (“Notably, while seemingly straightforward and rooted in common sense, neither prong of the [*Dusky*] test finds its genesis in medical or mental health literature.”); *Incompetency to Stand Trial*, *supra* note 27, at 470 (“Like criminal responsibility, incompetency is a legal question; the ultimate responsibility for its determination must rest in a judicial rather than a medical authority.”).

98. *See* *Medina v. California*, 505 U.S. 437, 465 (1992) (“Although competency is a legal issue ultimately determined by the courts, recommendations by mental health professionals exert tremendous influence on judicial determinations.”) (Blackmun, J., dissenting); *Incompetency to Stand Trial*, *supra* note 27, at 469 (“In most jurisdictions, reliance on psychiatric testimony is substantial.”); for a somewhat stronger critique, *see* Gerald T. Bennet & Arthur F. Sullwold, *Competence to Proceed: A Functional and Context-Determinative Decision*, 29 J. FORENSIC SCI. 1119, 1120 (1984) (“Uncritical acceptance of the undefined role of the expert has led the legal system to abdication of the traditional judicial decision-making function, supplanting that task by almost total reliance on and ‘rubber stamping’ of those opinions.”).

that underlie these legal definitions. Part II will reconsider the legal definitions of mental competency in the context of these underlying cognitive functions and will suggest a number of social-cognitive elements that are consistent throughout the three countries' various legal definitions.

#### A. Competency as a Function of Social-Cognitive Processes

Ultimately, the legal definitions of mental competency require the presence of certain mental abilities that allow for functional participation within the social context of a legal proceeding.<sup>99</sup> The scientific community has characterized these mental abilities into a suite of cognitive functions known as social cognition.<sup>100</sup> Comprising the neuropsychological skill set to recognize and manipulate socially relevant information,<sup>101</sup> social cognition is inherently necessary for any meaningful participation in a social context. As the language of the various legal definitions of mental competency suggests, social-cognitive function is key to a finding of mental competency.

##### 1. Competency as a Function of Context-Driven Cognition

The first indication that social-cognitive functions underlie legal competency is the context-based nature of mental competency. In ordinary usage, competence is the state of being functionally adequate or of having sufficient skill.<sup>102</sup> In broader legal usage, competence is the mental ability to understand problems and make decisions or, more broadly, a basic or minimal ability to do something.<sup>103</sup> Competency, therefore, varies based on the particular legal purpose and depends on contextual factors such as the relative interests at

---

99. *Drope v. Missouri*, 420 U.S. 162, 171 (1975) (noting that a person who is not mentally competent is someone “whose mental condition is such that he lacks the capacity to understand the nature and object of the proceedings against him, to consult with counsel, and to assist in preparing his defense may not be subjected to a trial”); *Dusky v. United States*, 362 U.S. 402, 402 (1960) (holding that a person who is mentally competent “has sufficient present ability to consult with his lawyer with a reasonable degree of rational understanding—and whether he has a rational as well as factual understanding of the proceedings against him”); *Incompetency to Stand Trial*, *supra* note 27, at 457 (noting that the “primary purpose of the incompetency rule is to safeguard the accuracy of adjudication”).

100. See Adolphs 2009, *supra* note 5.

101. See Ralph Adolphs, *The Neurobiology of Social Cognition*, 11 CURRENT OPINION IN NEUROBIOLOGY 231, 231 (2001) [hereinafter Adolphs 2001].

102. *Competence*, WEBSTER'S NEW INT'L DICTIONARY 463 (3d ed. 2002).

103. *Competence*, BLACK'S LAW DICTIONARY (10th ed. 2009).

2015]

## SOZIALE KOMPETENZ

stake and the circumstances of the proceedings.<sup>104</sup> As suggested by the US Supreme Court, “[t]here are, of course, no fixed or immutable signs which invariably indicate [competency]: the question is often a difficult one in which a wide range of manifestations and subtle nuances are implicated.”<sup>105</sup> This context-based approach to competency implies not only a flexible legal standard but also a focus on the pragmatic, outcome-driven nature of a defendant’s participation in legal proceedings.<sup>106</sup> Social-cognitive functions are equally context-specific and recruit both conscious and subconscious processes to integrate external stimuli and internal intentions, thereby facilitating social behavior:

Social behavior depends critically on context and intention, a sensitivity that arises from the rich interplay between controlled and automatic processing of social information, and a modulation long emphasized within social psychology. One way of viewing such modulations is to think of an initial feed-forward sweep of social information processing that is rapid and automatic, followed by cycles of additional processing that are biased by the first, but modulated by top-down effects that may incorporate controlled processing and conscious intent.<sup>107</sup>

Social cognition’s ultimate role, then, is to “modulate” socially appropriate behavior by integrating socially relevant information with the other, domain-general cognitive abilities<sup>108</sup> necessary to produce

---

104. Robert F. Schopp, *Wake Up and Die Right: The Rationale, Standard, and Jurisprudential Significance of the Competency to Face Execution Requirement*, 51 LA. L. REV. 95, 1038-39 (1991); Alec Buchanan, *Competency to Stand Trial and the Seriousness of the Charge*, 34 J. AM. ACAD. PSYCHIATRY & L. 458, 459 (2006); Bennet, *supra* note 98, at 1121.

105. *Drope v. Missouri*, 420 U.S. 162, 180 (1975).

106. “A determination of competence or incompetence is functional in nature, context-dependent and pragmatic in orientation . . . .” A.B.A., CRIM. JUST. MENTAL HEALTH STANDARDS 175 (1989), [http://www.americanbar.org/content/dam/aba/publications/criminal\\_justice\\_standards/mental\\_health\\_complete.authcheckdam.pdf](http://www.americanbar.org/content/dam/aba/publications/criminal_justice_standards/mental_health_complete.authcheckdam.pdf); *see also* Richard J. Bonnie, *The Competence of Criminal Defendants with Mental Retardation to Participate in Their Own Defense*, 81 J. CRIM. L. & CRIMINOLOGY 419, 424 (1990).

107. Adolphs 2009, *supra* note 5, at 707; *see also* Jonathan St. B. T. Evans, *Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition*, 59 ANN. REV. PSYCHOL. 255, 268-70 (2008). Note that, as Evans points out, an increasing number of models have been developed to represent the social cognitive processes.

108. Domain-general cognitive functions are functions that are used for all cognitive tasks, regardless of context. Attention and working memory are examples of domain-general cognitive functions. *See, e.g.*, Jeremy R. Gray et al., *Neural Mechanisms of Fluid Intelligence*, 6 NATURE NEUROSCIENCE 316, 316 (2003).

intentional, socially relevant action.<sup>109</sup> Therefore, social-cognitive function is critical to the interaction between socially contextual information and intentional actions that underlies mental competency.

This social-cognitive interaction between context and intention is clearly inherent within the various legal definitions of mental competency.<sup>110</sup> Under the US *Dusky* standard, a competent individual must possess both a rational and a factual understanding of the proceedings.<sup>111</sup> In order to do so, the individual's cognitive functions must allow him to perceive the necessary contextual information (i.e., the factual understanding), and to incorporate his conscious thoughts into that information so that he can navigate the proceedings in a meaningful way (i.e., the rational understanding).<sup>112</sup> This inference finds additional support in the US Supreme Court's characterization of *Dusky's* "rational understanding" as the ability to make "reasoned choices."<sup>113</sup> One of the defining tasks of the social cognition pathway

---

109. Social cognition provides "input" to these domain-general cognitive processes, and social behavior is the "output." See Adolphs 2001, *supra* note 101, at 232 (illustrating social cognition's role of processing stimulus input and producing behavior output); for a more detailed discussion about the ability to dissociate social cognition from other cognitive functions, see *infra* Part II.A.2.

110. This interaction between context and intent characterizes the fundamental notions of the legal system itself. See Adolphs 2009, *supra* note 5, at 708 ("The way in which our laws assign blame and dole out punishment also captures an important context effect: an interaction between the harmful consequences of an action, and the belief and intention of the person carrying it out.").

111. *Dusky v. United States*, 362 U.S. 402, 402 (1960).

112. "The weighting of personal experience ('individual information') against information provided from others ('social information') is a key determinant of human decision making, and numerous factors can determine this weighing, such as the predictability of the environment, the relative costs of social and individual information, or the availability of suitable models to learn from. Frequently, individual and social information will together determine a decision." Simon M. Reader & Ionnis Leris, *What Shapes Social Decision Making?*, 37 BEHAV. & BRAIN SCI. 63, 96 (2014).

113. "How this [reasoned choice] standard is different from (much less higher than) the *Dusky* standard – whether the defendant has a 'rational understanding' of the proceedings – is not readily apparent to us." *Godinez v. Moran*, 509 U.S. 389, 397 (1993). The Court when on to note that "even assuming that there is some meaningful distinction between the capacity for 'reasoned choice' and a 'rational understanding' of the proceedings," the two standards would have the same legal standard of pleading. *Id.* at 398; see also Schopp, *supra* note 104, at 1044 ("While the capacity to reason or to deliberate are not explicitly stated, the rationale implies that these are also necessary at least to some minimal degree."); Bennet and Sullwold, *supra* note 98, at 1121 (explaining that mental competency "encompasses, at least in part, the mental ability to make a reasoned choice among alternatives").

2015]

## SOZIALE KOMPETENZ

is the ability to make reasoned choices,<sup>114</sup> to “process multiple alternatives and to choose an optimal course of action.”<sup>115</sup> In the complex social environment of a legal proceeding,<sup>116</sup> therefore, it is all but certain that the *Dusky* standard of competency envisions these social cognitive abilities within its strictly legal definition.

Under the definitions in Germany’s BGB, competency, or “*Geschäftsfähigkeit*,” is the ability to exercise free will<sup>117</sup> such that an individual can be bound by a legal transaction.<sup>118</sup> Here, the context-driven interaction between individual information and social information is necessarily applicable,<sup>119</sup> because the individual must be able to balance various internal and external factors in the process of deciding whether to be freely bound by a transaction.<sup>120</sup> Therefore, the German BGB could imply an additional subset of social-cognitive functions specifically necessary to complete social transactions (i.e., a contract). Researchers have suggested that these sorts of social interactions rely on a unique set of social-cognitive processes, which may be tightly coupled with the cognitive processes used in other social situations.<sup>121</sup> Certainly German private law’s emphasis on the

---

114. Alan G. Sanfey, *Social Decision-Making: Insights from Game Theory and Neuroscience*, 318 *SCI.* 598, 598 (2007); Tania Singer, *The Past, Present and Future of Social Neuroscience: A European Perspective*, 61 *NEUROIMAGE* 437, 442-43 (2012).

115. James K. Rilling & Alan G. Sanfey, *The Neuroscience of Social Decision-Making*, 62 *ANN. REV. PSYCHOL.* 23, 24 (2011).

116. *See id.* (“[G]iven that we live in highly complex social environments, many of our most important decisions are made in the context of social interactions.”); *see also* Reader & Leris, *supra* note 112 (“Important decisions in particular are likely to involve substantial use of both individual and social information.”).

117. BGB, *supra* note 56, § 104.

118. MÜNCHENER KOMMENTAR, *supra* note 59; PALANDT, *supra* note 59.

119. Adolphs 2009, *supra* note 5, at 707; Evans, *supra* note 107.

120. Adolphs 2009, *supra* note 5, at 707; Evans, *supra* note 107; Reader & Leris, *supra* note 112.

121. For an experimental consideration of various theories describing the domain-specific cognitive processes underlying social contracts, *see* Gerd Gigerenzer & Klaus Hug, *Domain-Specific Reasoning: Social Contracts, Cheating, and Perspective Change*, 43 *COGNITION* 127 (1992); *see also* Leda Cosmides & John Tooby, *Social Exchange: The Evolutionary Design of a Neurocognitive System*, in *THE NEW COGNITIVE NEUROSCIENCE*, III 1295, 1305 (Michael S. Gazzaniga ed., 2005) (suggesting that “[t]he evidence strongly supports the claim that reasoning about social exchange is caused by computational machinery that is specialized for this function in adults”); Leda Cosmides & John Tooby, *Neurocognitive Adaptations Designed for Social Exchange*, in *THE HANDBOOK OF EVOLUTIONARY PSYCHOLOGY* 584, 587 (D. M. Buss ed., 2005) (arguing that “[t]aken together, the data showing design specificity, precocious development, cross-cultural universality, and neural dissociability implicate the existence of an evolved, species-typical neurocomputational specialization.”).

transactional nature of mental competency suggests that the ability to conclude legal contracts is uniquely important in that valid participation in the private legal system is predicated upon it.<sup>122</sup> Therefore, the definitions of mental competency in German private law require not just context-driven social-cognitive functions, but also context-driven social-cognitive functions necessary for completing social transactions.

Finally, while nothing in the Japanese definitions of mental competency explicitly suggests the dependence of context-driven social cognition (at least not to the extent that the German and US standards do),<sup>123</sup> it seems reasonable to conclude that the Keihō's definition of mental competency requires the same comprehension and decision-making skills as *Dusky*,<sup>124</sup> because the Keihō assumes that individuals who lack such competency cannot be subject to legal proceedings.<sup>125</sup> Since these skills require the coordination of social and internal information,<sup>126</sup> they rely on the social-cognitive functions that facilitate them.<sup>127</sup>

In conclusion, the legal definitions of mental competency, which are grounded in the social context of a legal interaction, suggest that the social-cognitive functions that facilitate the interaction between social context and individual intentions are a necessary component of the legal definition.

## 2. Competency as a Function of Social Moral Judgment

The second indication that social-cognitive functions underlie the legal definitions of mental competency is the emphasis on the ability to perceive and regulate one's behavior in the context of social norms. The moral incapacity and volitional incapacity tests,<sup>128</sup> which are a component of the US,<sup>129</sup> German,<sup>130</sup> and Japanese<sup>131</sup> legal

---

122. BGB, *supra* note 56, §§ 104, 827, 1304; ZPO, *supra* note 64; MÜNCHENER KOMMENTAR, *supra* note 59; PALANDT, *supra* note 59; BECK'SCHE KURZ KOMMENTARE, *supra* note 67.

123. *See supra* notes 88-89 and accompanying text.

124. *Dusky v. United States*, 362 U.S. 402, 402 (1960); *supra* note 116 and accompanying text.

125. KEIHŌ, *supra* note 86, art. 1.

126. *See supra* note 107 and accompanying text.

127. *See Adolphs* 2001, *supra* note 101.

128. *See Clark v. Arizona*, 548 U.S. 735, 749-50 (2006).

129. *Id.*

130. StGB, *supra* note 68, § 20.

131. Minpō, *supra* note 80, art. 713.



2015]

## SOZIALE KOMPETENZ

definitions of mental competency, generally require an individual to appreciate the wrongfulness of his actions. Ostensibly, this requirement is predicated on an individual's ability to recognize societal standards of right and wrong, to appreciate how his actions will impact himself and others, and to appropriately regulate his behavior in conformance with the societal standards. These abilities all depend on social-cognitive functions, and this dependency further supports the assertion that social cognition underlies mental competency.

Social cognition research has well classified the neuropsychological basis for moral and ethical judgments.<sup>132</sup> In fact, regulating behavior based on moral and societal norms is perhaps one of the most important aspects of social-cognitive functions:<sup>133</sup> social cognition provides the appropriate social input, which is necessary to produce the appropriate social behavior.<sup>134</sup> Moral judgment requires the cognitive function to recognize both one's own inner sense of morality and the sense of morality of others,<sup>135</sup> so it is natural that these cognitive functions are expressly indicated by the various legal definitions of mental competency.<sup>136</sup>

It is also known, however, that the moral judgment-related cognitive functions are dissociable from other domain-general

---

132. See Adolphs 2009, *supra* note 5, at 697. Note that moral judgment is also heavily dependent on context and the interaction between internal and external factors. Adolphs 2001, *supra* note 101, at 698 (“We judge actions to be right or wrong, and the people who carry them out to be good or bad, based on emotion, inference, automatic and reflective processing, and a host of processes that have evolved to subserve reciprocity, fairness, loyalty, respect, and other behavioral disposition.”); Young et al., *supra* note 28, at 8235 (“Developmental evidence thus suggests that mature moral judgments depend crucially on the cognitive processes responsible for representing and integrating information about beliefs and outcomes.”); Moll et al., *supra* note 28, at 804 (“Humans integrate extensive contextual elements when assessing the behavior of others and when appreciating their own actions in a given situation.”).

133. Moll et al., *supra* note 28, at 799 (“Morality is a product of evolutionary pressures that have shaped social cognitive and motivational mechanisms, which had already developed in human ancestors, into uniquely human forms of experience and behavior.”); *id.*, at 804 (“Morality is a real-world business. It is about people navigating, interacting and making choices in an ever-changing world.”).

134. Adolphs 2001, *supra* note 101.

135. Young et al., *supra* note 28, at 8235 (Successful moral judgment requires “not just ‘theory of mind,’ or the ability to represent the mental states of others, but the ability to integrate this information with information about consequences in the context of moral judgment.”); Turkstra et al., *supra* note 109, at 5 (suggesting that impairments in this so-called perspective taking ability may be “one of the most socially handicapping sequelae” of impaired cognitive function).

136. *Clark v. Arizona*, 548 U.S. 735, 749-50 (2006); StGB, *supra* note 68, § 20; Minpō, *supra* note 80, art. 713.

cognitive functions, such as memory or attentional control.<sup>137</sup> It is possible, therefore, to retain the cognitive functions necessary to general functioning while losing the cognitive functions necessary to undertake appropriate social judgment. This dissociation is often seen in individuals who display extremely antisocial behavior, such as psychopaths.<sup>138</sup> Even though these individuals are often severely impaired in their abilities to regulate behavior based on appropriate societal norms, they can nevertheless be successful in their careers or their goals.<sup>139</sup> Cases such as these emphasize the importance not only of general cognitive abilities, such as intelligence or rational thinking, but also of the social-cognitive functions that allow individuals to modify their behaviors based on appropriate social norms.<sup>140</sup>

This dissociation creates difficulty for the various legal definitions of mental competency. For example, it is possible to imagine a scenario in which, under the various German definitions of competency, an individual with these types of deficits is cognitively capable of performing a legal transaction,<sup>141</sup> thereby meeting the legal definition of mental competency under the BGB.<sup>142</sup> Simultaneously, however, the individual's deficits, which are presumably "serious mental abnormalities,"<sup>143</sup> might prevent him from appreciating the illegality or wrongfulness of his actions, thereby precluding mental competency under the StGB.<sup>144</sup> A similar scenario could be imagined for the mental competency definitions under US law: an individual may have the comprehension and decision-making abilities to be able

---

137. See, e.g., Adolphs 2009, *supra* note 5, at 704; Steven W. Anderson et al., *Impairment of Social and Moral Behavior Related to Early Damage in Human Prefrontal Cortex*, 2 NATURE NEUROSCIENCE 1032, 1032 (1995); Takahiro Osumi & Hideki Ohira, *The Positive Side of Psychopathy: Emotional Detachment in Psychopathy and Rational Decision-Making in the Ultimatum Game*, 49 PERSONALITY & INDIVIDUAL DIFFERENCES 451, 451 (2010); Mike Koenigs et al., *Damage to Prefrontal Cortex Increases Utilitarian Moral Judgments*, 446 NATURE 908, 908 (2007); see also *supra* note 108.

138. Anderson et al., *supra* note 137; Osumi, *supra* note 137; Koenigs et al., *supra* note 137.

139. Osumi, *supra* note 137 ("[P]sychopathy itself may not be decisive in one's social maladaptation; rather, it may enhance some types of social success. It has been a mystery why psychopathy includes such contradictory aspects as antisocial and successful achievements.").

140. Riling, *supra* note 115, at 36-37.

141. See MÜNCHENER KOMMENTAR, *supra* note 59; see also PALANDT, *supra* note 59.

142. BGB, *supra* note 56, § 104; MÜNCHENER KOMMENTAR, *supra* note 59; PALANDT, *supra* note 59.

143. STGB, *supra* note 68, § 20.

144. *Id.*

2015]

## SOZIALE KOMPETENZ

to meet the *Dusky* standard for mental competency,<sup>145</sup> but may be precluded from competency under *Clark* because his cognitive deficits impaired his social cognition and prevented him from appreciating that the act was wrong.<sup>146</sup> Finally, this same individual may be precluded from mental competency under both the civil<sup>147</sup> and criminal<sup>148</sup> legal definitions of Japan. These hypothetical examples<sup>149</sup> underscore social cognition's role within a determination of mental competency. If these legal determinations of mental competency did not contain a consideration of social cognition, they would be unable to distinguish between an individual who is cognitively capable of performing an action while conforming to social value norms and an individual who is cognitively capable of performing that action while not conforming to social value norms. Since this distinction is critically important for the purposes of determining competency under the definitions of all three counties,<sup>150</sup> a consideration of social cognition must underlie the legal definitions of competency.

In summation, the identifiable cognitive basis for moral judgment and the reliance on this aspect of human behavior within the various legal definitions of mental competency strongly suggest that the former underlies the latter, and further suggests that social-cognitive functions are a necessary component of the various legal definitions.

### 3. Competency as a Function of Normal Adult Cognition

The third and final indication that social-cognitive functions underlie the legal definitions of mental competency is the general presumption of competency within normal adults. Since social-cognitive functions are a natural component of normal human development,<sup>151</sup> any presumption of competency in normal adults must necessarily refer to social-cognitive functions.

---

145. *Dusky v. United States*, 362 U.S. 402, 402 (1960); *see also supra* Part II.A.1.

146. *Clark v. Arizona*, 548 U.S. 735, 749-50 (2006).

147. MINPŌ, *supra* note 80.

148. KEIHŌ, *supra* note 86.

149. Note that, because mental competency is a legal determination, the courts would ultimately determine the fate of these hypothetical individuals. *See supra* note 97.

150. *Clark*, 548 U.S. at 749-50 (2006); StGB, *supra* note 68, § 20; Minpō, *supra* note 80, art. 713; *see also supra* note 136 and accompanying text.

151. *See* Stephanie Burnett & Sarah-Jane Blakemore, *The Development of Adolescent Social Cognition*, 1167 ANN. N.Y. ACAD. SCI. 51 (2009).

The legal definitions of mental competency presume competency both explicitly and implicitly. In the United States, the Supreme Court has held that the US Constitution permits an explicit presumption of competence under *Dusky*. In *Medina v. California*, the US Supreme Court held that a state law that imposed a presumption of competence on the defendant did not violate the Constitution's due process protections.<sup>152</sup> Therefore, mental competency assumes that individuals are competent until proven otherwise, suggesting that mental competency refers to cognitive functions that are the norm, not the exception. Conversely, the legal definitions under *Clark* make an implicit presumption of mental competence. *Clark* creates a negative definition of mental competency, so that mental competency is described not by the presence of certain abilities (as is the case in *Dusky*),<sup>153</sup> but rather by the absence of certain abilities; that is, individuals are presumed competent unless they have a mental disease or defect and one of the corresponding incapacities.<sup>154</sup> Under German law, the presumption of competency is understood to be the general rule for both private law<sup>155</sup> and for criminal law.<sup>156</sup> Additionally, as was true for the United States' *Clark* definitions, both the BGB and the StGB define competency in negative terms,<sup>157</sup> further suggesting that normal cognitive functions are the legal standard. Finally, the Japanese laws imply a presumption of mental competency by creating a dichotomy between "insane" or "diminished" mental states, which are precluded from legal adjudication,<sup>158</sup> and all other mental states, which are not. In all three legal systems, then, mental competency is assumed to encompass normal adult functioning, including social cognition.

---

152. *Medina v. California*, 505 U.S. 437, 452-53 (1992). See generally Bruce J. Winick, *Presumptions and Burdens of Proof in Determining Competency to Stand Trial: An Analysis of Medina v. California and the Supreme Court's New Due Process Methodology in Criminal Cases*, 47 U. MIAMI L. REV. 817 (1993) (analyzing the merits of the US Supreme Court's due process-oriented approach to resolving the competency issue underlying *Medina*).

153. *Dusky v. United States*, 362 U.S. 402, 402 (1960).

154. *Clark*, 548 U.S. at 749-50; see also *supra* note 52 and accompanying text.

155. MÜNCHENER KOMMENTAR, *supra* note 59 ("The BGB is based on the rule that every person is competent to contract. It is standard only as an exception, then, that someone be viewed as incompetent or as having limited competence."); PALANDT, *supra* note 59 ("The law fundamentally views every person as being competent to contract.").

156. ROXIN, *supra* note 70 ("The legislature assumes that an adult who puts criminal injustice into effect is normally culpable").

157. BGB, *supra* note 56; STGB, *supra* note 68.

158. MINPŌ, *supra* note 80; KEIHŌ, *supra* note 86.

2015]

## SOZIALE KOMPETENZ

Social-cognitive functions are a critically important component of normal human existence,<sup>159</sup> and this importance further suggests that social cognition is inherently included in any consideration of normal cognition. These functions develop very early in life,<sup>160</sup> and by approximately two years of age, children can manipulate and produce complex social behaviors.<sup>161</sup> Injury during this time period can produce lasting negative outcomes and impair the development of social-cognitive functions.<sup>162</sup> There is no doubt, though, that typical adults have the ability to recognize both their own cognitive processes and those of the people around them.<sup>163</sup> Because social-cognitive functions are a necessary part of typical adult behavior, and because all three legal systems presume mental competence in typical adults, social-cognitive functions must be envisioned by the legal definitions of mental competency.

In summation, three key aspects of the various legal definitions of mental competency suggest that social-cognitive functions underlie mental competency's legal conceptualization. First, mental competency is a function of the law's social context and the interaction between an individual's internal and external social perceptions. Second, mental competency necessarily requires the ability to judge and regulate one's behavior against the backdrop of social moral norms. Third, the law generally presumes that individuals with typical cognitive abilities are mentally competent. Because social-cognitive functions underlie all three aspects, the legal

---

159. Adolphs 2001, *supra* note 101 (“Many species live in societies of multiple individuals, giving rise to opposing factors that shape the evolution of their social behavior: on one hand, groups can offer better prospects for survival; on the other hand, groups can generate within-group competition between individuals. A reconciliation of these factors is found in two distinct evolutionary solutions: rigid, eusocial behavior . . . or the highly complex, flexible social behavior exemplified by primates. The latter solution requires social cognition.”).

160. *Id.* (“The development of social cognitive abilities is tied closely to the development of emotion and of its communication between infant and mother, a topic that has seen enormous research from developmental social psychology.”); Burnett, *supra* note 151, at 51; Anderson et al., *supra* note 137.

161. Burnett, *supra* note 151, at 51.

162. Anderson et al., *supra* note 137.

163. Adolphs 2009, *supra* note 5, at 696 (“Yet in typical adults there is no doubt whatsoever that we have knowledge of other minds and our own.”); R. Raxe, S. Carey, & N. Kanwisher, *Understanding Other Minds: Linking Developmental Psychology and Functional Neuroimaging*, 55 ANN. REV. PSYCHOL. 87 (2004) (“Normal adults attribute to one another (and to themselves) unobservable internal mental states, such as goals, thoughts, and feelings, and use these to explain and predict behavior.”).

definitions of mental competency suggest a meaning that necessarily includes social cognition.

### III. POTENTIAL IMPROVEMENTS TO THE US DEFINITIONS OF COMPETENCY

To conclude the analysis, Part III will briefly consider how and to what extent real-world legal trends within the United States follow the analysis as described in Part II. Part III will briefly critique certain practices related to competency and criminal justice in the United States, and will suggest a number of improvements that would allow for greater accommodation and recognition of the social-cognitive functions that underlie mental competency.

Despite the (relatively) unambiguous requirements for mental competency under the *Dusky* and *Clark* definitions, the results of competency determinations in practice do not always reflect the legal definition's underlying requirements or underlying concepts of fairness and justice. In the United States, competency hearings are a common occurrence, estimated at some 60,000 a year.<sup>164</sup> Of these, about eighty percent reach a finding of competency, with mental retardation and psychosis being the two most common exclusion factors.<sup>165</sup> Perhaps unsurprisingly, a myriad of anecdotes exist to demonstrate how individuals who have obvious cognitive impairments nevertheless face trial and punishment.<sup>166</sup> While these grim examples also illustrate the fact that mental competency is ultimately a legal question,<sup>167</sup> they nevertheless suggest possible improvements to the legal definitions of competency within the United States.

---

164. Mossman et al., *AAPL Practice Guideline for the Forensic Psychiatric Evaluation of Competence to Stand Trial*, 35 J. AM. ACAD. PSYCHIATRY & L. S3, S3 (2007); Liselotte van den Anker, *Fitness to Stand Trial: A General Principle of European Criminal Law?*, 7 UTRECHT L. REV. 120, 123 (2011).

165. Mossman et al., *supra* note 164, at S55.

166. *See, e.g.*, Ed Pilkington, *Texas Poised to Execute Intellectually Disabled Prisoner Within Hours*, THE GUARDIAN (Jan. 29, 2015), <http://www.theguardian.com/world/2015/jan/29/texas-execute-intellectually-disabled-prisoner-robert-ladd>; *see also* Erik Eckholm, *After Delay, Inmate is Executed in Georgia*, N.Y. TIMES (Dec. 9, 2014), [http://www.nytimes.com/2014/12/10/us/georgia-supreme-court-refuses-to-delay-execution.html?\\_r=0](http://www.nytimes.com/2014/12/10/us/georgia-supreme-court-refuses-to-delay-execution.html?_r=0). While this article recognizes that there are considerably more legal issues at play in these cases than merely the U.S. Constitution's standards for mental competency, these anecdotes are prime examples of individuals with obvious social-cognitive impairments.

167. *See supra* note 97.

2015]

## SOZIALE KOMPETENZ

First, the United States should consider a conceptualization of mental competency that emphasizes the interpersonal nature of cognition functioning. The language in the BGB is a good model to demonstrate the significance of this transactional nature of social cognition. Because the BGB's definition of mental competency focuses on the dyadic nature of legal exchanges,<sup>168</sup> it better represents the underlying nature of human social interactions. As described above, the social context of an individual's actions (legal or otherwise) is an important factor in competency.<sup>169</sup> The BGB's portrayal of competency captures the importance of accurately representing mental competency within the proper relational context.<sup>170</sup> Indeed, research on interpersonal interactions has recognized the importance of studying human cognition not in isolation but as part of a social system,<sup>171</sup> so that the proper unit of measurement is not the cognitive abilities of the individual in a vacuum but the cognitive abilities of the individual as he interacts with those around him.<sup>172</sup>

If the United States could incorporate explicit reference to the interpersonal, transactional nature of human cognition into the legal standards for mental competency, then it would better represent the underlying social-cognitive context. It should be noted that this theme is not entirely absent from the US legal system. Under *Dusky*, a competent defendant will be able to understand the criminal proceedings and consult with his lawyer, both of which are interpersonal,<sup>173</sup> and under *Clark*, an individual must appreciate the

---

168. MÜNCHENER KOMMENTAR, *supra* note 59; PALANDT, *supra* note 59.

169. *Supra* Part 2.A.1.

170. *See supra* note 122 and accompanying text.

171. *See, e.g.,* Riitta Hari et al., *Synchrony of Brains and Bodies During Implicit Interpersonal Interaction*, 17 TRENDS IN COGNITIVE SCI. 105, 105 (2013) (“Mutual understanding requires a certain level of between-participant similarity in perception and action . . . . Altogether, human brains and minds are not as private as traditionally thought.”); Uri Hasson et al., *Brain-to-Brain Coupling: A Mechanism for Creating and Sharing a Social World*, 16 TRENDS IN COGNITIVE SCI. 114, 114 (2012) (“With so many cognitive faculties emerging from interpersonal space, a complete understanding of the cognitive processes within a single individual's brain cannot be achieved without examining and understanding the interactions among individuals.”).

172. Hari et al., *supra* note 171 (suggesting that this research might “provide the necessary methodological and conceptual leaps from the level of individuals to dyads”); Hasson et al., *supra* note 171 (calling for a “shift from single-brain to multi-brain frame of reference”).

173. *Dusky v. United States*, 364 U.S. 402 (1960) (per curiam).

wrongfulness of his actions,<sup>174</sup> which is also arguably interpersonal. Nevertheless, the US definitions lack a clear conceptualization of mental competency within a social frame of reference. Interestingly, lower courts in the United States have employed standards for mental competency law that approached the BGB's codified definition.<sup>175</sup> While these legal issues may be beyond the jurisdiction of the US Constitution and Supreme Court, they nevertheless make clear the inherently social nature of legal transactions.<sup>176</sup> Additionally, the American Academy of Psychiatry and Law's practice guidelines for forensic psychologists and psychiatrists suggests that a consideration of social cognitive factors is important in competency determinations.<sup>177</sup> While not explicitly advocating for an assessment of social-cognitive function, the guidelines urge examiners to obtain information to "establish rapport while simultaneously providing a helpful perspective on the defendant's intelligence and social functioning" and to "provide insight into how the defendant establishes or sustains relationships, which may help the psychiatrist gauge the defendant's capacity to relate to the defense attorney."<sup>178</sup> These examples all suggest that recognition of social transaction is an informal part of competency within the US legal system, but a more explicit reference within the US Constitution's legal definition would ensure that competency determinations are made with an account of social-cognitive functions.

Second, the United States should consider adopting a conceptualization of mental competency that accounts for diminished capacity. Both German and Japanese criminal law explicitly incorporate diminished mental capacity into the legal definition of mental competency.<sup>179</sup> In the United States, however, there is no clear

---

174. *Clark v. Arizona*, 548 U.S. 735, 749-50 (2006); *see supra* Part 2.A.2.

175. *See, e.g., In re Guardianship of O'Brien*, 847 N.W.2d 710 (Minn. 2014); *Davis v. Marshall*, No. 94APE02-158, 1994 WL 425169, at \*3 (Ohio Ct. App. Aug. 9, 1994).

176. *In re Guardianship of O'Brien*, 847 N.W.2d at 715 (describing that competency exists if a person "has enough mental capacity to understand, to a reasonable extent, the nature and effect of what he is doing" or "can fairly understand the matter he is considering"); *Davis*, 1994 WL 425169, at \*3 ("The test of competency to contract is whether the powers of a person's mind have been so affected as to destroy the ability to understand the nature of the act in which he is engaged, its scope and effect or its nature and consequences. If a person, at the time of entering into a contract, understands the nature, extent and scope of the business he is about to transact, and possesses that degree of mental strength which would enable him to transact ordinary business, he is in law considered a person of sound mind and memory.").

177. *Mossman et al.*, *supra* note 164, at S33.

178. *Id.*

179. *StGB*, *supra* note 68, § 21; *KEIHÖ*, *supra* note 86.



2015]

## SOZIALE KOMPETENZ

standard: although the Model Penal Code adopted a provision for diminished capacity,<sup>180</sup> there is considerable debate over how diminished capacity should be implemented.<sup>181</sup> The German and the Japanese models, however, are perhaps more accurate with regard to the variable nature of human cognition. As indicated in Part I, the definitions used by the German and Japanese codes suggest that mental competency and partial competency exist on a spectrum of mental cognitive function.<sup>182</sup> This portrayal of human cognition on a spectrum, such that certain cognitive functions can exist at relative levels, is how scientific and medical research now characterizes certain human disorders, including those that can impair social-cognitive function.<sup>183</sup> The German and Japanese definitions, therefore, are perhaps better able to accommodate the broad range of cognitive functions that exist both in normal humans and in individuals with mental disorders.

Finally, the United States should consider adopting a conceptualization of mental competency that captures a wider range of conditions that might preclude competency. The German and Japanese definitions of mental competency better allow the inclusion of a broader range of social-cognitive impairments that could potentially affect competency. Recall that, while the United States defines incapacity as the product of a “mental disease or defect,”<sup>184</sup> German law defines incapacity as the product of a “pathological mental disorder, a profound conscious disorder, debility, or any other serious mental abnormality.”<sup>185</sup> It is possible, therefore, that certain social-cognitive deficits which meet the German standard might not meet the US standard. One highly relevant example is language disorders. Language is a key component of social-cognitive

---

180. Model Penal Code § 4.02(1) (Am. Law Inst., Proposed Official Draft, 1962).

181. See Stephen J. Morse, *Undiminished Confusion in Diminished Capacity*, 75 J. CRIM L. & CRIMINOLOGY 1, 28 (1984); Peter Arenella, *The Diminished Capacity and Diminished Responsibility Defenses: Two Children of a Doomed Marriage*, 77 COL. L. REV. 827, 863 (1977) (both arguing that the proper conceptualization of diminished capacity is the “mens rea” variant as opposed to the “diminished responsibility” variant).

182. See *supra* note 74 and accompanying text; see *supra* note 91 and accompanying text.

183. See Selwyn B. Renard et al., *Dissociation and Social Cognition in Schizophrenia Spectrum Disorder*, 137 SCHIZOPHRENIA RESEARCH 219, 219-20 (2012); Tiziana Zalla, *Amygdala, Oxytocin, and Social Cognition in Autism Spectrum Disorder*, 76 BIOLOGICAL PSYCHIATRY 356, 357 (2014).

184. *Clark v. Arizona*, 548 U.S. 735, 749-50 (2006).

185. StGB, *supra* note 68, § 20.

function,<sup>186</sup> and language disorders are generally over-represented in individuals within the criminal justice system.<sup>187</sup> While language disorders most likely contribute to negative outcomes in a legal context,<sup>188</sup> a language impairment might not necessary qualify as a “mental disease or defect” under the US definition. It could, however, qualify as a “serious mental abnormality”<sup>189</sup> under the German standard or a “weakened mind”<sup>190</sup> under the Japanese standard. Language and communication skills are especially important given the decision in *Cooper*, in which the US Supreme Court explicitly included the ability to effectively communicate with counsel within the *Dusky* standard.<sup>191</sup> Because cognitive deficits such as language impairments<sup>192</sup> appear to fall through the cracks under the current US

---

186. See Lyn Turkstra, *Should My Shirt Be Tucked In Or Left Out? The Communication Context of Adolescence*, 14 APHASIOLOGY 349, 349 (2000); Nancie Im-Bolter et al., *I Thought We Were Good: Social Cognition, Figurative Language, and Adolescent Psychopathology*, 54 J. CHILD PSYCHOL. & PSYCHIATRY 724, 724 (2013); Cynthia Dahlberg et al., *Social Communication Skills in Persons With Post-Acute Traumatic Brain Injury: Three Perspectives*, 20 BRAIN INJURY 425, 425 (2006).

187. See Juliette Gregory & Karen Bryan, *Speech and Language Therapy Intervention With a Group of Persistent and Prolific Young Offenders in a Non-Custodial Setting With Previously Undiagnosed Speech, Language and Communication Difficulties*, 46 INT’L J. LANGUAGE & COMM. DISORDERS 202, 203 (2011); Pamela C. Snow et al., *Oral Language Competence, Young Speakers, and the Law*, 43 LANGUAGE, SPEECH, & HEARING SERVICES IN SCHOOLS 496, 502-03 (2012).

188. Indeed, there is research to suggest that legal language is particularly difficult to cognitively comprehend and manipulate. See, e.g., Michele Lavigne & Gregory Van Rybroek, *“He Got in My Face so I Shot Him”*: How Defendants’ Language Impairments Impair Attorney-Client Relationships, 17 CUNY L. REV. 69 (2014); Pamela Snow & Martine Powell, *Youth (In)justice: Oral Language Competence in Early Life and Risk for Engagement in Antisocial Behavior in Adolescence*, 435 TREND & ISSUES IN CRIME & CRIM. JUST. 1 (2012); Joseph Wszalek & Lyn Turkstra, *Language Impairments in Youths with Traumatic Brain Injury: Implications for Participation in Criminal Proceedings*, 30 J. HEAD TRAUMA & REHABILITATION 86 (2015).

189. StGB, *supra* note 68, § 20.

190. KEIHŌ, *supra* note 86, art. 39, para. 2.

191. *Cooper v. Oklahoma*, 517 U.S. 348, 354 (1996).

192. Although the topic is beyond the limits of this article, it is unquestionable that functional language usage is also suggested within the various legal definitions of mental competency, as an individual’s ability to use language will profoundly affect his ability to act within the legal system. See Michele Lavigne & Greg J. Rybroek, *Breakdown in the Language Zone: The Prevalence of Language Impairments among Juvenile and Adult Offenders and Why It Matters*, 15:1 U.C. DAVIS JUV. L. & POL’Y 37, 69; see also Wszalek, *supra* note 188, at 88-90. The cognitive and neurobiological bases for language and communication in humans have been extensively studied. See, e.g., Uri Hasson & Steven L. Small, *Functional Magnetic Resonance Imaging (fMRI) Research of Language*, in HANDBOOK OF THE NEUROSCIENCE OF LANGUAGE 81 (Brigitte Stemmer & Harry A. Whitaker, eds., 2008); see also Charles A. Perfetti & Gwen A. Frishkoff, *The Neural Bases of Text and Discourse Processing*, in

2015]

*SOZIALE KOMPETENZ*

definition of mental competency, the adoption of a definition closer to that of Germany or Japan may allow US courts to better observe the fundamental concepts of fairness and due process that underlie competency requirements and to better reflect the prevailing scientific and medical norms.<sup>193</sup>

*CONCLUSION*

The scientific progress of the twenty-first century has discovered a multitude of information about the nature and function of the human brain and human mental conditions.<sup>194</sup> National and international actors<sup>195</sup> increasingly recognize the social aspect of human cognition, social cognition, as a fundamental and necessary component of healthy human life.<sup>196</sup> As this information draws greater and greater traction within global society, however, it is unclear how the scientific understanding of human cognition relates to legal definitions of mental capacity and mental competence. As this Article concluded, it appears that the plain-text legal definitions of three important legal systems (those of the United States, Germany, and Japan) all envision social cognition as a component of the legal consideration of mental competency.<sup>197</sup> However, the current US legal standards for mental competency would be better able to reflect the underlying scientific and biological realities if the United States were to incorporate features of the German and the Japanese definitions.<sup>198</sup> Even though no one legal definition will (or perhaps even should)<sup>199</sup> fully

---

HANDBOOK OF THE NEUROSCIENCE OF LANGUAGE 165 (Brigitte Stemmer & Harry A. Whitaker, eds., 2008).

193. *See supra* note 27 and accompanying text.

194. *See supra* note 4.

195. *See supra* notes 8-11.

196. *See, e.g., Social Participation*, WORLD HEALTH ORGANIZATION, [http://www.who.int/social\\_determinants/thecommission/countrywork/within/socialparticipation/en/](http://www.who.int/social_determinants/thecommission/countrywork/within/socialparticipation/en/) (defining social participation as “one of the main axes for the development of the Primary Health Care Strategy and in reaching health system goals” in the 2008 World Health Report); *see also Social (Pragmatic) Communication Disorder*, AMER. PSYCHIATRIC ASSOC., <http://www.dsm5.org/Documents/Social%20Communication%20Disorder%20Fact%20Sheet.pdf> (indicating that, under the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders released in 2013, impairments to social communication and social participation are a recognized and medically-classified disorder).

197. *See supra* Part II.

198. *See supra* Part III.

199. It is important to remember that, as has been indicated several times, the question of mental competency is ultimately a legal question that must be answered by the law. *See supra* note 97.

incorporate the underlying scientific bases of human mental functions, the German definitions of mental competency reflect certain important aspects of the transactional, context-driven nature of human cognition and explicitly define competency within a social context.<sup>200</sup> Additionally, both the German and the Japanese definitions accommodate diminished mental capacity, which more accurately represents the spectrum of cognitive functioning (social or otherwise) that individuals can possess.<sup>201</sup>

As society and scientific understanding become more and more global, comparative legal analyses play an important role in analyzing US laws, and the legal language related to mental competency is no exception. Although the United States, Germany, and Japan all rely on legal definitions of mental competency that suggest a certain set of essential cognitive functions, the United States would do well to consider the German and Japanese definitions so that its legal standards can better reflect both the underlying biological processes and the fundamental notions of fairness and due process.

---

200. BGB, *supra* note 56; MÜNCHENER KOMMENTAR, *supra* note 59; PALANDT, *supra* note 59

201. StGB, *supra* note 68, art. 39, § 21; KEIHŌ, *supra* note 86, para. 1; *see supra* note 74 and accompanying text; *see also supra* note 91 and accompanying text.