Trigger Warnings in the Classroom: Assessing the Roles of Appraisals and Stress Mindsets

By

Sarah E. Gavac

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

Markus Brauer, Professor, Psychology
Stephanie Graham, Associate Professor, Counseling Psychology
Judy Harackiewicz, Professor, Psychology
Janet Hyde, Professor, Psychology and Gender & Women's Studies

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Abstract

Trigger warnings—notices about potentially sensitive material that might activate strong emotional or physical responses—have received polarized attention for their presence on college campuses. Some scholars argue that trigger warnings are "coddling the American mind"; whereas others argue that such warnings are essential to student success. Despite media attention, there is little empirical work on trigger warnings in the college classroom. Past research has conflicting results on the effectiveness of trigger warnings and none of these studies have fully investigated the mechanisms by which trigger warnings work. In order to address how trigger warnings function in classrooms, I conducted two studies. Study 1 was designed to collect descriptive data on students' experiences with and understanding of trigger warnings and to collect pilot data on students' mindsets about stress and appraisals of course material. Students were moderately familiar with trigger warnings and saw trigger warnings as facilitating classroom engagement. Students, on average, saw stress as debilitating and their course material as a challenge. Study 2 tested, experimentally, whether and how trigger warnings had positive or negative effects on knowledge retention and affect. Study 2 also investigated the role of stress mindset (manipulated experimentally). Overall, Study 2 tested a theoretical model, whereby appraisals explain the effect of trigger warnings on knowledge retention and affect and stress mindset moderates this effect. Receiving a trigger warning (vs. not) before viewing a video did not influence outcomes (i.e., knowledge retention and positive or negative affect). Moreover, there was no evidence to support the proposed model: appraisals did not mediate the effect of trigger warnings on outcomes and a stress mindset intervention did not moderate this (lack of) effect. Overall, these studies suggested that whereas students generally understand the purpose behind the use of trigger warnings in college classrooms (Study 1), trigger warnings—at least in

the context of this experiment—had little effect on student outcomes (Study 2). Future studies should continue to investigate the influence of how course material is framed as well as mechanisms through which trigger warnings impact student outcomes.

Keywords: trigger warning, anxiety, stress mindset, stress appraisal

Chapter 1: Introduction

Overview

Trigger warnings—notices about potentially sensitive material that might activate strong emotional or physical responses—have been at the center of an increasingly polarized debate on college campuses over the past 15 years. Online search history reveals that trigger warnings were searched for as early as 2005 (although documenting was not as consistent for searches as it is now) with peaks for "trigger warning" in 2013, August 2016, and January 2019 (Google Trends, 2019). These peaks reflect the early debates on trigger warnings in the classroom as well as the resurgence of debates based on newly released empirical research. Some voices on the side against the use of trigger warnings decry that trigger warnings are simply "coddling the American mind" and encourage students to disengage with counter-ideological material (i.e., material that goes against the students' previously held beliefs) or material that simply makes students uncomfortable, which undermines undergraduates' preparation for the post-collegiate world (Lukianoff & Haidt, 2015; Roff, 2014). Other scholars argue that such warnings can facilitate students' learning and regulation of distress (Lockhart, 2016; Rae, 2016) and some suggest that such warnings are necessary for students' engagement with course material, particularly those for whom the material might be particularly difficult to encounter (Carter, 2015).

Trigger warnings are often intended to lower the negative affect that students might otherwise face when engaging with certain material in the classroom. Despite the increased attention to trigger warnings in the media, there is very little empirical evidence concerning whether or how trigger warnings help or hinder students in an academic setting. I was able to identify only 5 relevant publications, with 17 individual studies, that empirically tested the

effects of trigger warnings on various outcomes. Recent research tends to show trivial effects of trigger warnings on negative affect, knowledge retention, and avoidance (described in more detail below; see Table 1), but little is known about the underlying mechanisms and conditions that might determine whether trigger warnings are effective or ineffective in preparing students to handle stressful classroom material. Furthermore, as indicated in Table 1, many of these studies did not actually test the effects of trigger warnings with student samples in contexts that clearly generalize to college classrooms.

The goal of the present research was to collect descriptive data on students' experiences with and understandings of trigger warnings (Study 1) and to test whether trigger warnings have an effect on students' knowledge retention and affect (both negative and positive) in a moderately stressful classroom-like situation (Study 2). Furthermore, Study 2 was intended to test a theoretical model which proposed a mechanism for the effect of trigger warnings on knowledge retention and affect (appraisal, described in more detail below) and a condition that might buffer any negative effects of trigger warnings (stress mindset, described in more detail below).

Prevalence of Trigger Warnings in College Classrooms

Despite—or because of—this debate, trigger warnings are increasingly present on college campuses and in the news (Kamenetz, 2016; Schmidt, 2015). Although there is still much that is not known about trigger warnings and their effects, preliminary studies have identified three factors that seem to influence the prevalence of trigger warnings in college classrooms: (1) type of institution, (2) instructor preference, and (3) course material. In the following paragraphs, I will address these three factors. Then, I will identify additional factors that have not been addressed in previous research, but are crucial to our understanding of trigger warnings.

Table 1

Summary of Experimental Investigations of the Effects of Trigger Warnings

Authors *(Year)*	Study number	*n*	Sample	Academic context	Trauma exposure	Stimuli	Topic of stimuli	Engagement with stimuli	Outcomes (*d*)
Bellet, Jones, & McNally *(2018)*	1	270	Crowd-sourced	Yes	No	Literature passages	Varied, included graphic descriptions of violence	Real	Self-reported anxiety (0.06) [a]
Gainsburg & Earl *(2018)*	1	276	Crowd-sourced	No	No	Video	Varied, included lynching, classism	Imagined	Anticipated negative affect (SAM; 0.38**); Anticipated avoidance (0.26**)
	2	979	Crowd-sourced	Mixed	No	Essay	Domestic abuse	Real	Anticipated negative affect (SAM; 0.13**); Experienced negative affect (-0.17*)
Sanson, Strange, & Garry *(2019)* [b]	Internal meta-analysis	1880	Students. Crowd-sourced	Mixed	Mixed, n.s.	Story / Film clip	Car crash / Domestic abuse	Real	Negative affect (PANAS; 0.02); Avoidance (-0.05)

Authors *(Year)*	Study number	*n*	Sample	Academic context	Trauma exposure	Stimuli	Topic of stimuli	Engagement with stimuli	Outcomes (*d*)
Bridgland, Greene, Oulton, & Takarangi *(2019)* [c]	Internal meta-analysis	1600	Crowd-sourced	No	No	Photos	Ambiguous and neutral	Real	Anticipated anxiety (STAI; 1.36***); Anticipated negative affect (PANAS; 1.38***); Reported change in anxiety post-stimuli (STAI; 0.12); Reported change in negative affect post-stimuli (PANAS; 0.11)
Boysen, Tretter, Markowski, & Isaacs *(2019)*	1	353	Crowd-sourced	Yes	Mixed, n.s.	Educational video	Sexual assault	Real	Negative affect (0.06); Positive affect (0.21); Retention (0.11)
	2	412	Crowd-sourced	Yes	Mixed, n.s	Educational video	Death by suicide	Real	Negative affect (PANAS-S; 0.09); Positive affect (PANAS-S; 0.06); Retention (0.06)
	3	105	Students	Yes	Mixed, n.s.	Educational video	Sexual assault	Real	Negative affect (PANAS-S; 0.29); Positive affect (PANAS-S; 0.18); Retention (0.20)

Note. Positive *d* values indicate an increase in outcome. A crowd-sourced sample indicates a sample of adults whose schooling experience is variable. n.s. indicates non-significant differences between participants with and without trauma exposure, as defined by

the respective study. Academic context reflects whether the study framing drew parallels to a classroom (e.g., asking participants to imagine they encountered this material in a classroom, selecting stimuli that has been or would be encountered in classrooms). Real engagement with the stimuli indicates that participants fully engaged with the material (e.g., watched a video); imagined engagement indicates that participants received information about the stimulus and responded to anticipated outcomes should real engagement occur. SAM = Self-Assessment Manikin, PANAS = Positive and Negative Affect Scale (unless specified, only reported negative affect), STAI = State Trait Anxiety Inventory, PANAS-S = Positive and Negative Affect Scale – Short Form (unless specified, only reported negative affect).

[a] The effect of trigger warnings on self-reported anxiety was moderated by the belief that words can cause harm, such that those who saw trigger warnings reported greater anxiety in response to the passages, but only if they believed that words can cause harm. [b] Results are from an internal meta-analysis across six experiments. One study reported on participants' history of trauma and found no significant interaction between trigger warning condition and trauma. [c] Results are from an internal meta-analysis across five experiments.

* $p < 0.05$. ** $p < 0.01$. *** $p < .001$

In a study by National Public Radio, instructors at two-year, public institutions were most likely to report using trigger warnings (55%). Of four-year institutions, instructors at public institutions were more likely to have used a trigger warning (51%) than those at private institutions (39%; Kamenetz, 2016). Of instructors who had given a trigger warning, the motivation was more internal than external: 67% of instructors reported using a trigger warning because they thought the warning was necessary compared to 3% who reported using a trigger warning when a student requested a trigger warning (Kamenetz, 2016). Another survey found that less than 1% of institutions had a policy about trigger warnings, or at least a policy that the respondents were familiar with (the report did not clarify institutional vs. departmental policies; National Coalition Against Censorship [NCAC], 2016).

Across all course subjects, trigger warnings are moderately frequently used in college classrooms, with surveys reporting anywhere from 39% to 58% of college instructors using trigger warnings at least once (Boysen et al., 2018; Kamenetz, 2016; NCAC, 2016). It is possible that field and the topics covered influence the use of trigger warnings. One survey of 131 Abnormal Psychology instructors suggests that the field of psychology might be on the high end of the spectrum (although there is no empirical data to provide a comparison to other fields). The survey of Abnormal Psychology instructors found that, across 9 topics (e.g., suicide, sexual dysfunctions, gender identity), 56% (range: 46% - 69%) of instructors provided trigger warnings at least occasionally (Boysen et al., 2016). Of these nine topics, 79% of Abnormal Psychology instructors provided a trigger warning for at least one of the topics (Boysen et al., 2016).

Although the factors of institution-type, instructor preference, and course material can all help determine the likelihood of whether a student in a specific classroom receives a trigger warning, past research has limited descriptive information on the use of trigger warnings in

college classrooms. First, we need to establish the number of trigger warnings students receive in a given semester, which will provide more insight into the scope of trigger warnings in classrooms than the number of *students* who received a trigger warning. It is likely the case that individual students vary in the number of trigger warnings they receive. Second, it is critical to establish in which classes or departments students receive trigger warnings. Previous research has either focused solely on psychology courses (Boysen et al., 2016, 2018) or has not collected information on the courses and departmental affiliation of instructors when assessing the prevalence of trigger warnings in college classrooms (Kamenetz, 2016; NCAC, 2016). It is likely the case that instructors provide—and students receive—trigger warnings for a wide variety of courses and these courses are nested in departments beyond psychology.

Arguments For the Use of Trigger Warnings in College Classrooms

Argument #1: Protect Those who Experience Trauma

Trigger warnings were first used to help those who experience distress related to a traumatic event in their past, with a specific focus in online communities (Medina, 2014; Vingiano, 2014). Researchers have found that many types of traumatic events can lead to distress. Trauma, here, is defined as a shocking, scary, or dangerous event (NIMH, 2019). According to one survey, 81.7% of Americans experience a trauma at some point in their lifetimes (Sledjeski et al., 2008). A 2015 national survey of children's exposure to violence showed that more than 60% of children under 17 experience some type of violence, crime, or abuse (Finkelhor et al., 2015). According to the National Violence Resource Center, 1 in 5 women and 1 in 71 men will be raped at some point in their lives (Black et al., 2010). For the large majority of Americans exposed to trauma, the trauma will not lead to persistent symptoms that meet clinical criteria for a mental health diagnosis; however, they can experience sub-

clinical symptoms of trauma-response in the aftermath of the traumatic event (Rothbaum et al., 1992).

One key feature of trauma responses, among others[1], is re-experiencing symptoms, such as intrusive thoughts and flashbacks, which bring back the original emotional response from the trauma (NIMH, 2019). Evidence suggests that these re-experiencing symptoms can be activated in response to reminders of the original trauma experience (e.g., image, scent, sound, phrase; American Psychiatric Association, 2013), that is, triggers. To help mitigate this distress, online communities began providing trigger warnings in discussion forums when trauma-related topics were addressed (Medina, 2014; Vingiano, 2014). Similarly, trigger warnings have been instituted in college classrooms as a way to reduce potential distress that students might experience in response to engaging with course material, with a particular focus on students who have experienced a traumatic event (Boysen, 2017).

The use of trigger warnings in classrooms, particularly for those who have experienced a traumatic event, has theoretical merit. One method of treatment to reduce the association between triggers and distress response, rooted in learning theory, is prolonged exposure therapy, during which individuals repeatedly imagine engaging with their triggers before engaging in-

[1] Beyond the re-experiencing symptoms, there is avoidance—staying away from physical places, events, people, or objects as well as thoughts that are reminders of the traumatic event; arousal—startling easily, being vigilant to threats, difficulty sleeping, bursts of anger; and cognitive/mood—difficulty remembering key aspects of the traumatic event, loss of interest, negative thoughts (National Institute for Mental Health [NIMH], 2019). Symptoms differ from person to person and can be influenced by the specific features of the traumatic event (Levine, 2008). It is not uncommon for people to experience dissociation or dysphoria, physical and mental numbness, and immune system complications as well (Levine, 2008).

person with the triggers (Hofmann & Smits, 2008; Powers et al., 2010). The key to prolonged exposure therapy is that it follows a pattern of systematic desensitization to unlearn the association between an external cue and its response. A meta-analysis on prolonged exposure therapy found that it is a highly effective treatment (Powers et al., 2010). If trigger warnings might aid those with a distress response in choosing when and where to engage with their triggers and psychologically prepare themselves for such engagement, then trigger warnings could facilitate an informal type of prolonged exposure therapy.

Today, trigger warnings in U.S. classrooms are used in a much broader sense than specifically for reducing distress responses for those who have experienced trauma (Boysen, 2017). Trigger warnings are used in conjunction with the discussion of specific events such as sexual assault and lynching, and may be requested by students for more abstract concepts like classism and white privilege (Boysen, 2017; Lukianoff & Haidt, 2015). According to a recent survey of instructors, trigger warnings were most often given for topics related to suicide, child abuse, self-harm, violence, pedophilia, and sexual material (Boysen et al., 2018; Kamenetz, 2016).

Although some scholars recognize that trigger warnings are beneficial for those who meet diagnostic criteria for specific disorders, they argue that the broad use of trigger warnings is not needed. Some scholars even go so far as to suggest that trigger warnings could be harmful to those who do not meet diagnostic criteria for specific mental disorders because trigger warnings label material as potentially harmful (Boysen et al., 2019). However, there are a number of reasons that trigger warnings are not just relevant for those with trauma-related distress.

First, numerous psychological disorders are characterized by distress that is activated by external cues. Although the literature on trigger warnings has mostly focused on Post-Traumatic

Stress Disorder, other types of anxiety disorders have symptoms activated by external cues (e.g., obsessive-compulsive disorder, social phobia; Hofmann & Smits, 2008). These anxiety disorders have also been shown to benefit from prolonged exposure therapy to unlearn the association between an external cue and its response (Hofmann & Smits, 2008). In addition, individuals with severe phobias might benefit from trigger warnings so that they are not too overwhelmed or surprised with a distress-evoking stimulus (Boysen, 2017). As addressed above, desensitization can help manage distress and at the more extreme, in the short-term, avoidance of the external cues can help reduce this distress too (Rosenthal et al., 2005).

Second, distress responses might be present even without meeting clinical criteria for a diagnosis or without experiencing a specific subset of traumas (Scott et al., 2007). Past research often asks participants to identify if they have experienced any traumas from a set list (Boysen et al., 2019; Sanson et al., 2019). This is a narrow definition of what kinds of events and experiences can lead to trauma and the types of material that might be linked to a trauma response. It is important to note that many of the studies on trigger warnings in a clinical setting are only specific to those who have trauma- or fear-related triggers. Although a large majority (81.7%) of Americans are exposed to trauma during their lifetimes and a significant minority (6.8%) will meet the DSM criteria for Post-Traumatic Stress Disorder over their lifetime, these studies have only investigated those with a clinical diagnosis (Kessler et al., 2005; Scott et al., 2007; Sledjeski et al., 2008).

Furthermore, mental illness is under diagnosed and many do not or cannot seek treatment. Much is yet to be learned about the effects of trigger warnings in the general population, a few of whom have diagnosable anxiety disorders, more of whom have subclinical symptoms, and the majority of whom do not have a disorder. For the purposes of the present

research, our discussion on the effectiveness of trigger warnings includes those with clinically diagnosed mental health problems (including those with and without trauma experience) and those without clinical diagnoses.

Argument #2: Informed Engagement with Course Material

A second argument in favor of trigger warnings is that trigger warnings provide information about a potential threat and therefore provide a possibility for informed consent. Research suggests that increased information about a threat (i.e., making the threat specific and predictable) reduces anxiety associated with the threat (Grupe & Nitschke, 2013; Sarinopoulos et al., 2010). In the case of trigger warnings, the possible threat would be potentially distressing course material. By increasing the knowledge that students have about specific content—thereby making the material specific and predictable—trigger warnings could reduce anxiety and other negative affect associated with that course content. Trigger warnings can also give the perception of control, which can reduce stress reactions (Cares et al., 2014, 2018; Thompson, 1981). The perception of control is especially important for individuals who have experienced trauma, as trauma can undermine their sense of control (Janoff-Bulman & Frieze, 1983). Furthermore, the more that expectations meet reality (i.e., the expectation of stress or anxiety aligns with actual physiological sensations), the less anxiety people actually feel (Telch et al., 2011). This finding suggests that even if people experience increased anticipated negative affect due to a trigger warning, they still might be better prepared to handle the threat emotionally in the future.

The additional information about a potential threat—or in the context of this dissertation, sensitive course material—might lead to increased engagement with trauma cues or course material. Research in media studies supports this hypothesis: researchers investigated the role of television warnings (e.g., “Due to some violent content, parental discretion is advised”) and

found that having a warning—especially if presented from an authority figure—increases interest in violent television programming (Bushman & Stack, 1996). This is consistent with the forbidden fruit theory, which suggests that presenting something as forbidden invokes reactance and piques interest in whatever is forbidden (Christenson, 1992). Although the content of the television warnings is slightly different than trigger warnings and the studies did not address differences in approach or avoidance based on clinical diagnoses, these models suggest that trigger warnings might encourage some people to engage more with the forewarned material.

Argument #3: Communicate Respect for Boundaries

A third argument for the use of trigger warnings in college classrooms is that trigger warnings can be a way for instructors to communicate respect for students' boundaries (e.g., what students individually are and are not comfortable or open to talking about) and experiences (Spencer & Kulbaga, 2018). Although there is little empirical social science data to support or dispute this notion, the theoretical scholarship in the fields of Disability and Legal Studies does provide support for this argument. As Spencer and Kulbaga (2018) pointed out, many scholars who are opposed to the use of trigger warnings assume that trigger warnings encourage students to avoid material that is uncomfortable for them and dismiss the very real boundaries students might put in place to care for their own emotional well-being. As Kafer (2016) noted, providing trigger warnings can expand access to course material to a more diverse audience of students by acknowledging students' individual histories of trauma, as well as community-level trauma (e.g., racism, transphobia). Trigger warnings can demonstrate to students respect for their experiences and a desire to include students from diverse backgrounds, including students of color, economically disadvantaged students, and students with disabilities (Rae, 2015; Spencer & Kulbaga, 2018).

Argument #4: Trigger Warnings as Accommodations

The Disability Studies literature frames trigger warnings as accommodations (Carter, 2015; Rae, 2015). Carter (2015) reasoned that much of the debate about trigger warnings centers on a fundamental misunderstanding of what trauma and triggers are. Although most scholars focus on trauma as an event, Carter argued that we must think of trauma solely as an affective response and situate it in relation to other forms of neurodiversity (e.g., learning disorders), which universities commonly provide accommodations for. Indeed, universities frequently provide accommodations for anxiety-related disorders, whose symptoms can be activated by outside stimuli. Just as a panic attack might compromise a student's ability to learn, so too would the activation of trauma-related symptoms, especially if it was the class material that re-traumatized the student (Johnson, 2014). Thus, as one argument goes, trigger warnings are ways students can opt-in to the course material by reducing the unexpectedness of the material and giving the student agency over their engagement (Carter, 2015).

Trigger warnings can therefore be one method of fostering inclusive classrooms (Horton, 2017). Research has found that inclusive classrooms increase student engagement, help students feel more comfortable, and increase students' overall performance (Ambrose et al., 2010). Using trigger warnings to manage inclusive classrooms might therefore impact a wide range of meaningful outcomes in higher education.

Arguments Against the Use of Trigger Warnings in College Classrooms

Argument #1: Avoidance of Course Material

A significant concern in the conversation about trigger warnings is that they may motivate individuals to avoid trauma cues, which could lead to disengaging with a course (Gainsburg & Earl, 2018). This concern is supported by research suggesting that trigger

warnings convey information that might lead to expectations of negative affect and that people often avoid material that they expect to induce negative affect (Earl et al., 2016; Gainsburg & Earl, 2018; Taylor, 1991). Although avoidance of trauma cues can lead to short-term reduction of distress responses for individuals with Post-Traumatic Stress Disorder (and thus reinforce the avoidance behavior), symptom severity can increase over time with avoidance of such cues (Rosenthal et al., 2005). Avoidance can manifest in a number of ways, such as situation selection (i.e., not engaging with situations that evoke negative affect) and attentional deployment (i.e., focusing attention on stimuli that do not evoke negative affect; Gross, 1998). In the classroom, these avoidance tendencies can manifest as not attending class or skipping over parts of the reading that might lead to distress, both of which can hamper students' learning. Accordingly, if trigger warnings lead to avoidance, they might not help with long-term emotional distress and could lead to decreased learning.

Argument #2: Increased Feelings of Vulnerability

A second concern is that trigger warnings might cause people to believe that they are more vulnerable, especially to future threats. Bellet et al. (2018) argued that trigger warnings undermine people's expectations that they will be resilient in the face of trauma and instead suggest that people will face difficulty with new content encountered in daily life. Similarly, Sanson et al. (2019) suggested that trigger warnings might exacerbate distress for both individuals with trauma-related distress and the general population by creating an expectation of threat and negative consequences. This expectation, they argued, might be stronger than the stress response without the trigger warning (Sanson et al., 2019).

Argument #3: Increased Negative Affect

A third argument against the use of trigger warnings in college classrooms is that trigger warnings will lead to increased negative affect. Although there are few empirical studies on trigger warnings in academic contexts (see Table 1), the focus of the empirical research on trigger warnings has centered around distress and negative affect more broadly despite there being little consensus on the direction of the effect or whether it even exists. Regardless of the lack of consistent empirical evidence, there are a number of reasons for the prediction that trigger warnings might lead to more negative affect.

One perspective is that trigger warnings might be viewed as indicators that people should expect to have a negative reaction. This argument is supported by cognitive research demonstrating that information before content can bias the interpretation of that content in favor of the prior information (Bransford & Johnson, 1972). Furthermore, there is evidence that when people are told they will view disturbing video footage, they report being more upset about the video footage than those who were not told information about what they would view (Cantor et al., 1984; de-Wied et al., 1997).

Research by Orne and others suggest that trigger warnings might induce negative emotional reactions through demand characteristics, where contextual factors surrounding the situation—rather than the situation itself—draw out specific reactions (Orne, 1962; Orne & Scheibe, 1964). This is similar to nocebo effects, in which telling people to expect negative side-effects when taking medicine (vs. not setting an expectation of negative side-effects) increases reports of negative side effects (Barksy et al., 2002).

Empirical Research on Trigger Warnings in Academic Contexts

Only 17 empirical studies have investigated the effect of trigger warnings and their findings are inconsistent as to whether trigger warnings have positive, negative, or null effects on relevant outcomes (see Table 1). Of those 17 studies, 14 have occurred outside an academic context with crowd-sourced participants, which might limit the generalizability of these findings to students in classroom settings.

The studies that do exist generally agree that trigger warnings are likely to influence distress, operationalized as negative affect or anxiety. Beyond negative affect, two sets of studies have looked at avoidance of content related to the distressing material (Gainsburg & Earl, 2018) and test scores based on retention of information conveyed by the distressing material (Boysen et al., 2019). In addition to these outcomes, this section outlines the few studies that have looked at the effect of trauma exposure on outcomes as well as some preliminary work on students' perspectives on trigger warnings.

Trigger Warnings and Affect

The effect of trigger warnings on affect has mixed evidence.

Across two studies, Gainsburg and Earl (2018) demonstrated that individuals' prior beliefs that trigger warnings are protective (e.g., protect people from exposure to harmful material) moderate the effect of trigger warning on negative affect. In one study, participants saw two video titles, one with a trigger warning and one without, and then indicated their anticipated affect if they were to watch the videos. The results indicated larger differences in anticipated negative affect between responses to videos with versus without a trigger warning for those that see trigger warnings as protective (as measured at the start of the study). In a subsequent study in which participants were randomly assigned to read an essay prefaced by a trigger warning or not,

the researchers also found that although believing that trigger warnings protect people from harm increases anticipated anxiety, trigger warnings marginally decreased experienced negative affect after reading the essay. In the context of classrooms, anticipated and experienced negative affect might have different consequences. Anticipated negative affect might prevent someone from attending class to begin with, whereas experienced negative affect might diminish participation or reduce retention of material.

Likewise, another study on non-traumatized participants found that for those who believe that words can cause harm (rather than that just actions can cause harm; a construct developed by the researchers), trigger warnings increased anxiety (Bellet et al., 2018). Those exposed to trigger warnings (vs. control) expressed increased perceptions of themselves and others as vulnerable to future trauma after reading literary passages as well as stronger beliefs that such warnings are necessary after watching educational videos (Bellet et al., 2018; Boysen et al., 2019). Correlational evidence also suggests that trigger warnings are associated with negative affect. In a survey in a class on war and terrorism, students who had not previously expressed having any triggering condition indicated more apprehension and anxiety about being triggered as a result of the trigger warning (Bentley, 2017).

A number of additional experimental studies have found only trivial effects of trigger warnings on negative affect. One recent set of five studies investigated whether trigger warnings caused participants to respond differently to a set of ambiguous photos (Bridgland et al., 2019). An internal meta-analysis of these five studies found that trigger warnings did not lead to differences in perceptions of the photos, although the trigger warnings did increase anxiety prior to viewing the images, suggesting that trigger warnings in and of themselves in their current form might evoke negative affect. Sanson et al. (2019) ran a series of six studies manipulating

the presence of trigger warnings before participants saw a film clip or read a story and then engaged with another nonfiction article. Across these six studies, trigger warnings had no influence on the perceived negativity of the material, positive or negative affect, or intrusive thoughts about the distressing material.

The emphasis in empirical and scholarly work on trigger warnings has been on negative affect. As such, few studies have measured and reported the effect of trigger warnings on positive affect. Recently, a set of three studies found that there was not a significant effect of trigger warnings on positive affect after viewing educational videos about sexual assault or death by suicide (Boysen et al., 2019).

Overall, the evidence for trigger warnings leading to a change in affect is mixed. Across the current empirical studies on trigger warnings, there is not consistent evidence that trigger warnings have positive, negative, or null effects on affect. Importantly, all of the studies that have focused on negative affect measure it using different scales, reducing our ability to draw conclusions or make comparisons across studies.

Trigger Warnings and Avoidance

Overall, evidence suggests that trigger warnings do not lead to increased engagement with course material, although the evidence is mixed on whether people avoid such material or not. In one study, participants who were randomly assigned to read an essay prefaced by a trigger warning (or not) indicated increased monitoring of essays for distressing content and—at least for trigger warnings that include a keyword related to the distressing content—a higher preference not to engage with the essay topic in the future (Gainsburg & Earl, 2018). In another study, in which participants received a trigger warning (vs. not) before viewing a film clip,

trigger warnings had no influence on avoidance of a nonfiction article similar in content to that covered in the film clip (Sanson et al., 2019).

Trigger Warnings and Knowledge Retention

Little empirical work has been conducted to specifically test the effect of trigger warnings on knowledge retention, despite the fact that knowledge retention is a crucial outcome in academia. In classroom settings, stressful situations have been linked to decreased retention of educational material (Vogel & Schwabe, 2016). Thus, finding ways to manage the distress associated with course material is necessary for student learning; trigger warnings—and the mechanisms and conditions under which they might work—may provide a way to mitigate potential distress and thereby increase retention.

A recent set of three studies found that when learning about either sexual assault or death by suicide, trigger warnings did not influence retention of facts about the specific topic (Boysen et al., 2019). In this series of studies, participants received a trigger warning (or not; trigger warning notified participants of the content and highlighted that the video might "trigger extreme distress among some people, especially survivors of trauma"; Boysen et al., 2019, p. 8) before watching a short lecture about either sexual assault or death by suicide. Retention of information from the lecture, as measured by a four-item test, did not differ depending on whether someone received a trigger warning or not.

In Sanson et al.'s (2019) series of six studies manipulating the presence of trigger warnings before participants engaged with another nonfiction article, the presence of a trigger warning did not affect the number intrusive thoughts about the distressing material. The researchers considered intrusive thoughts as one manner of operationalizing deficits in learning.

Although distractions such as intrusive thoughts do block students' ability to learn, intrusive thoughts are a weak measure of learning.

Trigger Warnings and Those Who Have Experienced Trauma

Despite the initial intention of trigger warnings to help those who experience trauma-related distress, there is little empirical work assessing whether trigger warnings might differentially impact those who have a history of trauma or not. Although Sanson et al. (2019) suggested that trigger warnings may exacerbate distress for both individuals with trauma-related distress and the general population by creating an expectation of threat and negative consequences, in an internal meta-analysis of six studies, they did not find differences between people with and without a history of trauma, for outcomes such as negative affect, intrusive thoughts, and future avoidance of material related to the distressing content. Similarly, having a personal experience with sexual assault did not moderate the effect of trigger warnings on affect or knowledge retention when the topic was sexual assault, at least for an adult sample (Boysen et al., 2019).

Despite the prevalence of arguments that trigger warnings might be especially helpful for those who have experienced trauma or a distressing event, there are few studies thus far that have empirically tested whether the effects of trigger warnings on various outcomes depend on exposure to trauma.

Students' Views on Trigger Warnings

The empirical research addressed previously has covered the prevalence of trigger warnings in college classrooms and well as the effect of trigger warnings on outcomes such as negative affect and knowledge retention. In order to fully understand the function and impact of trigger warnings in college classrooms, however, it is vitally important to assess how students

view trigger warnings. In the following section, I will outline the limited research that has investigated the student perspective on trigger warnings and address a key gap in our understanding of student views on trigger warnings.

A survey of over 700 undergraduates found generally favorable views towards trigger warnings, with students indicating they expected to feel little discomfort after exposure to the trigger warning and that such warnings didn't impact their learning (Boysen et al., 2018). As addressed previously, there is evidence that—at least in Abnormal Psychology classrooms at one university—students report that instructors are adequate at determining which topics do and do not necessitate a trigger warning (Boysen et al., 2018). The necessity of trigger warnings might depend on course material: Focus groups for a war and terrorism class found that general and immediate trigger warnings seemed redundant given the topic of the course (Bentley, 2017).

Qualitative responses of students in medical school suggest that although those students are generally unfamiliar with the term trigger warning, they do think they are helpful for other students with a history of trauma and increase understanding of the severity of the material being covered (Beverly et al., 2018). It is important to note, however, that these studies did not use random assignment.

What is missing from this evidence, however, is how students actually define "trigger warning." Although instructors might have specific definitions of trigger warnings and the empirical research on trigger warnings has had a fairly narrow definition of trigger warning, this does not mean that students define trigger warnings the same way (see below for further discussion on definition of trigger warning). In order to make empirically-based decisions about the inclusion of trigger warnings in college classrooms, it is critical that we know how students define and view trigger warnings.

Limitations of Past Research on Trigger Warnings in College Classrooms

Problems with Definitions

Empirical research on trigger warnings has been limited based on the definitions used. The three most relevant to the present set of studies are in the definitions of trauma and trigger warning.

Past studies have largely focused on experiences with trauma by asking students to identify which experiences they have had from a set list of topics. This limited scope in assessing trauma leaves us not knowing the subjective emotional repercussions of those events for a particular student, nor does it capture events that are not on the list.

Previous surveys of the prevalence of trigger warnings on college campus have focused on a narrow definition of trigger warning. The survey by the National Coalition Against Censorship, in the qualitative portion of their survey, found that some instructors distinguished between providing information about course content rather than a warning about specific or general material, but the authors did not provide any data supporting this conclusion. Nonetheless, the distinction between warnings and information is important in understanding the context about empirical work about trigger warnings: “trigger warnings” are not necessarily fully representative of all the ways in which college instructors might provide content information to students. As addressed further in Chapter 4, it could be the case that instructors provide the same content to students, but attach different labels (e.g., “trigger warning” vs. “content notice”). It could also be the case that some instructors will talk through the syllabus at the beginning of the semester and discuss content and activities for each week without explicitly saying they are giving trigger warnings. This nuance suggests that statistics on instructors’ use of trigger warnings may underestimate the prevalence of warnings that function as trigger warnings in

college classrooms but do not carry the label “trigger warning.” The impact of these other warnings has yet to be empirically tested. Many of the theoretical arguments against trigger warnings tend to focus on a very narrow definition of trigger warning. Although testing the impact of different language used is beyond the scope of the present work, it does bear further research. In order to do so, we first need to establish (1) how students define trigger warnings and (2) if the narrow definitions of trigger warnings used in past research are pedagogically beneficial.

Boysen and colleagues (2019) argue that the definition of trigger warning has expanded—incorrectly, they argue—to include any material that might be uncomfortable rather than material that might evoke distress related to a clinically diagnosed mental health concern. However, the debate around trigger warnings has also expanded and the discussions led by students and instructors alike often function at the level of trigger warnings referring to any uncomfortable material, not just that which causes distress. This expansion is not necessarily detrimental. It provides room for marginalized students, as addressed previously, and for people who experience trauma and anxiety without meeting (or seeking) a clinical diagnosis. Although these students do not have a clinical diagnosis, this does not guarantee a total absence of symptoms or responses (Scott et al., 2007).

Scholars have suggested that the word “trigger” itself might evoke strong emotional responses and thus “trigger warning” draws too much attention to the potential negative affect one might experience (Boysen, 2017). Indeed, a number of recent studies investigating the role of trigger warnings have used manipulations that have “trigger warning” very clearly labeled, often with all capital letters (Gainsburg & Earl, 2018; Sanson et al., 2019). Other studies

investigating the general use of warnings have printed their warning labels in uppercase and enclosed these warnings within asterisks (Bushman & Stack, 1996).

Problems with Measured Outcomes

With regard to distress, most previous studies focused on the presence of negative affect, rather than allowing for the possibility of positive affect. More generally, previous studies focused heavily on negative outcomes, potentially biasing the research toward negative effects and ignoring potential positive effects. Although it is certainly the case that lowering negative affect is a positive outcome, inquiring about feelings with a negative valence might induce participants to notice negative affect more. Furthermore, it could be the case that people feel both negatively and positively about trigger warnings—they might be more likely to avoid the material in the future, but might also find their engagement a fulfilling experience.

Mechanisms Underlying Potential Effects of Trigger Warnings

Beyond the question of whether trigger warnings aid in the regulation of stress related to course material, the underlying mechanism for *how* trigger warnings are or are not effective remains unknown. Although changes in negative affect, as well as avoidance, can be indicators of distress, previous studies have not assessed what might be the likely mechanisms to explain the influence of trigger warnings on responses to distressing material: interpretation of stress.

Two groups of researchers have suggested that emotion regulation might play a role in the effects of trigger warnings on outcomes, but they have only focused on the role of anticipated anxiety as an outcome and mediator of the effect of trigger warnings on avoidance, rather than a specific method of regulation (Gainsburg & Earl, 2018; Sanson et al., 2019). Although empirical evidence is suggestive that expected emotional responses predict outcomes, anticipated anxiety is a weak proxy for emotion regulation and for stress in general. Overall, these studies largely

overlook the role of appraisals and mindsets about stress, both of which are stronger indicators of the interpretation of stress. Appraisals of stressors and stress mindsets have been found to be predictive of attitudes and behaviors, including positive ways of handling stress and performance (Crum et al., 2013, 2017; Lazarus & Folkman, 1984; Smith et al., 2020). The following sections will consider how appraisals of stressors and stress mindsets can advance understanding of the effects of trigger warnings.

Theoretical Frameworks

In addition to the importance of learning theory for framing conditioned responses to trauma (Blechert et al., 2007; VanElzakker et al., 2014), two other theoretical frameworks guide the current research: The Transactional Model of Stress and Coping and Mindset Theory, specifically the Stress Mindset Model. Stressful situations have been linked to decreased retention of educational material and worse memory overall (Kim & Diamond, 2002; Schwabe et al., 2012; Vogel & Schwabe, 2016). Thus, finding ways to manage the distress associated with course material is necessary for student learning.

The Transactional Model of Stress and Coping

The Transactional Model of Stress and Coping proposes that stress is highly contextual and involves a transaction between the person and environment (Lazarus & Folkman, 1984). According to the Transactional Model, before one engages in any particular stress management technique, one must first appraise the situation (i.e., determine personal significance). The *primary appraisal* involves determining if the event is stressful. The secondary appraisal involves an evaluation of the available resources to manage the situation. In the *secondary appraisal*, if an individual views themselves as having inadequate resources to manage the situation, they will make a *threat appraisal* and retreat from the stressful situation; if an

individual views themselves as having the proper resources to handle the situation, they will make a *challenge appraisal* and approach the distressing situation (Lazarus & Folkman, 1984).

Lazarus and Folkman (1984) thus identified two ways that people respond to stress after their primary appraisal of the stressor: threat or challenge. These stress responses play a role in determining whether to approach the distressing situation or retreat from it. This theory is consistent with the biopsychosocial model (BPSM) proposed by Blascovich and Tomaka. In the BPSM, challenge and threat are two motivational states reflecting how individuals appraise and engage with situations (Blascovich & Mendes, 2000; Blascovich & Tomaka, 1996). This BPSM focuses on an appraisal of resources: if someone determines they have sufficient resources to adequately address a situation, they will take on a challenge mindset; otherwise, they will take on a threat mindset.

In both of these models of stress, it is not the event itself that is relevant, but rather an individual's appraisal of that stressful event: the same situation can be viewed and responded to differently by different individuals (Blascovich & Mendes, 2000; Blascovich & Tomaka, 1996; Lazarus & Folkman, 1984). This approach is also similar to Carter's (2015) perspective that it isn't the traumatic event itself, but rather the affective response that should be the focus of trigger warnings.

According to Lazarus, viewing a stimulus as a valid threat (i.e., a threat that is worth attending to) moderates threat expectations to make the threat less overwhelming (1991). More recent work supports this notion: when people expect to experience a negative emotional reaction and are told to regulate their response by reappraising it, they have less negative emotional responses (Gross, 1998; for a meta-analysis, see Webb et al., 2012).

Overall, the Transactional Model of Stress and Coping provides an important and unexplored avenue for understanding how trigger warnings might impact academic outcomes such as affect and knowledge retention. Trigger warnings might reduce negative affect and increase retention by providing information to students in the face of distress experienced in response to a particular educational topic. As the Transactional Model and other research suggest, the additional information provided by trigger warnings is likely to influence students' appraisal of the distressing course material. Previous research has proposed that greater challenge appraisals are associated with more efficient and beneficial behaviors to manage stress (Folkman, 2010). If students are able to appraise the course material as a challenge because of the presence of a trigger warning, it is far more likely that they will retain more information and experience more positive affective responses.

The Stress Mindset Model

Mindset Theory proposes that people have mindsets, or cognitive heuristics, about the malleability of personal attributes (Dweck, 1999). Research suggests that mindsets shape information processing and inform goals, motivations, and behaviors (Chiu et al., 1997). For example, students with a growth mindset about intelligence tend to view failures in an adaptive manner and see failure as an opportunity to try again and learn, whereas those with fixed mindsets about intelligence tend to disengage after failures. Furthermore, individuals with a growth mindset about intelligence are more likely to perceive and engage with opportunities for learning compared to those with a fixed mindset (Dweck, 1999). Burnette and colleagues (2013) suggested that a growth mindset about intelligence fosters resiliency in students. For example, growth mindset interventions help students to understand academic setbacks in terms of challenges to promote learning and increased engagement.

Mindsets are not specific to intelligence; rather, mindsets are a general term and are applicable in a variety of domains. For example, one correlational study found that those with a negative mindset about aging die sooner than those who have a more positive mindset about aging (Levy et al., 2002). Schroder and colleagues (2015, 2019) found that mindsets apply to the context of therapy as well: those with a growth mindset about anxiety tended to have greater motivation to engage with and succeed in therapy compared to those who had a fixed mindset about anxiety. In a later study, Schroder et al. (2017) found that inducing a growth mindset about anxiety was a buffer to the impact of stressful life events such as natural disasters and car accidents—events that could be considered traumas, or at the very least stressful—on psychological outcomes. Although mindsets about intelligence and anxiety play a role in the classroom, my dissertation focused on stress mindsets.

The Stress Mindset Model views the stress mindset as a cognitive heuristic that influences how individuals experience and respond to stress (Crum et al., 2013). An individuals' stress mindset includes their expectations about stress as well as the attributes they ascribe to stress. A stress mindset is the extent to which an individual believes that stress has enhancing or debilitating consequences for outcomes such as performance, productivity, and learning and growth (Crum et al., 2013). Stress mindset has effects on health, performance, and well-being, such that inducing a stress-is-enhancing mindset leads to increased performance and well-being compared to inducing a stress-is-debilitating mindset or not inducing a stress mindset at all (Crum et al., 2013, 2017; Moore et al., 2012). Correlational research has also found that having a stress-is-enhancing mindset (vs. a stress-is-debilitating mindset) was associated with increased persistence in Navy SEALS special warfare training and with less perceived distress and lack of control for adolescents who later experienced adverse life events (Park et al., 2017; Smith et al.,

2020). A key aspect of stress mindset is that it is a meta-cognitive belief about the qualitative nature of stress rather than an appraisal of resources, as in the Transactional Model of Stress and Coping (Crum et al., 2013).

Stress mindset is distinct from appraisal in that stress mindset focuses on the nature of stress as debilitating or enhancing rather the evaluation of a particular stressor. An individual may view a stressor such as an exam as highly stressful and determine that they do not have adequate resources to handle the exam but also have a stress-is-enhancing mindset, which would lead to the belief that the exam, although stressful, will have positive outcomes. Conversely, another individual might have a stress-is-debilitating mindset, which would lead to the belief that the exam will have negative outcomes, regardless of the primary or secondary appraisals of the exam (Crum et al., 2013; see previous section for description of primary and secondary appraisals).

People engage in motivated reasoning; that is, individual beliefs motivate people to seek out or interpret information in such a way that it is congruent with their beliefs (Crum et al., 2017; Kunda, 1990). Those with a stress-is-enhancing stress mindset tend to focus on positive information about stress and are more likely to engage in actions and stress-management behaviors that utilize the stress to meet goals, whereas those with a stress-is-debilitating mindset are more likely to focus on negative information about stress and this motivates actions to avoid the stress (Crum et al., 2013, 2017). Crum and colleagues (2013) found that people with a stronger stress-is-enhancing mindset engaged in approach coping strategies (e.g., active coping) more frequently and avoidant coping strategies (e.g., disengagement) less frequently. Furthermore, the individuals with stress-is-enhancing mindsets exhibited smaller psychological stress responses relative to individuals with a stress-is-debilitating mindset, suggesting that

individuals with a stress-is-enhancing mindset tend to handle stressful situations better than those with a stress-is-debilitating mindset (Crum et al., 2017). Although the research on stress mindsets has yet to be applied in an education context, it could be the case that a stress-is-enhancing mindset might be associated with or lead to increased retention of course material and less negative affect.

As identified by Jamieson et al. (2018), the majority of interventions targeted at managing stress focus on reducing the frequency of stressors. However, it is not always possible to avoid stressors and avoiding stressors can lead to more negative long-term effects (Rosenthal et al., 2005). To focus simply on avoiding the source of the stress perpetuates the mindset that stress is debilitating and *should* be avoided. A more effective way to manage stressful situations is to optimize stress responses (Crum et al., 2020; Jamieson et al., 2018). Much like mindsets about intelligence and anxiety, stress mindsets can also be altered via intervention, including video interventions and scripts (Chiu et al., 1997; Crum et al., 2013, 2017). Crum et al. (2013) demonstrated that stress mindsets could be induced using short film clips that presented factual information about the nature of stress, with a bias to present stress as either enhancing or debilitating. For employees at a large financial firm, those induced to have a stress-is-enhancing mindset reported better work performance and mood and lower anxiety (Crum et al., 2013). They also found that those induced to have a stress-is-enhancing mindset had a moderate level of cortisol reactivity (a beneficial level of reactivity under stress) and desire for feedback under stress (which is an indicator of stress tolerance; Crum et al., 2013). Although the effect of stress mindset on work performance is especially suggestive, it is necessary to test if stress mindsets function in a similar manner in an academic context.

Taken together, these approaches to stress management suggest that how students appraise their course material (i.e., as a challenge or a threat) as well as students' mindset about stress (i.e., as enhancing or debilitating) will influence their responses to potentially discomforting class material. Thus, these two theoretical models may offer insight into how and when trigger warnings are effective—or ineffective—in classrooms.

The Current Research

The effects of trigger warnings on students' outcomes has received little empirical testing and the results of these studies are largely inconclusive (see Table 1). Despite the lack of conclusive research, instructors are using trigger warnings widely (Kamenetz, 2016; Schmidt, 2015). The goals of the present research were to collect descriptive data on students' experiences with and understandings of trigger warnings (Study 1) and to test whether trigger warnings have an effect on knowledge retention and affect (both negative and positive) in a moderately stressful classroom-like situation (Study 2). Furthermore, Study 2 was intended to test a theoretical model that proposed that appraisals are the process through which trigger warnings affect knowledge retention and affect and that stress mindset is a condition under which these effects differ.

Based on previous research and theory, I identified five research questions that need to be addressed to gain a better understanding of the effects of trigger warnings in college classrooms:

- **Research Question 1:** What are students' perceptions of and experiences with trigger warnings?
- **Research Question 2:** Do trigger warnings lead to positive or negative outcomes, as measured by knowledge retention and affect?
- **Research Question 3:** Is appraisal of course material a mechanism by which trigger warnings affect knowledge retention, positive affect, and negative affect?

- **Research Question 4:** Does stress mindset have a direct effect on knowledge retention and affect and interact with the presence of a trigger warning to moderate the effect on knowledge retention and affect?
- **Research Question 5:** Is there empirical support for the proposed theoretical model in a test of moderated mediation, with appraisal as a mediator and stress mindset as a moderator of the effect of trigger warnings on appraisals, knowledge retention, and affect?

The present research included two studies to answer the five research questions outlined above. Study 1 was a descriptive study that primarily established students' experience with, and perceptions of, trigger warnings. Study 1 was also intended to collect pilot data on students' mindsets about stress and appraisals of course material to give insight into whether it could be effective to manipulate stress mindsets in the context of appraisals in a stressful academic setting. Study 2 tested the effects of trigger warnings (experimentally manipulated) and stress mindset (experimentally manipulated) on responses to a distressing video, with appraisals of the video as a hypothesized mediator of these effects.

For Study 1, I did not have a priori predictions about student experiences overall. I anticipated that many students would be unfamiliar with trigger warnings. I predicted that there would be a positive correlation between stress mindset and appraisals: the more students see stress as enhancing, the more likely they would be to report viewing course material as a challenge. Furthermore, I predicted that viewing stress as enhancing would be positively correlated with finding more functionality in trigger warnings, more positive affect in response to trigger warnings, and increased perceptions that trigger warnings facilitate interactions with course material.

In Study 2, I predicted that the presence of trigger warnings (vs. control) before viewing a moderately stressful video would influence affect and retention of information about the stimulus video, with no a priori prediction about direction. I also predicted that appraisal of course material would be a process through which trigger warnings affect outcomes; that is, I predicted that appraisals mediate the effect of trigger warnings on knowledge retention and affect and that the effect of trigger warning on appraisal and outcomes would be moderated by induced stress mindset. Given the prevalence of trigger warnings in college classrooms and the inconclusive debate about their effectiveness, it is imperative that studies empirically test different mechanisms and collect more descriptive data to thoroughly understand perceptions of trigger warnings and their application in college classrooms.

Chapter 2: Study 1

Study 1 was a descriptive study that primarily established students' experience with, and perceptions of, trigger warnings. In order to develop clear hypotheses to test, researchers first need a basic understanding of trigger warnings. This includes knowing how students define trigger warnings, the general prevalence of trigger warnings, and under what circumstances trigger warnings are used and expected in college classrooms. The secondary purpose of Study 1 was to collect pilot data on students' mindsets about stress and appraisals of course material to give insight into whether manipulating stress mindsets would be an effective intervention in the context of a stressful academic setting.

Because Study 1 was descriptive, I did not have any strong a priori predictions about students' experiences with trigger warnings overall (Research Question 1). With regard to correlations, based on past research, I expected that:

Hypothesis A: individuals who see stress as enhancing (compared to those who see stress as debilitating) are more likely to appraise course material as a challenge (rather than a threat). Previous research suggests that those who have a stress-is-enhancing mindset have more approach-oriented responses to stress, which is linked with challenge appraisals (Crum et al., 2013).

Hypothesis B: individuals who see stress as enhancing (compared to those who see stress as debilitating) are more likely to perceive a positive function in trigger warnings because trigger warnings provide information about how to approach the course content (Folkman, 2010; Lazarus, 1991).

Hypothesis C: more frequent instances of being emotionally triggered in class this semester (compared with fewer instances or not been emotionally triggered) will have a

negative association with viewing trigger warnings as facilitating course materials because the experiences will lead to disengagement with the course (McEwen & Lasley, 2003).

Method

Participants

Participants (N = 152) were recruited through the University of Wisconsin-Madison Psychology Participant Pool (Fall Semester 2019, Weeks 11 and 12). To be a part of the Participant Pool, students were 18 years or older and currently enrolled in Introductory Psychology. All participants were given extra credit in their Introductory Psychology course for completing the study. Participants were encouraged to respond to all questions, although they were able to skip questions they did not want to answer. See Table 2 for demographic details.

Measures

Participants saw all of the following items. Items were randomized within question block for each participant, unless otherwise noted.

Definition of Trigger Warnings

Participants indicated whether they were familiar with the term *trigger warning* ("Yes", "No", or "Not sure") and how they would define a trigger warning (open-ended; see Appendix A; adapted from Gainsburg & Earl, 2018). The two items were presented in a set order on separate pages.

To quantify students' definitions of "trigger warning", I developed a coding manual, which was initially developed a priori based on themes related to trigger warnings (see Appendix B). The themes were developed based on the empirical and theoretical literature as well as published opinion pieces about trigger warnings. Overall, the themes addressed many

preconceptions about trigger warnings held both in scholarly work as well as popular opinion (e.g., that trigger warnings are only associated with personal trauma, that trigger warnings are about specific topics).

Table 2

Summary of Demographic Information

Variable	*n*	%
Race	150	
Asian	16	10.7
Black	1	0.7
Latinx	1	0.7
Middle Eastern	0	0.0
Other / Mixed	13	8.7
White	120	80.0
Gender	152	
Man	58	38.2
Woman	92	60.5
Transman	0	0.0
Transwoman	0	0.0
Nonbinary/Genderqueer	1	0.7
Gender not listed	1	0.7
Semester in school	152	
First semester	102	67.1
Second semester	1	0.7
Third semester	40	26.3
Fourth semester	0	0.0
Fifth semester	6	4.0
Sixth semester	1	0.7
Seventh semester	2	1.3
Eighth semester or higher	0	0.0
	M	*SD*
Age	18.5	0.8

Note. Not all participants responded to all of the demographic questions. Data missing for race (n = 2) and age (n = 1).

After pilot testing with the research team, the coding manual was revised to retain six themes, with 12 total items. A team of two independent raters coded the responses. In a training session, the two research assistants coded the same 10 responses and then discussed with the lead researcher. Discrepancies were resolved by consensus. After this training session, the research assistants alternated double-coding 10 responses and separately coding 10 responses. In total, 50 responses were double coded by both research assistants.

As the content analysis was not the main purpose of Study 1, the explanation of the content analysis below has been shortened for brevity. Additional themes and analyses can be found in the Supplemental Material.

Quality of definition and wording. The two research assistants coded two items assessing the wording in the definition. The first item assessed whether students had an accurate definition of what a trigger warning is. To meet the criteria for an accurate definition, students needed to indicate that trigger warnings are: 1) statements and 2) about distressing material or material that would lead to a reaction (author developed item; definition based on Gainsburg & Earl, 2018). The two assistants coded whether students had an accurate definition (met both criteria), partially accurate definition (met only one of the criteria), or an inaccurate definition (a response such as “feeling things”). The research assistants also indicated if the response was missing entirely or if the student indicated they did not know the definition (e.g., “I don’t know).

A key aspect of the definition of trigger warnings is the type of deterministic language included; that is, whether students see the content (or the trigger warning itself) as leading to an emotional or physical reaction. The research assistants coded whether the definitions implied causality (e.g., the content *will* lead to an emotional reaction) or suggested causality (e.g., the

content *may* lead to an emotional reaction; author developed). Research assistants also indicated if there was insufficient information to make a conclusion about deterministic language.

Content of trigger warnings. The two research assistants coded four items focusing on the content of trigger warnings. The first item assessed the type of stimulus; that is, whether students saw trigger warnings addressing material (e.g., readings, lectures, videos), events (e.g., School function, interactions with other people), both, neither, or a general type of stimulus (e.g., does not reference material or event, but does suggest that the reaction originated with something). See Appendix B for more details. The second item addressed the idea that students see trigger warnings as necessary for controversial or counterideological material (item based on preconceptions by Lukianoff & Haidt, 2015). The research assistants coded whether the students' definitions mentioned controversial material (e.g., "Prepare for engaging with unpopular material; material that people have strong, oppositional feelings for, such as abortion, death penalty"), counterideological material (e.g., "Prepare for engaging specifically with material that is counter to one's beliefs"), both types of material, or neither. The third and fourth items addressed the hypothesis that trigger warnings are—or should be—about trauma (Boysen, 2017). In the third item, the research assistants focused specifically on whether trauma was mentioned. If trauma was mentioned, the coding manual distinguished between trauma that was not specified (e.g., "trauma mentioned, but not sufficient detail to assume source"), trauma that is based on previous experience ("reminds you of a trauma that happened before"), trauma that is generally disturbing (e.g., "material that people find traumatizing, like the Holocaust or lynching"), or both based on previous experience and generally disturbing. The fourth item focused on impactful material that was not labeled traumatic, but made the same distinctions in source.

Exposure to Trigger Warnings

Participants were then presented with a definition of trigger warning ("A trigger warning can be defined as: 'A statement at the start of a piece of writing, video, lecture, etc., alerting the student to the fact that it contains potentially distressing material.'"; Gainsburg & Earl, 2018). Then, participants were asked if, by this definition, they had had a trigger warning in any class in the current semester ("Yes", "No", or "Not sure"). If participants indicated *Yes* or *Not sure*, they were asked to identify the department in which they received the trigger warning (open-ended). If they had multiple classes in the same department, participants were asked to provide an identifier for the class. For each class, students indicated how the instructor provided a trigger warning. Participants checked all methods that apply from a list (e.g., "A syllabus statement", "A statement before a specific sensitive topic"). Students also indicated when instructors for each class provided a trigger warning, checking all that apply from a list (e.g., "at the beginning of the semester", "after a student was visibly distressed in class by a topic"; adapted from Boysen et al., 2018). If the participant indicated that they had not received a trigger warning this semester, they moved on to the next set of measures. See Appendix C for more details.

Perceived Content of Trigger Warnings

For a list of 12 topics (e.g., suicide / self-harm, offensive language), participants indicated whether an instructor issued a warning and it was necessary, an instructor issued a warning and it was unnecessary, an instructor did not issue a warning and it was necessary, or an instructor did not issue a warning and it was unnecessary. If the topic was not covered this semester, participants chose Not Applicable. Global warming and economic policy were included as control topics (see Appendix D; adapted from Boysen et al., 2018; control topics were added by the author).

Perceived Function of Trigger Warnings

This scale was a collection of nine items related to students' perceptions of the function trigger warnings serve in the classroom, broadly defined. Participants indicated the extent to which they see trigger warnings as useful on a 0 (*strongly disagree*) to 6 (*strongly agree*) scale (e.g., "Trigger warnings help people avoid distressing content", "Trigger warnings protect instructors from complaints"; three items were based on statements from Boysen et al. (2018); three items on the questions from Beverly et al., 2018; other items were developed solely by the research team based on prevailing theory about trigger warnings; see Appendix E). Although the nine items were not created to form a cohesive scale, but rather to reflect the range of arguments made about the perceived function of trigger warnings, after removing Item 3 ("Trigger warnings compromise the academic freedom of instructors"), the eight remaining items formed a scale with high internal reliability (Cronbach's $\alpha = .83$). Higher scores indicated that students viewed trigger warnings as having more functionality in the classroom.

Affective Response to Trigger Warnings

Participants indicated on a 7-point Likert scale from 0 (*very slight or not at all*) to 6 (*Extremely*) the extent to which they expect to feel each of 10 affect-related words (e.g., inspired, determined, afraid) when encountering content that is preceded by a trigger warning (prompt adapted by author to fit purpose of study). These items were from the Positive and Negative Affect Schedule-Short (PANAS-S), which has good internal consistency ($\alpha_{positive} = .78$; $\alpha_{negative} = .87$; Mackinnon et al., 1999; Watson et al., 1988; see Appendix F). Item 2 ("Alert") loaded with the negative affect items (rather than the positive affect items as the original scale intended) and so the item was included with the negative affect subscale. Ratings for items on the positive and negative affect subscales were averaged across each subscale ($\alpha_{positive} = .89$; $\alpha_{negative} = .93$).

Perceived Facilitation of Interaction with Course Material

This scale is a collection of 10 items related to students' perceptions of how a trigger warning would influence their future engagement with learning, broadly defined. The items focus on students' emotional preparedness, feelings of efficacy, and perceptions of whether trigger warnings would be detrimental to their academic participation. Although this scale covered a wide range of items, I will refer to it either by name or as engagement with course material for the sake of brevity. Participants indicated their past or anticipated engagement with course material if a trigger warning was provided on a 0 (*strongly disagree*) to 6 (*strongly agree*) scale (e.g., "Seeing a trigger warning makes me more likely to seek out that material"). I based four items on statements by Boysen et al. (2018); the other items were developed by the research team based on theory about trigger warnings (see Appendix G). After removing Items 1 – 4, the six remaining items formed a scale with high internal reliability ($\alpha = .86$). Higher scores indicated that students viewed trigger warnings facilitating more interaction with course material.

Stress Mindset Measure

Participants responded to the eight-item Stress Mindset Measure–General (SMM-G) developed by Crum and colleagues (2013). The SMM-G is used to determine whether participants see stress as enhancing (e.g., "Experiencing stress facilitates my learning and growth"; $\alpha = .89$) or debilitating (e.g., "The effects of stress are negative and should be avoided"; see Appendix H; $\alpha = .77$). I planned to obtain stress mindset scores by reverse-scoring the four stress-is-debilitating items and then taking the mean of all eight items. This treatment is consistent with Dweck's original work on intelligence mindsets and Crum and colleagues' recent work on stress mindsets (Crum et al., 2013, 2017; Dweck, 1999). Higher scores indicated that participants on average saw stress as enhancing.

Appraisal of Course Material

Participants were asked to think of their "most difficult course this semester" and evaluate the demands of the course (e.g., "My course material is demanding") and their resources to cope with the stress (e.g., "I have the abilities to perform well in this course") on a 0 (*strongly disagree*) to 6 (*strongly agree*) scale (Mendes et al., 2007; prompt adapted by author; see Appendix I). Six questions assessed demand appraisals ($\alpha = .78$) and five questions assessed resource appraisals ($\alpha = .75$). Internal reliabilities are consistent with previous work ($\alpha_{demand} = .80$ and $\alpha_{resource} = .75$; Crum et al., 2017). In line with previous research, the appraisals were averaged separately for demands and resources (Akinola & Mendes, 2008, 2013; Mendes et al., 2007).

Definition of and Experience with Distressing Events

Participants were asked three questions related to their definition of and experience with distressing events (see Appendix J).

First, participants defined what it means to be emotionally triggered ("In your own words, what does it mean to be emotionally triggered?"). Please see the discussion of the coding of the definitions below. Next, participants indicated whether they had ever experienced an extremely distressing event ("Have you ever experienced a distressing event that exceeded your ability to cope with that stress?"). Response options were Yes, No, and Not Sure. Following IRB guidance, participants were not asked to specify what kind of distressing event they experienced.

Participants then indicated how frequently they had been emotionally triggered in class this semester ("How frequently have you experienced the feeling of being emotionally "triggered" by something in class this semester, according to your definition of what it means for someone to be 'triggered'?"). Response options ranged from "Never" to "More than 20 times this semester". The response options were presented in a fixed order and participants were able

to choose only one option. Given that some of the response options were ranges (e.g., "9 – 15 times this semester"), I took the midpoint of the range (e.g., "9 – 15 times this semester" was treated as "12 times this semester") in order to analyze the frequency data.

To quantify students' definitions of "emotionally triggered", I developed a coding manual, which was initially developed a priori by the author based on themes related to being triggered (see Appendix J). After pilot testing, the coding manual was revised to retain six themes, with 30 total items. A team of two independent research assistants coded the responses, following the same procedure as with the coding for the responses to "trigger warning". As with the responses to "trigger warning", additional themes and analyses can be found in the Supplemental Material.

Quality of definition and wording. The research assistants responded to two items assessing the wording in the definition of "triggered". The first item determined whether students had an accurate definition of what it means to be emotionally triggered. To meet the criteria for an accurate definition, a student needed to indicate that being emotionally triggered involves: (1) a stimulus and (2) a reaction. The research assistants indicated whether students had an accurate definition (met both criteria), partially accurate definition (met only one of the criteria), or an inaccurate definition (a response such as "feeling things"). Research assistants also coded if the response was missing entirely or if the student indicated they did not know the definition (e.g., "I don't know).

A key aspect of being emotionally triggered is that the stimulus leads to the reaction. As such, the second item focused on the type of deterministic language included; that is, whether students see the stimulus as leading to a reaction. The research assistants coded whether the definitions implied causality (e.g., the stimulus *will* lead to a reaction) or suggested causality

(e.g., the content *may* lead to an emotional reaction). The two research assistants also coded whether there was insufficient information to make a conclusion about deterministic language.

Emotions experienced while triggered. The research assistants responded to 19 items related to emotions that might be referenced as a reaction to being triggered. The first item focused on the valence of any non-specific emotion. For responses that mentioned emotional responses, research assistants coded whether the valence of the emotion(s) was negative, positive, both, or unspecified. Items two through 19 were coded for the presence or absence of specific emotions. To generate the list of emotions, I started with the list of affect-related items from previous studies (Durik et al., 2006; Watson et al., 1988) and pruned items (amusement, excited, happiness, inspired) that were not relevant to being emotionally triggered and because they focused on positive emotions. Further items were merged for the sake of brevity and to reduce redundancy (e.g., upset and hurt). See the full list of affect-related items in Appendix J.

Background Questions

Participants answered a number of background questions. These questions always appeared last and in a set order. Participants indicated their major or intended major. In order to understand the context of how long students have been enrolled at UW-Madison, participants indicated which semester this was for them and how many courses they were currently enrolled in at UW-Madison. Finally, participants were asked to indicate their race, gender, and age. See Appendix L for details.

Procedure

The study was conducted fully online in weeks 11 and 12 of a 14-week Fall 2019 semester. After consenting to partake in the study, participants saw all measures before being debriefed and provided with resources, should they need emotional support after participating in

the study (see Appendices M and N). Participants were able to skip any of the items should they choose to do so.

Results

Definition of Trigger Warnings

Participants first indicated whether they had heard of trigger warnings before. After removing the 11% of non-responses, 57.9% of participants indicated that they had heard of trigger warnings (see Table 3).

Table 3

Summary of Familiarity with Trigger Warnings

Variable	Yes	No	Not sure	NA
Heard of trigger warning	57.9%	27.0	15.1	11.1
Received a trigger warning this semester	33.6	50.7	15.8	11.1
After being told the definition of a trigger warning and indicating they had received a trigger warning: the number who had heard of trigger warning	66.7	23.5	9.8	--

Note. Participants were given the definition of trigger warning before indicating if they had received a trigger warning this semester. NA (n = 19) indicates the percent of the total number of participants who did not respond to this item. Percentages were calculated based on those who did respond to the questions.

The free-response definitions of trigger warnings were coded based on six themes (see Appendix B and discussion of theme development in Methods). I calculated kappa coefficients using standard guidelines of interpretation (Landis & Koch, 1977). Of the twelve items, six had almost perfect agreement between the two raters (κ = .82 – 1.00), five had substantial agreement

between the raters (κ = .64 - .79), and one had fair agreement between the raters (κ = .37; See Table S1 in the Supplemental Material). Any disagreement in coding between the research assistants was resolved by consensus among the coding team. Five responses were removed because the response was blank and an additional 21 responses were removed for indicating that they did not know the definition of a trigger warning (e.g., "I don't know", "not sure"). The themes detailed in the Methods section are included below; see the Supplemental Material for additional analyses.

Quality of definition and wording

Overall, 86.9% of participants who responded to the question about their own definition of a trigger warning identified at least one of the two key components that I identified as crucial to trigger warnings: that trigger warnings include a statement on the content and are associated with some type of reaction. The remaining 12.8% of students attempted a definition, but their response did not clearly meet either of the two criteria for accuracy of definition.

Based on the language used in their definitions of trigger warnings, students are almost twice as likely to view the reactions to the distressing content or trigger warnings as a possibility (57.3%) rather than a certainty (30.8%). 11.9% of the students' responses lacked sufficient information to determine perceptions of causality.

Content of trigger warnings

According to the student responses, trigger warnings are more likely to be about only material (30.8%) than events (14.5%), although a majority of trigger warnings had an unspecified stimulus (47.9%; see Table S4 in Supplemental Material). Contrary to some recent theorizing about trigger warnings, students overwhelmingly (89.7%) did not see trigger warnings as applying to controversial material, counterideological material, or both.

Furthermore, although trigger warnings were initially used in response to PTSD, only 39.3% of students indicated that trigger warnings apply to traumas (vs. 60.7% who did not mention trauma). 90.6% of students suggested that trigger warnings are about material that is impactful without the label of trauma and that the material is more often generally disturbing (25.6%) than based on an individual's previous experiences (19.7%; see Table 4).

Table 4

Summary of How Material Relates to Past Trauma or Impactful Event

Variable	Material not specified	Based on previous experience	Generally disturbing	Previous experience & generally disturbing	Missing sufficient information
Linked to past trauma	12.8%	14.5	10.3	1.7	60.7
Impactful	41.9	19.7	25.6	3.4	9.4

Note. Percentages were calculated based on those who did respond (NA = 26). Percentages sum to 100 across row.

Exposure to Trigger Warnings

After being given a definition of trigger warnings, 33.6% of participants indicated that they had received a trigger warning this semester (see Table 3).

I completed an internal check of responses. Of those participants who indicated that they had received a trigger warning this semester, 66.7% indicated on a previous question that they had heard of trigger warnings. I would expect this number to be 100%, in that those who received a trigger warning by definition should be familiar with trigger warnings. However, it

could be the case that individuals did not realize they had received a trigger warning until after they were given a definition of trigger warning during the study.

Overall, 38.8% of respondents had received one to five trigger warnings in one or more courses this semester (see Table S6 in the Supplemental Material).

Participants who received a trigger warning this semester (n = 59) indicated a total of 87 courses that they had received a trigger warning in. The majority of the courses (64.8%) were housed in six departments: psychology (*n* = 35 respondents; 39.8%), sociology (*n* = 6 respondents; 6.8%), gender and women's studies (*n* = 5 respondents; 5.7%), history (*n* = 5 respondents; 5.7%), anthropology (*n* = 3 respondents; 3.4%), and English (*n* = 3 respondents; 3.4%). The high number of students indicating that they had received a trigger warning in a psychology class is likely because all of the students were recruited through the Psychology Participant Pool, and therefore were taking a psychology course. Of those who had received a trigger warning, 18% (*n* = 24) were business majors, 14% were finance majors (*n* = 19), 8% were undecided (*n* = 11), 7.5% were biology majors (*n* = 10), 7% were marketing majors (*n* = 9), and 6% were psychology majors (*n* = 8). See Tables S7 and S8 in the Supplemental Material for further details.

For those who received a trigger warning in Fall 2019, students most frequently indicated receiving a trigger warning before a specific course topic (54.0%) or before specific content (64.4%) rather than as more general statements in the syllabus (19.5%) or before a large module (26.4%). Trigger warnings tend to be specific and content based (see Table S9 in the Supplemental Material). Data about when trigger warnings were conveyed further suggest that trigger warnings tend to be conveyed before specific content (94.3%) rather than just at the beginning of the semester (18.4%; see Table S10 in the Supplemental Material). Although 47.7%

of participants were triggered one or more times during class this semester, 0% of students indicated that they received a trigger warning that made clear it was in response to a student's distress.

Perceived Content and Necessity of Trigger Warnings

Students rated their experiences with receiving trigger warnings across their courses this semester for 12 topics, two of which were control topics. Participants indicated whether instructors provided necessary warnings for the topics, provided warnings for topics that didn't need a warning, did not provide a warning when it was needed, or did not provide a warning and it wasn't needed. See Table 5 for a summary of the percentages for each response for those who covered the topic. Across all topics needing trigger warnings, participants indicated a greater likelihood of receiving a trigger warning than not. In addition, for those topics not needing trigger warnings, students reported low incidences of receiving trigger warnings, suggesting that instructors are appropriately issuing trigger warnings. For ease of interpretation, I also calculated a difference score in perceptions of whether trigger warnings are necessary or not (regardless of whether the trigger warning was issued). Positive scores indicate that trigger warnings are seen as more often necessary than unnecessary. The two control topics were the only topics for which trigger warnings were seen as more unnecessary. Of particular note, the greatest difference scores were for sexual violence, gory imagery, abuse, and suicide / self-harm, suggesting that these are topics for which students view a trigger warning as necessary.

Table 5

Students' Ratings of Necessity for, and Issuance of, Trigger Warning by Topic Area

Topic	Not applicable	Necessary and issued	Necessary but not issued	Unnecessary but issued	Unnecessary and not issued	Difference: Necessary – Not [a]
Non-sexual violence (e.g., imagery of guns, war)	62.3%	46.6	13.8	5.2	34.5	20.7
Sexual violence (e.g., rape, sexual assault)	65.6	69.8	9.4	9.4	11.3	58.5
Abuse (e.g., physical, emotional)	59.1	66.1	8.1	8.1	17.7	48.4
Offensive language	57.1	39.7	13.2	5.9	41.2	5.9
Nudity	71.4	45.5	20.5	11.4	22.7	31.8
Suicide / self-harm	63.0	66.7	10.5	10.5	12.3	54.4
Gory imagery (e.g., blood)	61.7	63.3	20.0	3.3	13.3	66.7
Consensual sexual acts	70.8	45.7	17.4	4.3	32.6	26.1
Issues related to diversity (e.g., racism, classism, sexism)	43.5	59.1	12.5	1.1	27.3	43.2
Mental health disorders (e.g., depression, anxiety, eating disorders)	37.0	54.6	11.3	9.3	24.7	32.0
Economic policy (control)	70.1	27.7	12.8	4.3	55.3	-19.1
Global warming (control)	68.8	18.4	16.3	4.1	61.2	-30.6

Note. Not Applicable indicates that the topic was not covered. Except for Not Applicable, all values reflect the percentage of students indicating each response who had covered the topic in Fall 2019 (i.e., for whom the topic was applicable).

[a] For ease of interpretation, I computed this difference score. Higher scores indicate greater agreement that a trigger warning is necessary for the topic. Negative scores indicate that trigger warnings are largely seen as unnecessary. As expected, the two control topics have a negative difference score, which serves as a validity check.

Perceived Function of Trigger Warnings

Participants responded to nine items regarding the utility of trigger warnings (see Table 6 for a summary of responses). I did not have a priori predictions about whether these items would form a single scale. A test of internal reliability revealed that the items have high internal reliability overall ($\alpha = .81$) and that the reliability would be increased by .02 ($\alpha = .83$) with the removal of Item 3. Items 1 and 3 were negatively correlated with the overall scale.

Table 6

Students' Ratings of Perceived Function of Trigger Warnings

Question	*M*	*SD*
1. Trigger warnings before a lecture, a reading, or a piece of writing or video are harmful	1.48	1.56
2. Trigger warnings help people avoid distressing content	4.34	1.39
3. Trigger warnings compromise the academic freedom of instructors	2.18	1.65
4. Trigger warnings are necessary before a lecture, a reading, or a video	4.39	1.43
5. Trigger warnings help people brace for distressing content	4.62	1.29
6. Trigger warnings are helpful for those who need them	4.75	1.3
7. Trigger warnings help students engage with course material	3.2	1.58
8. Trigger warnings protect instructors from complaints	4.1	1.44
9. Trigger warnings raise awareness of how course material may affect other students in the class	4.36	1.34

Note. Ratings were on a scale from 0 (*strongly disagree*) to 6 (*strongly agree*).

I performed an exploratory factor analysis with oblique rotation on the nine items. The first two factors explained 38.0% and 11.0% of the variance, respectively. The one-factor solution was preferred because the eigenvalue was above 1.0 and the scree plot leveled off after

one factor, χ^2 (27, N = 152) = 74.6, p < .001 (Zwick & Velicer, 1986). Eight of the nine items loaded high on one factor (factor loadings > .3). The factor-loading matrix for the one-factor solution is presented in Table 7. One item (Item 3) was eliminated because it failed to meet the criterion of having a primary factor loading of .3 or above and it had low communality with the other items.

Table 7

Factor Loadings and Communalities Based on Exploratory Factor Analysis for One-Factor Model with Oblique Rotation for Nine Items Assessing Perceived Function of Trigger Warnings (N =152)

Question	Factor 1	Communality
1. Trigger warnings before a lecture, a reading, or a piece of writing or video are harmful	-.40	.16
2. Trigger warnings help people avoid distressing content	.57	.32
3. Trigger warnings compromise the academic freedom of instructors	-.26	.07
4. Trigger warnings are necessary before a lecture, a reading, or a video	.75	.57
5. Trigger warnings help people brace for distressing content	.81	.65
6. Trigger warnings are helpful for those who need them	.80	.65
7. Trigger warnings help students engage with course material	.49	.24
8. Trigger warnings protect instructors from complaints	.50	.25
9. Trigger warnings raise awareness of how course material may affect other students in the class	.71	.50

To form a cohesive scale of Perceived Function of Trigger Warnings, I removed Item 3, reverse-scored Item 1, and averaged across the remaining eight items, such that higher values on the scale indicate greater perceived utility for trigger warnings. See Table S11 in the Supplemental Material for factor loadings of the final scale.

Affective Response to Trigger Warnings

Students responded to 10 items related to positive and negative affect. See Table 8 for descriptive statistics. I initially followed standard procedures in the field by dividing the items into positive and negative affect subscales (Watson et al., 1988). Both the positive affect ($\alpha_{positive}$ = .83) and negative affect ($\alpha_{negative}$ = .93) subscales had good internal reliability. However, a test of internal reliability revealed that the positive affect subscale would increase (α = .89) with the removal of Item 2 (Alert).

Table 8

Students' Ratings of Anticipated Affect When Given a Trigger Warning

Question	*M* (raw)	*SD*
1. Inspired	1.5	1.5
2. Alert	3.6	1.8
3. Excited	1.7	1.5
4. Enthusiastic	1.5	1.5
5. Determined	1.6	1.5
6. Afraid	2.2	1.6
7. Upset	2.0	1.7
8. Nervous	2.6	1.7
9. Scared	2.2	1.7
10. Distressed	2.2	1.8
Average Positive	1.6	1.3
Average Negative	2.5	1.4

Note. Items 1 – 5 refer to positive affect; Items 6 – 10 refer to negative affect (Watson et al., 1988). Students rated how likely they were to experience each of the items on a scale from 0 (*very slight or not at all*) to 6 (*extremely*). Item 2 was included with the negative affect items based on the results of the factor analysis.

I performed an exploratory factor analysis with oblique rotation on the 10 items, testing one-factor and two-factor solutions. The one-factor solution explained 43.0% of the variance and

the two-factor solution explained 70.0% of the variance. The two-factor solution was preferred because the eigenvalues were above 1.0, two factors accounted for considerably more variance, and the scree plot leveled off after two factors, χ^2 (26, N = 149) = 89.42, $p < .001$ (Zwick & Velicer, 1986). The two-factor solution reflects one factor for negative affect (Factor 1) and one factor for positive affect (Factor 2). Item 2, Alert, loaded with the negative affect items, which is inconsistent with the original scale, but consistent with the reliability analysis. The two-factor solution is quite interpretable, also suggesting that two factors should be retained. The factor-loading matrix for the two-factor solution is presented in Table 9. Reliability for these two subscales was high ($\alpha_{positive}$ = .89; $\alpha_{negative}$ = .93).

Following the results of the factor analysis, affect ratings were divided into positive and negative affect subscales and averaged to create two subscale scores. See Table 8 for a summary of the responses. I ran a dependent-groups t-test to determine whether students were more likely to anticipate feeling more positive or more negative affect when given a trigger warning. Participants indicated anticipating feeling significantly more negative affect (M = 2.5, SD = 1.4) than positive affect (M = 1.6, SD = 1.3) when given a trigger warning before class content, t = 2.29, df = 151, $p < 0.05$. Overall, though, the means indicate that students felt little negative affect and little positive affect.

Given the performance of Item 2 (Alert), I wanted to determine if students anticipated feeling more alert than the other types of negative affect (excluding Alert) and more alert than positive affect items. I created a composite score of the other negative affect items (α = .88) and ran two dependent-groups t-tests. Students indicated anticipating feeling significantly more alert (M = 3.6, SD = 1.8) than the other types of negative affect (M = 3.3, SD = 1.5), t = 12.82, df = 151, $p < 0.05$, and positive affect (M = 1.57, SD = 1.3), t = 13.56, df = 151, $p < 0.001$. These

results suggest that in the context of trigger warnings, affect-related words such as "alert" may have different connotations. Whereas in the original context "alert" may be synonymous with interest, in the present context, "alert" may be more aligned with vigilance.

Table 9

Factor Loadings and Communalities Based on Exploratory Factor Analysis for Two-Factor Model with Oblique Rotation for Ten Items Assessing Anticipated Affect (N = 149)

Question	Factor 1 negative affect	Factor 2 positive affect	Communality
1. Inspired		.66	.55
2. Alert	.43		.28
3. Excited		.89	.71
4. Enthusiastic		.98	.90
5. Determined		.77	.67
6. Afraid	.91		.84
7. Upset	.83		.65
8. Nervous	.83		.70
9. Scared	.95		.87
10. Distressed	.85		.68

Note. Factor loadings greater than .2 are reported.

Perceived Facilitation of Interaction with Course Material

Participants responded to 10 items related to engagement with course material. See Table 10 for descriptive statistics. I did not have a priori predictions about whether these items would form a single scale. Overall, the means for all but two items were below the scale midpoint, suggesting that students disagreed that the effects of trigger warnings are negative, though they also did not strongly endorse the premise that trigger warnings facilitate interaction with course material. Based on internal reliability analyses, all of the items correlated positively with the overall scale. A test of internal reliability revealed that the scale reliability would increase

negligibly (by .01 to α = .87) with the removal of Items 1, 2, 3, and 4. All items were retained for an exploratory factor analysis.

Table 10

Perceived Facilitation of Interaction with Course Material in the Face of Trigger Warnings

Question	*M* (raw)	*SD*
1. Seeing a trigger warning makes me more likely to avoid that material	2.2	1.6
2. Seeing a trigger warning makes me more likely to seek out that material	2.7	1.7
3. Trigger warnings would be detrimental to my learning	1.3	1.4
4. Trigger warnings would be detrimental to my mental well-being	1.4	1.4
5. Having a trigger warning would reduce the amount I was distracted by that material	2.5	1.6
6. Having a trigger warning would help me focus on that material more	2.7	1.6
7. I would be less worried about watching a video in class if I knew I wouldn't be surprised by the content	3.1	1.7
8. I would feel better prepared to discuss emotional issues from an academic perspective after having a trigger warning	3.1	1.7
9. I would feel more able to participate in the class discussion if a trigger warning was provided	2.4	1.6
10. I would feel more comfortable with course material if a trigger warning was provided	2.9	1.6
Average	2.4	1.0

Note. Ratings were on a scale from 0 (*strongly disagree*) to 6 (*strongly agree*).

I performed an exploratory factor analysis with oblique rotation on the 10 items. The first two factors explained 39.0% and 18.0% of the variance, respectively. The one-factor solution was preferred because the eigenvalue was above 1.0 and the scree plot leveled off after one factor, χ^2 (35, N = 152) = 171.14, p < .001 (Zwick & Velicer, 1986). All of the 10 items loaded >

.3 on the one factor, although the commonalities for Items 1 – 4 were low. The factor-loading matrix for the one factor solution is presented in Table 11.

Table 11

Factor Loadings and Communalities Based on Exploratory Factor Analysis for One-Factor Model with Oblique Rotation for Ten Items Assessing Perceived Facilitation of Interaction with Course Material (N =152)

Question	Factor 1 facilitation	Communality
1. Seeing a trigger warning makes me more likely to avoid that material	.51	.26
2. Seeing a trigger warning makes me more likely to seek out that material	.40	.16
3. Trigger warnings would be detrimental to my learning	.31	.10
4. Trigger warnings would be detrimental to my mental well-being	.34	.12
5. Having a trigger warning would reduce the amount I was distracted by that material	.63	.39
6. Having a trigger warning would help me focus on that material more	.68	.47
7. I would be less worried about watching a video in class if I knew I wouldn't be surprised by the content	.62	.39
8. I would feel better prepared to discuss emotional issues from an academic perspective after having a trigger warning	.80	.64
9. I would feel more able to participate in the class discussion if a trigger warning was provided	.80	.64
10. I would feel more comfortable with course material if a trigger warning was provided	.85	.72

A total of four items (Items 1 – 4) were eliminated because (a) all four items had low communalities, (b) removing the four items increased scale reliability (final $\alpha = .87$), and (c) Items 5 – 10 formed a coherent scale. In addition, Items 1 and 2 should have loadings with

opposite signs, given that students cannot simultaneously avoid and seek out material, but the loadings were in fact both positive. The remaining items were treated as a scale, in which higher scores indicated increased perceptions that trigger warnings help facilitate interaction with course material. The new six-item scale loaded well onto one factor that explains 54% of the variance. See Table S12 in the Supplemental Material for factor loadings of the final scale.

Stress Mindset

Participants responded to the eight items in the Stress Mindset Measure-General. See Table 12 for descriptive statistics. I intended to follow standard procedures in the field by treating all eight items as one factor and reverse-scoring the four items related to a stress-is-debilitating mindset (Crum et al., 2013, 2017). However, contrary to what standard treatment of the items would suggest, all of the items were positively correlated and had high internal reliability ($\alpha = .85$). A test of internal reliability revealed that the scale reliability would increase negligibly by .01 ($\alpha = .86$) with the removal of Item 5 and remain unchanged with the removal of Item 7. All items were retained for an exploratory factor analysis.

I performed an exploratory factor analysis with oblique rotation on the eight items, testing one-factor and two-factor solutions. The two-factor solution was preferred because (a) eigenvalues were above 1.0 and (b) the scree plot leveled off after two factors, χ^2 (13, $N = 152$) = 27.93, $p < .05$, and reflects one factor for the stress-is-enhancing items (Factor 1) and one factor for the stress-is-debilitating items (Factor 2; Zwick & Velicer, 1986). In addition, the two-factor solution was quite interpretable and explained an additional 16% of the variance over the one-factor solution (59% for the two-factor solution vs. 43% for the one-factor solution), suggesting that two factors should be retained. The factor-loading matrix is presented in Table 13.

Table 12

Students' Ratings of Stress Mindset

Question	*Mean* (raw)	*SD*
1. The effects of stress are negative and should be avoided	3.2	1.5
2. Experiencing stress facilitates my learning and growth	2.7	1.5
3. Experiencing stress depletes my health and vitality	3.7	1.4
4. Experiencing stress enhances my performance and productivity	2.8	1.5
5. Experiencing stress inhibits my learning and growth	3.1	1.4
6. Experiencing stress improves my health and vitality	2.0	1.6
7. Experiencing stress debilitates my performance and productivity	3.3	1.4
8. The effects of stress are positive and should be utilized	2.6	1.4
Average stress-is-debilitating	3.4	1.1
Average stress-is-enhancing	2.5	1.3
Overall stress mindset	2.6	1.0

Note. Overall Stress Mindset calculated by reverse-scoring the stress-is-debilitating items (1, 3, 5, 7) and adding them to the stress-is-enhancing items (2, 3, 6, 8). Ratings were on a scale from 0 (*strongly disagree*) to 6 (*strongly agree*).

I decided to conduct analyses using both the one-factor and two-factor solutions. The one-factor solution follows standard scoring procedures in the literature to treat the eight items as a cohesive scale (Crum et al., 2013). In evaluating the items, it's important to note that a number of the items are double-barreled items. Item 1 was particularly egregious as its two parts, "negative" and "avoid", do not necessarily align (vs. "health" and "vitality" in Item 3). For the one-factor solution, I first reverse-scored the items related to a stress-is-debilitating mindset and then took the average of all eight items ($\alpha = .86$). This treatment of the stress mindset score was

consistent with approaches to intelligence mindset scores (Dweck, 1999). Students on average indicated a stress-is-debilitating mindset (i.e., average score was below the scale midpoint of 3).

The two-factor solution had high face validity. For the two-factor solution, I computed two subscale scores, one containing the items classified as stress-is-debilitating ($\alpha = .77$) and one containing the items classified as stress-is-enhancing ($\alpha = .89$). The analyses that follow included, in separate analyses, both the eight-item scale as a single outcome measure and the two subscales from the two-factor solution.

Table 13

Factor Loadings and Communalities Based on Exploratory Factor Analysis for Two-Factor Model with Oblique Rotation for Eight Items Assessing Stress Mindset (N =152)

Question	Factor 1 stress-is-enhancing	Factor 2 stress-is-debilitating	Communality
1. The effects of stress are negative and should be avoided	-.38	.39	.44
2. Experiencing stress facilitates my learning and growth	.85		.70
3. Experiencing stress depletes my health and vitality		.83	.64
4. Experiencing stress enhances my performance and productivity	.86		.69
5. Experiencing stress inhibits my learning and growth		.71	.44
6. Experiencing stress improves my health and vitality	.70		.54
7. Experiencing stress debilitates my performance and productivity		.66	.47
8. The effects of stress are positive and should be utilized	.93		.78

Note. Factor loadings greater than .2 are reported.

Appraisal of Course Material

Participants responded to 11 items related to their appraisal of course material in their most demanding class that semester—six items specific to the demands of the class and five items specific to the students' resources. See Table 14 for a summary of students' ratings of appraisals. I intended to follow the standard scoring procedure by treating the demands and resources items as two separate subscales (Akinola & Mendes, 2008, 2013; Mendes et al., 2007). All of the items within each subscale were positively correlated and had good internal reliability ($\alpha_{demands} = .78$; $\alpha_{resources} = .75$). All items were retained for factor analysis.

Table 14

Students' Ratings of Appraisals of Their Most Difficult Class This Semester

Question	*M* (raw)	*SD*
1. My course material is demanding	4.5	1.3
2. My course material is stressful	4.1	1.6
3. My course material is distressing	3.0	1.7
4. My course material is threatening	2.0	1.7
5. I am uncertain how I am performing in this course	2.8	1.6
6. My course material requires a lot of effort	4.7	1.2
7. I have the abilities to perform well in this course	4.5	1.1
8. I expect to perform well in this course	4.2	1.3
9. Performing well in this course is important to me	5.1	1.2
10. My course material is a positive challenge	4.0	1.3
11. I am the type of person who does well in my courses	4.5	1.3
Average Demand	3.5	1.1
Average Demand with Items 4 and 5 removed	3.1	1.2
Average Resource	4.5	0.8

Note. Items 1 – 6 assess demand appraisals; Items 7 – 11 assess resource appraisals. Ratings were on a scale from 0 (*strongly disagree*) to 6 (*strongly agree*).

I performed an exploratory factor analysis with oblique rotation on the 11 items, testing the one-factor and two-factor solutions. The two-factor solution explained 46% of the variance,

whereas the one factor solution explained 24% of the variance. The two-factor solution was preferred because it accounted for considerably more variance, both eigenvalues were above one, and the scree plot leveled off after two factors, χ^2 (34, N = 151) = 83.48, $p < .001$, and reflects one factor for the demands items (Factor 1) and one factor for the resources items (Factor 2). All of the 11 items loaded onto one of the two factors (factor loadings > .3) and the two factors have high interpretability. The factor-loading matrix is presented in Table 15. A total of two items (Items 4 and 5) were eliminated because they had low communalities and doing so increased the internal reliability of the demands subscale (final $\alpha_{demands}$ = .80). Although Item 6 has cross-loadings on two factors above .3, it had high communality and was retained on Factor 1 (Demands). The remaining items were treated as two subscales. See Table S13 in the Supplemental Material for final factor loadings.

Students, on average, reported that their most difficult class this semester was somewhat stressful (M = 4.1; SD = 1.6) and somewhat demanding (M = 4.5; SD = 1.3). See Table 14 for descriptive statistics. To determine whether participants made challenge or threat appraisals of the course materials in their most difficult class this semester, I averaged the four items assessing demands and five items assessing resources. A dependent-groups t-test determined that there was a significant difference between the two means, t = -93.89, df = 150, $p < .001$: students reported significantly higher resources than demands, which indicates that the students were more likely to make challenge appraisals of their most difficult course material. See Table 14 for a summary of descriptive statistics for items and the two subscales.

Table 15

Factor Loadings and Communalities Based on Exploratory Factor Analysis for Two-Factor Model with Oblique Rotation for 11 Items Assessing Appraisal of Course Material (N =151)

Question	Factor 1 demands	Factor 2 resources	Communality
1. My course material is demanding	.84	.25	.72
2. My course material is stressful	.76		.58
3. My course material is distressing	.57		.39
4. My course material is threatening	.32		.15
5. I am uncertain how I am performing in this course	.39		.17
6. My course material requires a lot of effort	.82	.42	.77
7. I have the abilities to perform well in this course		.78	.65
8. I expect to perform well in this course		.68	.52
9. Performing well in this course is important to me	.38	.70	.57
10. My course material is a positive challenge		.46	.21
11. I am the type of person who does well in my courses		.59	.34

Note. Factor loadings greater than .20 are reported. Items 1 – 6 assess demand appraisals; Items 7 – 11 assess resource appraisals.

Definition of and Experience with Distressing Events

Participants responded to one item indicating whether they had ever experienced a distressing event that exceeded their ability to cope. Of the participants who responded to this question, 40.1% indicated that they had experienced such an event, whereas 41.4% had not experienced such an event and 18.4% of students were unsure.

Nearly half (47.7%) of participants were triggered one or more times during class this semester (see Table S14 in the Supplemental Material). As can be seen in Table 16, frequency of being triggered (recoded so that the values indicate the midpoint of the range in each response choice) was correlated with the most outcomes. Of note, frequency of being triggered was

positively associated with greater demands appraisals ($r_{triggered}$ = .22, p < .001) and greater threat appraisals ($r_{triggered}$ = .27, p < .001), indicating that experiences in class might influence how students view other material in the same course and other courses.

The free-response definitions of triggered were coded based on six themes and 30 items (see Appendix K and discussion of theme and item development in Methods). I calculated kappa coefficients using standard guidelines of interpretation (Landis & Koch, 1977). Of the thirty items, 22 had almost perfect agreement between the two research assistants (κ = .85 – 1.0), six had substantial agreement between the research assistants (κ = .66 - .70), one item had moderate agreement between the research assistants (κ = .58), and one item had fair agreement between the research assistants (κ = .26; see Table S15 in the Supplemental Material). Any disagreement in coding between the research assistants was resolved by the coding team. Five responses were removed because the response was blank and an additional 21 responses were removed for indicating that they did not know the definition of a trigger warning (e.g., “I don’t know”, “not sure”).

Table 16

Correlations of Background Questions with Outcome Measures

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Frequency triggered this semester [a]											
2. Number of classes with trigger warnings	.27** [.12, .42]										
3. Perceived function [b]	-.04 [-.19, .12]	.14 [-.02, .29]									
4. Positive affect [c]	.18* [.02, .33]	-.00 [-.16, .16]	-.14 [-.29, .02]								
5. Negative affect [d]	.09 [-.08, .24]	.03 [-.13, .19]	.20* [.04, .35]	.31** [.15, .45]							
6. Perceived facilitation [e]	.23** [.07, .38]	.06 [-.10, .22]	.34** [.19, .47]	.21* [.05, .36]	.39** [.25, .52]						
7. Overall stress mindset [f]	-.02 [-.18, .14]	.01 [-.15, .17]	.01 [-.15, .17]	.29** [.14, .43]	.22** [.06, .37]	.32** [.16, .45]					
8. Stress-is-debilitating [g]	.09 [-.07, .24]	-.03 [-.19, .13]	.16* [.00, .31]	.10 [-.06, .25]	.27** [.11, .41]	.29** [.14, .43]	.39** [.25, .52]				
9. Stress-is-enhancing [h]	-.10 [-.25, .06]	.04 [-.12, .20]	-.13 [-.28, .03]	.19* [.04, .34]	-.02 [-.18, .15]	.05 [-.11, .21]	.63** [.52, .72]	-.47** [-.59, -.34]			
10. Resource [i]	-.09 [-.25, .07]	.07 [-.09, .23]	.36** [.22, .50]	-.11 [-.26, .06]	.07 [-.10, .22]	.01 [-.15, .17]	.06 [-.11, .21]	.04 [-.12, .20]	.02 [-.14, .18]		
11. Demand [j]	.22** [.07, .37]	-.01 [-.17, .15]	.25** [.10, .39]	.09 [-.07, .24]	.24** [.08, .38]	.21* [.05, .36]	.17* [.01, .32]	.36** [.22, .49]	-.15 [-.30, .01]	.20* [.04, .35]	
M	2.21	0.59	4.29	1.57	2.47	3.77	2.94	3.35	2.53	4.47	3.06
SD	4.07	0.92	0.96	1.30	1.43	1.27	0.62	1.09	1.29	0.82	1.15

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation.

[a] Recoded to account for ranges in options. Averaged across range where able. Higher values = More frequent. [b] High values = More useful. [c] Higher values = More positive affect. [d] Higher values = More negative affect. [e] Higher values = More engagement. [f] High values = Stress is enhancing. [g] Higher values = Stress is debilitating. [h] Higher values = Stress is enhancing. [i] Higher values = Greater resources. [j] Higher values = Greater demands.

* $p < .05$. ** $p < .01$.

Quality of definition and wording

Overall, 91.2% of participants who responded to the question about their own definition of what it means to be triggered identified at least one of the two key components that I identified as crucial to being triggered: a reference to a stimulus and an association with some type of reaction. The remaining 8.8% of students attempted a definition, but their response did not clearly meet either of the two criteria for accuracy of definition.

Based on the language used in their definitions of being triggered, students largely suggested certain causality (83.9%) rather than a possibility (5.8%). 14.6% of the students' responses lacked sufficient information to determine perceptions of causality.

Emotions experienced while triggered

Overall, definitions of being triggered reflected far more negative valence (62.8%) than positive valence (0%). An additional 35.0% of students referred to emotions, but did not indicate a valence. Only 2.2% of responses did not include a reference to emotions. See Table S17 in the Supplemental Material for analyses of the 18 specific emotions.

Background Questions

Neither semester in school nor number of classes in the current semester were significantly correlated with any of the outcome measures (i.e., affect, appraisal, perceived facilitation, perceived function, stress mindset). Age had a significant negative correlation with negative affect ($r = -.18$, $p < .05$), such that older students anticipated feeling less negative affect in response to encountering a trigger warning.

Correlations

To test the hypotheses, I calculated the correlations between the outcomes of interest (see Table 16).

Hypothesis A

Hypothesis A predicted that there would be a negative correlation between stress mindset and appraisal, such that seeing stress as more debilitating (vs. enhancing) would be associated with appraising difficult course material as a threat (vs. challenge). The data provide mixed support for Hypothesis A.

A significant positive correlation was present between the stress-is-debilitating subscale and the demands subscale, ($r = .36$, $p < .01$), such that those who had higher stress-is-debilitating mindsets were likely to view a difficult course as more demanding. However, the single scale score for stress mindset was positively correlated with the demands subscale of appraisals ($r = .17$, $p < .05$), suggesting that the more individuals endorsed a stress-is-enhancing mindset, the greater they saw the demands of a course, which is inconsistent with Hypothesis A. All other correlations between stress mindsets and appraisals had non-significant correlations ($-.15 < r < .11$). Thus, the evidence is mixed in support of Hypothesis A.

Hypothesis B

Hypothesis B predicted that there would be a positive correlation between the single scale score for stress mindset and perceived function of trigger warnings, such that seeing stress as more enhancing (vs. debilitating) would be associated with seeing an increased functionality of trigger warnings. The data do not support Hypothesis B, whether analyzing the single scale or the two subscales for stress mindset.

A small but significant positive correlation was present between the stress-is-debilitating subscale of stress mindset and the perceived functionality of trigger warnings ($r = .16$, $p < .05$), such that greater endorsement of a stress-is-debilitating mindset was associated with seeing trigger warnings as more functional. Neither the correlation between the single scale score for

stress mindset nor the stress-is-enhancing subscale of stress mindset were significant ($-0.13 < r$'s $< .01$).

Hypothesis C

Hypothesis C predicted that there would be a negative correlation between the frequency of being emotionally triggered in classes this semester and the perception that trigger warnings facilitate interaction with course material, such that more frequent instances of being emotionally triggered (vs. fewer or no instances) would be associated with a lower perception that trigger warnings facilitate interaction with course material. The data do not support Hypothesis C.

A significant positive correlation was present between the number of instances of being emotionally triggered in class this semester and perceived facilitation of course material after receiving a trigger warning ($r = .23$, $p < .05$). That is, the more that students had been emotionally triggered, the more they saw trigger warnings as facilitating interaction with course material.

Discussion

Study 1 was designed to add to the literature on trigger warnings by assessing students' experience with, and perceptions of, trigger warnings in secondary-education contexts. In addition to the descriptive purpose of Study 1, I also tested whether there were correlations, in the predicted direction, between stress mindset, appraisals, and perspectives on trigger warnings.

Overall, students indicated a moderate amount of familiarity with trigger warnings and that trigger warnings were perceived as usually provided when necessary. Trigger warnings were seen as functional and they were associated with anticipated negative affect more often than positive affect. Although surprising from a theoretical standpoint, it was individuals who saw stress as debilitating that viewed trigger warnings as serving the most purpose in classrooms.

Importantly, the more individuals had been triggered by course material, the more individuals perceived trigger warnings as facilitating interaction with course material, suggesting that there is potentially a subset of individuals who would benefit the most from trigger warnings in classrooms, even outside of those who have experienced a trauma.

Have Students Been Exposed to Trigger Warnings?

Yes. A large minority (38.8%) of students indicated that they had received at least one trigger warning this semester and a majority (57.9%) were at least familiar with the term "trigger warning", which is consistent with past work (Gainsburg & Earl, 2018). Students have typically received trigger warnings as needed for sensitive material and instructors tended to provide these warnings before a specific topic or content, which is consistent with past work (Boysen, 2017). A novel finding was that almost half of the students in the sample reported that they had been emotionally triggered at least once in class this semester, suggesting that many students encountered material that activated emotional or physical responses in the classroom.

The results of the content analysis corroborated these findings. Students were overwhelmingly at least partially accurate in defining "trigger warning" (86.9%).

Do Students See Trigger Warnings as Serving a Pedagogical Purpose?

Somewhat. On average, students saw trigger warnings as serving a purpose in classrooms, even beyond their own learning. However, students generally disagreed that trigger warnings help them prepare for encountering class material. This contradiction may indicate that whereas students didn't personally see themselves benefitting from trigger warnings, they did see a benefit in trigger warnings for others. This is consistent with past work assessing the perceived purpose of trigger warnings in medical school (Beverly et al., 2018). In the students' definitions

of being triggered, the majority of students indicated that being triggered is related to avoidance tendencies (78.8%) rather than approach tendencies (0.7%).

How do Students Respond to Trigger Warnings and Difficult Material?

Mixed results. Students in the sample indicated that they anticipated feeling more negative affect than positive affect in response to trigger warnings. However, students reported relatively low levels of affect in general, which is consistent with some past literature (Bellet et al., 2018; Gainsburg & Earl, 2018; see Table 1). In addition, students generally viewed stress as debilitating. This is consistent with previous work on stress mindsets (Crum et al., 2013). However, students also indicated that they view their most difficult course this semester as a challenge rather than a threat, suggesting that the students believe they have the resources to handle any difficulties as they emerge in the class. Given that these measures had different foci (e.g., trigger warnings vs. course work vs. general outlook), I feel hesitant to make a general conclusion about students' responses.

The Relationship Between Stress Mindset and Appraisals

In support of my hypothesis, there was a significant positive correlation between viewing stress as debilitating and indicating greater demands in the most difficult course this semester. This relationship was a novel finding and (1) provides support for the possibility that manipulating stress mindset might influence appraisals in the context of trigger warnings and (2) was a novel application of the synthesis of the Transactional Model of Stress and Coping and the Stress Mindset Model (see Crum et al., 2020 and Jamieson et al., 2018 for alternative theoretical syntheses of stress mindsets and reappraisals). However, viewing stress as enhancing was also positively correlated with increased demand appraisals. Interestingly, it was the demands subscale of appraisals and the stress-is-debilitating subscale of stress mindset that had the

strongest correlations with other scales, suggesting that students tended to view stress in a negative manner. These conflicting results suggest that the relationship between stress mindset and appraisals needs to be further explored to clarify the nature of the relationship. It is possible that student factors such as optimism-pessimism might help explain this relationship.

The Relationship Between Stress Mindset and Perceived Usefulness of Trigger Warnings

Contrary to my hypothesis, the data indicated that viewing stress as debilitating was associated with greater perceived functionality of trigger warnings, which was a novel finding. Although I predicted that it would be those who endorse a stress-is-enhancing mindset who would find trigger warnings most useful, this result suggests that trigger warnings might serve a protective purpose for those who are most vulnerable because they view stress as debilitating. It may be the case that those who see stress as debilitating especially appreciate knowing when a stressful situation may arise in the classroom.

The Relationship Between Being Triggered and Anticipated Participation in Course

The data do not support the prediction that more experience with being triggered in a class is associated with academic disengagement; rather, more experiences with being triggered were related to greater perceptions that trigger warnings facilitate interaction with course material. Though surprising, this finding actually has positive implications. The results suggest that trigger warnings help students who have been triggered in the past feel more positive about interacting with class material in the future. Although this is a novel finding in the context of trigger warnings and classrooms, it is consistent with some previous work on stress. One study looking at resilience in the face of stressors found that the number of stressors an individual experienced was associated with increased resilience later in life (Crane et al., 2019). It could be

the case that, like stressors, being triggered in the classroom increases resilience in academic contexts.

Findings from Content Analysis

One of the perspectives in the current debate about the use of trigger warnings in the classroom is that the original definition of trigger warning has been diluted. As one set of scholars note: **"**These definitions [of trigger warnings] extend far from the original psychological concept behind trigger warnings, which pertained to the avoidance of clinically related distress attached to traumatic experiences" (Boysen et al., 2018, p. 70). Although the data from the present content analysis did not allow us to draw conclusions about whether the connection students see between trauma and trigger warnings has declined over time, the data did support the disconnect: only 39.3% of students included a reference to a trauma in their definitions of trigger warning. However, students overwhelmingly included a reference to impactful material in their definitions of trigger warnings. These findings suggest that although students might not always link trigger warnings with trauma, they did broadly define trigger warnings to include impactful material.

Strengths and Limitations

The main strengths of Study 1 are that it (1) takes a novel theoretical approach to the understanding of trigger warnings, integrating Learning Theory, the Transactional Model of Stress and Coping, and the Stress Mindset Model; and (2) intends to understand students' perceptions of trigger warnings. Past research on trigger warnings has largely overlooked the influence that students' perceptions of stress and their course material have on the value students might see in trigger warnings.

Two key aspects of Study 1 strengthened its design: (1) I included positive affect as well as negative affect, which allowed me to conceptualize and measure more than just the potential negative effects of trigger warnings on affect and (2) I included an item about students' experiences being emotionally triggered in class. Past studies have largely focused on experiences with trauma by asking students to identify experiences that they have had from a set list of topics. This limited scope in assessing trauma leaves us not knowing the subjective emotional repercussions of events that might not be objectively classified as traumatic by others. Here, I have identified the frequency with which students are triggered *in class* to highlight the importance of students' subjective experiences in the classroom.

Study 1 was not without limitations. Most significantly, it was a correlational study and cannot make claims about the causal effects of any of the variables. Although a college sample was appropriate for the study of trigger warnings in college classrooms, the results cannot be generalized to all students. See the General Discussion for a further discussion of the sample.

A third limitation was in the operationalization of distress. Initially, I wanted to have students describe a specific event that they had experienced that overwhelmed their ability to cope with the stress. In consultation with the IRB, I changed this item to avoid needing to take a variety of additional steps to mitigate potential harm caused by participation reliving such an event in the study. In future investigations of trigger warnings, I would prefer to use a variable with a wider range of options of experience with an overwhelming event and to include an item that provides a qualitative assessment of the impact of these events. I further discuss the operationalization of distress in the General Discussion.

Conclusions

Study 1 was intended as a descriptive study that would establish students' experience with, and perceptions of, trigger warnings in classrooms. As such, the measures about students' experiences and perceptions were not developed or used with strong a priori predictions in mind. Overall, the data suggest that many students were familiar with trigger warnings and had favorable—or at least not unfavorable—views about trigger warnings in a classroom setting. Although some correlational findings were inconsistent with predictions, Study 1 established that stress mindsets, appraisals, and perspectives on trigger warnings warrant further research.

Chapter 3: Study 2

Study 1 established basic information about students' experiences with, and perceptions of, trigger warnings. Study 1 also established a relationship between stress mindset, appraisals, and perceptions of trigger warnings, although the evidence for the relationship between stress mindset and appraisals was mixed: there were significant positive correlations between having stress-is-debilitating and stress-is-enhancing mindsets and making threat appraisals. However, this evidence was correlational and does not tell us whether stress mindsets affect appraisals or responses to a potentially stressful learning experience.

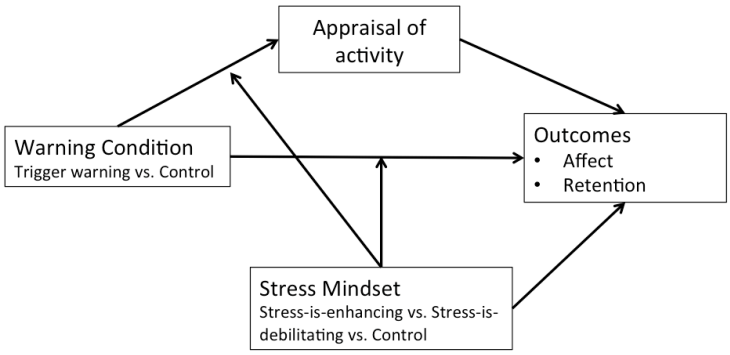
In Study 2, I tested the effects of trigger warnings (experimentally manipulated) and stress mindset (experimentally manipulated) on responses to a distressing video, with appraisals of the video as a hypothesized mechanism. A stress mindset intervention is useful because it recognizes that avoidance of stressors is not fully possible; increasing stress-is-enhancing mindsets may help individuals develop a framework for more effective engagement with stress.

Study 2 addressed the following five hypotheses, which overall tested a theoretical model proposing appraisal of course material as the process through which trigger warnings affect outcomes and stress mindset as a condition under which these effects differ (see Figure 1):

- Hypothesis A, Trigger Warnings: I tested the competing hypotheses that trigger warnings could have positive, negative, or null effects on knowledge retention and positive and negative affect. Hypothesis A was intended as a replication of past work on trigger warnings that have not found consistent evidence on the direction of the effects of trigger warnings on various outcomes (see Table 1 for a summary of past research; Research Question 2).

Figure 1

Proposed Theoretical Model



Note. Proposed theoretical model whereby appraisal of course activity is the process through which trigger warnings affect outcomes and stress mindset is a condition under which these effects differ. The theoretical model was tested with a statistical test of moderated mediation.

- Hypothesis B, Mechanism: I hypothesized that appraisals are the process by which trigger warnings affect outcomes; that is, that appraisals would mediate the effect of trigger warnings on knowledge retention and affect. To test whether appraisals mediated the effect of trigger warnings on outcomes, I predicted that there would be: a significant effect of trigger warning on outcomes (Hypothesis A), a significant effect of trigger warning on appraisals, a significant effect of appraisals on outcomes, and that the effect of trigger warnings on outcomes would lessen or disappear when controlling for appraisals (Research Question 3).
- Hypothesis C, Stress Mindset:
    - C1: Based on previous research on stress mindsets, I hypothesized that inducing a stress-is-enhancing mindset (vs. stress-is-debilitating mindset) would lead to more

positive affect, less negative affect, and greater knowledge retention after engaging with mildly distressing material (Crum et al., 2013, 2017; Research Question 4).

  - C2: In addition, I hypothesized that there would be an interaction between trigger warnings and induced stress mindset. Specifically, inducing a stress-is-enhancing mindset would serve as a buffer to the potentially negative impact of trigger warnings on knowledge retention and affect and lead to challenge appraisals (Research Question 4).

- Hypothesis D, Full Test of Theoretical Model: I also predicted that stress mindsets would be a condition under which the effect of trigger warning on outcomes through appraisals would differ. Thus, Hypothesis D tested my proposed theoretical model. I expected that a test of moderated mediation would reveal that the effect of trigger warnings on outcomes was mediated by appraisals and the effect of trigger warnings on appraisals and outcomes was moderated by induced stress mindset (see Figure 1; Research Question 5).

Method

Participants

Participants ($N = 349$) were recruited through the University of Wisconsin-Madison Psychology Participant Pool during Spring Semester 2020. To be a part of the Participant Pool, students were 18 years or older and currently enrolled in Introductory Psychology. All students were given extra credit in their Introductory Psychology course for completing the study. I excluded participants ($n = 47$) who scored a two or below on the knowledge retention questions, resulting in a final sample size of 302. Such a low score indicated that students were not paying sufficient attention to the stimulus video and may have been careless in responding to other

questions as well. See Table 17 for demographic details and Table S21 in the Supplemental Material for demographic details of the sample before exclusion.

A priori power analysis recommended 390 participants in a 2 x 3 between-subjects design (Power = 0.81, α = 0.05, and an effect size, d = 0.38; Gainsburg & Earl, 2018). Although there were fewer students in the Participant Pool in Spring 2020 compared with other semesters, I had a data collection plan that was on-track to obtain data from 390 students. With the onset of the COVID-19 pandemic, data collection slowed and I was not able to collect data from as many students as recommended by the a priori power analysis. I address the implications of collecting data during a pandemic in the General Discussion. With a final sample size of 302, I had the ability to detect an effect size of d = .40 for the 2 x 3 between-subjects design. Post-hoc power analysis revealed that the study was underpowered to detect significant effects in the 2 x 3 design (P = .11, α = .05, d = 0.11), but had adequate power to detect a direct effect of trigger warning (Power = .69, α = 0.05, d = .04).

Over 70 majors were represented in the sample, with over half of the majors students indicated represented by nine different majors.[2] 9.2% (n = 32) indicated Biology major, 6.9% indicated they were Undecided (n = 24), 6.3% indicated a Nursing or Pre-nursing major (n = 22), 6.0% indicated the major of Finance, investment, and banking within the School of Business (n = 21), 6.0% indicated Psychology majors (n = 21), 5.7% indicated they were in the Business School or Pre-business though did not specify a specific major (n = 20), 4.0% indicated

[2] Students were able to indicate more than one major each, so it is not necessarily the case that over half of the students in the sample indicated one of these nine majors.

Computer science major (n = 14), 3.7% indicated a Marketing major within the Business School (n = 13), and 2.9% indicated a major of Microbiology (n = 10). See Table S22 in the Supplemental Material for further details.

Table 17

Summary of Demographic Information

Variable	*n*	%
Race	299	
Asian / Asian American	55	18.4
Black	7	2.3
Latinx	11	3.7
Middle Eastern	5	1.7
Other / Mixed	16	5.4
White	205	68.6
Gender	302	
Man	98	32.5
Woman	203	67.2
Transman	0	0
Transwoman	0	0
Nonbinary/Genderqueer	1	.3
Gender not listed	0	0
Semester in school	294	
First semester	20	6.8
Second semester	254	86.4
Third semester	5	1.7
Fourth semester	8	2.7
Fifth semester	1	.3
Sixth semester	4	1.3
Seventh semester	1	.3
Eighth semester or higher	1	.3
	M	*SD*
Number of classes this semester	4.62	.54
Age	18.9	.99

Note. N = 302. Data reflect the sample after careless responders – those who scored two or less on the knowledge retention questions (n = 47) – were eliminated. Not all participants responded to every demographic question; data missing for Race (n = 3) and Semester in school (n = 8).

Procedure

The study was conducted fully online in weeks one through 13 of the 14-week Spring 2020 semester. After consenting to partake in the study, all participants were asked to imagine that they were in a course on News Journalism and that the instructor had asked them to complete a number of assignments (see Appendix O for consent form). I orthogonally manipulated warning (trigger warning vs. control) and stress mindset (stress-is-enhancing vs. stress-is-debilitating vs. control) in a 2 x 3 between-subjects design.

All participants were told that they would be watching videos as part of an imagined course on News Journalism. Students first watched a video about stress mindset (or nothing, if in the Control condition; see below for details about all materials and measures). To ensure that participants watched the video, the survey did not progress until the video was complete. Next, all participants received a message about completing a video assignment for the class. Participants were told that they were expected to watch the entire video and complete knowledge retention questions about it. Students were also told they would receive feedback and a score about their performance on the knowledge retention questions. For those in the trigger warning condition, they received an additional message from the instructor about the video content. Again, to ensure that students watched the stimulus video on a school shooting, they could not progress to the rest of the study until they watched the video. After watching the stimulus video, participants made an appraisal about the video, and then completed knowledge retention questions related to the stimulus video's content. After the knowledge retention questions, participants completed a manipulation check for receiving a trigger warning and then responded to the affect items (see Figure 2 for diagram). Finally, participants responded to background

questions (described below) and were debriefed (see Appendix P for debriefing). Participants were able to skip any of the items if they chose to do so.

Figure 2

Procedure for Study 2

Materials

Stress Mindset Manipulation

Students were randomly assigned to one of three conditions: induce a stress-is-debilitating mindset, induce a stress-is-enhancing mindset, or control (see Appendix Q). Participants watched a video in which stress in a learning context is presented as either enhancing (leading to positive outcomes) or debilitating (leading to negative outcomes), or they did not watch a video (control). The videos were created by Crum et al. (2013) and have successfully manipulated stress mindsets, primarily in health and organizational contexts, even when watching only one three-minute video (Crum et al., 2017).

Trigger Warning Manipulation

Students were randomly assigned to receive either a "trigger warning" or no comment (control) about the content of the stimulus video before watching a video about a school shooting. For students in the trigger warning condition, they received additional text that mentioned the content of the video and potential affective response (e.g., "The video is about a recent school shooting and includes graphic imagery. This content may be difficult for some of

you and you might experience discomfort and stress"; see Appendix R for full details). The language and content of the manipulation was consistent with past research on trigger warnings (Gainsburg & Earl, 2018; Sanson et al., 2019).

Stimulus Video

All students watched a video about a recent school shooting in Greenville, Texas (length of video is 2 minutes and 38 seconds; CNN, 2019; see Appendix S). The video was from a news program and was selected to be fairly neutral (e.g., not targeting a specific religious group, appearing on a more centrist political network; see Appendix S for selection criteria). Based on the recommendations of the Institutional Review Board, the video was chosen to be reflective of content that participants might come across in daily life or that might be shown in a class on News Journalism.

Measures

Following the video, participants saw all of the following measures, as illustrated in Figure 2 above. Items were randomized within question block.

Video Appraisal

Participants indicated whether they viewed the video assignment as a challenge or as a threat (e.g., "The activity presented itself as a challenge to me," "I felt threatened by the activity"; adapted from Williams & Cumming, 2012; Williams et al., 2010; McGregor & Elliot, 2002; see Appendix T). Participants responded to the six items on a scale from 0 (*not at all true*) to 6 (*very true*). Three items related to threat ($\alpha = .89$) and three items related to challenge ($\alpha = .89$). Internal reliabilities are consistent with previous work ($\alpha > .87$ for both subscales; Williams & Cumming, 2012). In line with previous research, the appraisals were averaged separately for threat and for challenge (Williams & Cumming, 2012; Williams et al., 2010; McGregor & Elliot,

2002). Higher scores indicated higher level of appraising the task as a threat or as a challenge, respectively.

Knowledge Retention Questions

All participants were assessed on their retention of basic knowledge about the stimulus video in a series of five questions (e.g., "How many shootings were discussed in the video?", "What happened during the vigil for one of the victims?"; all items were generated by the research team, specific to the video; see Appendix U for other items). All participants were provided the same feedback following the knowledge retention questions ("The video discussed two shootings, in which two people were killed. During the vigil for one of the victims, more gunfire broke out. Currently, there are no suspects identified and the shooter got away by blending into the crowd"). Students were provided their scores with the feedback. Higher scores indicated greater knowledge retention.

Trigger Warning Manipulation Check

Students responded to one manipulation check item to indicate their agreement ("Yes", "No", or "Not sure") with whether the imagined instructor provided them with a written warning about the stimulus video's content before they watched the video (i.e., "Thinking back to the instructions, did the instructor give you a written warning about course content?"; see Appendix V).

Stress Mindset Manipulation Check

I did not include a direct manipulation check of stress mindset to avoid priming students to think about stress as either enhancing or debilitating. Instead, Video Appraisal was treated as an indirect manipulation check of Stress Mindset; I expected students primed to see stress as

debilitating to score higher on threat appraisals of the stimulus video, and students primed to see stress as enhancing to score higher on challenge appraisals.

Affect

Students completed the short version of the Positive and Negative Affect Schedule (PANAS-S), which has good internal consistency ($\alpha_{positive}$ = 0.78; $\alpha_{negative}$ = .87; Mackinnon et al., 1999; Watson et al., 1988). Students rated 10 affect-related words (e.g., inspired, determined, afraid) on how much they feel that way in the present moment (i.e., after watching the stimulus video and responding to other items) on a 7-point Likert scale from 0 = *very slight or not at all* to 6 = *Extremely* (see Appendix T). As with Study 1, Item 2 ("Alert") loaded with the negative affect items (rather than the positive affect items) and so the item was included with the negative affect subscale. Ratings for items on the positive and negative affect subscales were each averaged to create a positive affect score and a negative affect score, with higher values indicating feeling more positive and negative affect, respectively ($\alpha_{positive}$ = .86; $\alpha_{negative}$ = .92).

Experience with Distressing Events

Participants responded to the question from Study 1 regarding whether they had ever experienced a distressing event that had exceeded their ability to cope (question 2 in Appendix J). Participants did not respond to the questions from Study 1 about being emotionally triggered.

Background Questions

Background questions were the same as in Study 1. See Appendix L for details.

Results

Descriptive Statistics

Trigger Warning Manipulation Check

Students who received a trigger warning (vs. no additional commentary on the content of the stimulus video) were more likely to indicate that they had received a written notice about the content, compared to being Not Sure or not receiving a notice. I performed a chi-squared test of independence to determine if student responses to the manipulation check were independent from whether they received a trigger warning or not. For analysis purposes, participants who indicated they were "not sure" if they had received a trigger warning were included with the students who indicated they did not receive a trigger warning. A significant association was present between a student receiving a trigger warning and indicating that they had received a trigger warning, χ^2 (1, N = 302) = 21.15, p < .001. See Table 18 and Figure S1 in the Supplemental Material for a graph of these results. Overall, the trigger warning manipulation was successful: those who received a trigger warning were more likely to remember receiving a warning. However, it should be noted that it is not the case that 100% of students in the trigger warning condition reported that they had received a trigger warning; only 62.4% did.

Table 18

Frequency of Trigger Warning Manipulation Check Responses by Condition

	Response to manipulation check		
Warning condition	Yes	No	Not Sure
Control	35.3%	36.6	28.1
TW	62.4	18.8	18.8

Note. All participants (NA = 0) responded to the manipulation check item.

Stress Mindset Manipulation Check

Video appraisal served as a manipulation check for stress mindset. Appraisal was treated as two subscales, threat and challenge (see discussion below). Stress mindset condition did not have a significant effect on threat appraisal, $b = -.03$, $F(1, 300) = 0.02$, $p = .88$, or on challenge appraisal, $b = .21$, $F(1, 300) = 0.96$, $p = .33$. Students who were primed to view stress as enhancing ($M = 2.07$; $SD = 1.55$) were not more likely to make a threat appraisal compared to students who were primed to view stress as debilitating ($M = 2.10$; $SD = 1.68$), $b = -.02$, $p = .99$, or who were in the control condition ($M = 1.96$; $SD = 1.40$), $b = .11$, $p = .87$. Similarly, students primed to view stress as enhancing ($M = 1.80$; $SD = 1.54$) were not more likely to make a threat appraisal compared to students who were primed to view stress as debilitating ($M = 1.59$; $SD = 1.54$), $b = .21$, $p = .60$, or who were in the control condition ($M = 1.76$; $SD = 1.50$), $b = .04$, $p = .98$. Additional post-hoc analyses did not find significant differences in threat appraisals, $b = .13$, $p = .80$, or challenge appraisals, $b = -.17$, $p = .69$, between students who were in the control condition and those who viewed the stress-is-debilitating video, which is consistent with previous literature suggesting that a stress-is-debilitating mindset is the default (Crum et al., 2013).

Overall, the stress mindset manipulation check does not provide evidence that the manipulation of stress mindset was successful—at least in the way that I was conceptualizing the relationship between stress mindset and appraisal.

Video Appraisal

Students responded to six items related to their appraisal of watching the stimulus video—three items specific to challenge and three items specific to threat. See Table 19 for descriptive statistics.

Table 19

Means, Standard Deviations, and Correlations of Video Appraisal

Variable	1	2	3	4	5	6
1. Watching the video presented itself as a challenge to me						
2. I viewed watching the video as a challenge	.72** [.66, .77]					
3. I felt challenged by watching the video	.75** [.70, .80]	.70** [.63, .75]				
4. Watching the video presented itself as a threat to me	.57** [.49, .64]	.51** [.43, .59]	.57** [.49, .65]			
5. I viewed watching the video as a threat	.53** [.45, .61]	.48** [.39, .56]	.48** [.39, .56]	.75** [.69, .79]		
6. I felt threatened by watching the video	.59** [.51, .66]	.50** [.41, .58]	.63** [.56, .69]	.75** [.70, .80]	.69** [.62, .74]	
M	2.05	2.02	2.05	1.66	1.74	1.74
SD	1.68	1.79	1.67	1.65	1.74	1.66

Note. N = 302. Participants responded on a scale from 0 (*not at all true*) to 6 (*very true*). Items 1 – 3 = Challenge; 4 – 6 = Threat.

Values in square brackets indicate the 95% confidence interval for each correlation.

* $p < .05$. ** $p < .01$.

I intended to follow the standard scoring procedure by treating the challenge and threat items as two separate subscales (Williams & Cumming, 2012; Williams et al., 2010; McGregor & Elliot, 2002). All of the items within each subscale were positively correlated and had good internal reliability ($\alpha_{challenge} = .89$; $\alpha_{threat} = .89$). A test of internal reliability revealed that the reliabilities of the two subscales would not be improved with the removal of any item.

To test whether two subscales are warranted, I performed an exploratory factor analysis with oblique rotation on the six items, testing the one- and two-factor solutions. The one-factor solution explained 62% of the variance, whereas the two-factor solution explained 69% of the variance. The one-factor solution was preferred because the eigenvalue was above one and the scree plot leveled off after one factor, χ^2 (9, $N = 302$) = 203.2, $p < .001$. All of the six items loaded onto one factor (factor loadings > .3).

Despite the one-factor solution being preferred statistically, the two-factor solution was used in subsequent analyses for a number of reasons: (1) the standard scoring procedure reflects a two-factor solution (Williams & Cumming, 2012; Williams et al., 2010; McGregor & Elliot, 2002); (2) the one-factor solution, where all items have positive loadings, is uninterpretable; and (3) I proposed testing two subscales for appraisal under the assumption that there would be two subscales. See Table 20 for the factor-loading matrix of the two-factor solution and Table S23 in the Supplemental Material for the factor-loading matrix of the one-factor solution.

I created two subscales by averaging the three threat items for the threat subscale ($\alpha_{threat} = .89$) and the three challenge items for the challenge subscale ($\alpha_{challenge} = .89$). In the tests of my hypotheses—outlined below—I analyzed each subscale as a separate measure. To determine whether students made challenge or threat appraisals of the stimulus video, I ran a dependent-groups t-test. The test revealed a significant difference between the means of the two appraisal

subscales, t = 4.50, df = 301, $p < .001$: students were more likely to make a challenge appraisal ($M = 1.71$; $SD = 1.52$) than a threat appraisal ($M = 2.04$; $SD = 1.55$). Nonetheless, the means for all items were below the scale midpoint of 3, indicating that students, on average, did not strongly appraise the material as either a threat or challenge. This result is consistent with Study 1. See Table 19 for a summary of descriptive statistics for items.

Table 20

Factor Loadings and Communalities Based on Exploratory Factor Analysis for Two-Factor Model with Oblique Rotation for Six Items Assessing Video Appraisal (N =302)

Question	Factor 1 threat	Factor 2 challenge	Communality
1. Watching the video presented itself as a challenge to me	.85		.77
2. I viewed watching the video as a challenge	.82		.66
3. I felt challenged by watching the video	.83		.74
4. Watching the video presented itself as a threat to me		.90	.82
5. I viewed watching the video as a threat		.84	.68
6. I felt threatened by watching the video	.16	.72	.71

Note. Factor loadings greater than .2 are reported.

Knowledge Retention Questions

Students responded to five items assessing their retention of the content of the stimulus video. See Table 24 in the Supplemental Material for more details about student performance on each knowledge retention question. I calculated a single knowledge retention score for each participant by summing the number of items they answered correctly. Participants' scores ranged

from zero to five, with five being the highest score. 83.5% of students scored a three or higher (out of five).

I excluded participants (n = 47) who scored a two or below on the knowledge retention questions. I ran all analyses a second time, including all participants, to assess whether the exclusion of careless responders affected the results. I have indicated instances in which the inferences of the statistical analyses differ with the inclusion of the careless responders. Unless otherwise noted, the inferences did not differ based on inclusion or exclusion of the careless responders.

Affect

Students responded to 10 items related to positive and negative affect. See Table 21 for descriptive statistics. I initially followed standard procedures in the field by dividing the items into positive and negative affect subscales (Watson et al., 1988). Both the positive affect ($\alpha_{positive}$ = .82) and negative affect ($\alpha_{negative}$ = .92) subscales had good internal reliability. However, a test of internal reliability revealed that the positive affect subscale would increase (α = .86) with the removal of Item 2 (Alert) and the internal reliability of the negative affect subscale would not change with the inclusion of Item 2.

I performed an exploratory factor analysis with oblique rotation on the 10 items, testing one-factor and two-factor solutions. The one-factor solution explained 41% of the variance, whereas the two-factor solution explained 67% of the variance. The two-factor solution was preferred because the eigenvalues were above one and the scree plot leveled off after two factors, χ^2 (26, N = 302) = 89.42, p < .001 (Zwick & Velicer, 1986). The two-factor solution reflects one factor for negative affect (Factor 1) and one factor for positive affect (Factor 2). All of the 10 items loaded well onto one of two factors (factor loadings > .3). Item 2, Alert, loaded with the

negative affect items, which is inconsistent with the original scale, but consistent with the reliability analysis and Study 1. The two-factor solution is quite interpretable and explained an additional 26% of the variance over the one-factor solution, suggesting that we should retain two factors. The factor-loading matrix for the two-factor solution is presented in Table 22.

As suggested by the factor analysis, affect ratings were divided into positive and negative affect subscales. See Table 21 for a summary of the responses. I ran a dependent-groups t-test to determine whether students were more likely to anticipate feeling more positive or more negative affect when given a trigger warning. Participants indicated anticipating feeling significantly more negative affect ($M = 2.31$, $SD = 1.50$) than positive affect ($M = 1.03$, $SD = 1.12$) when given a trigger warning before class content, $t = 13.17$, $df = 300$, $p < 0.01$. Overall, though, the means indicate that students felt little negative affect and little positive affect.

Based on the reported difference in means for individual items and the factor loadings for Item 2 (Alert) that were inconsistent with standard scoring, I wanted to determine if students anticipated feeling more alert than positive affect and the other negative affect items. I created a composite score of the other negative affect items ($\alpha = .92$) and ran two dependent-groups t-tests. Students indicated anticipating feeling significantly more alert ($M = 2.68$, $SD = 1.78$) than both positive affect ($M = 1.03$, $SD = 1.12$), $t = 16.62$, $df = 300$, $p < 0.01$ and negative affect ($M = 2.23$, $SD = 1.53$), $t = 5.39$, $df = 300$, $p < 0.01$.

Table 21

Means, Standard Deviations, and Correlations with Confidence Intervals for Affect Items

Variable	1	2	3	4	5	6	7
1. Inspired							
2. Alert	.26** [.15, .36]						
3. Excited	.61** [.54, .68]	.27** [.16, .37]					
4. Enthusiastic	.72** [.66, .77]	.27** [.16, .37]	.73** [.67, .78]				
5. Determined	.61** [.54, .68]	.42** [.32, .51]	.48** [.39, .56]	.62** [.54, .68]			
6. Afraid	.09 [-.03, .20]	.61** [.54, .68]	.07 [-.04, .18]	.03 [-.08, .14]	.22** [.11, .32]		
7. Upset	.06 [-.05, .18]	.43** [.34, .52]	-.01 [-.13, .10]	-.07 [-.18, .04]	.12* [.00, .23]	.64** [.57, .70]	
8. Nervous	.21** [.10, .31]	.56** [.48, .64]	.21** [.10, .31]	.16** [.05, .27]	.25** [.15, .36]	.76** [.71, .81]	.53** [.44, .61]
9. Scared	.06 [-.06, .17]	.62** [.54, .68]	.03 [-.09, .14]	.01 [-.10, .12]	.20** [.08, .30]	.90** [.87, .92]	.69** [.62, .74]
10. Distressed	.10 [-.01, .21]	.56** [.47, .63]	.13* [.01, .24]	.03 [-.08, .15]	.23** [.12, .33]	.68** [.61, .73]	.64** [.57, .71]
M	.93	2.68	.71	.85	1.64	1.97	2.85
SD	1.33	1.78	1.15	1.25	1.53	1.72	1.89

Variable	8	9	10
8. Nervous			
9. Scared	.76** [.71, .80]		
10. Distressed	.66** [.59, .72]	.70** [.64, .75]	
M	2.05	1.99	2.31
SD	1.75	1.82	1.72

Note. N = 302. Participants responded on a scale from 0 = *very slight or not at all* to 6 = *Extremely*. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. Items 1 and 3 – 5 formed the Positive Affect subscale (*M* = 1.03, *SD* = 1.12). Items 2 and 6 – 10 formed the Negative Affect subscale (*M* = 2.31, *SD* = 1.50).

* $p < .05$. ** $p < .01$.

Table 22

Factor Loadings and Communalities Based on Exploratory Factor Analysis for Two-Factor Model with Oblique Rotation for Ten Items Assessing Affect (N =302)

Question	Factor 1 negative affect	Factor 2 positive affect	Communality
1. Inspired		.80	.63
2. Alert	.62	.24	.51
3. Excited		.80	.62
4. Enthusiastic		.93	.83
5. Determined		.68	.51
6. Afraid	.95		.87
7. Upset	.74		.61
8. Nervous	.79		.67
9. Scared	.98		.91
10. Distressed	.76		57

Note. Factor loadings greater than .2 are reported.

Tests of Hypotheses

To test the hypotheses, I estimated a series of general linear models with trigger warning and stress mindset (contrasts defined below) as between-subject predictors.

Hypothesis A: Trigger Warnings

Hypothesis A involved the competing hypotheses that trigger warnings could have positive, negative, or null effects on knowledge retention and positive and negative affect. Overall, the data suggest that the presence of a trigger warning had little effect on outcomes.

I regressed each of the outcomes (knowledge retention, positive affect, and negative affect) on warning (coded -0.5 for trigger warning and 0.5 for control). Warning condition did not have a significant effect on any of the outcomes (p's > .60). See Table 23 for full results of the regressions models and Table 24 for means and standard deviations across warning condition.

Table 23

Regression Models for Knowledge Retention, Positive Affect, and Negative Affect

	Knowledge retention			Positive affect			Negative affect		
Predictor	*b*	t (300)	*p*	*b*	t (300)	*p*	*b*	t (300)	*p*
Warning condition	0.04	0.43	.67	0.07	0.52	.60	0.06	0.34	.74

Note. Standardized coefficients (betas) are reported.

Table 24

Means and Standard Deviations for Knowledge Retention, Positive Affect, and Negative Affect by Warning Condition

	Knowledge retention		Positive affect		Negative affect	
Warning condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Trigger warning	4.31	0.78	1.00	1.21	2.28	1.52
Control	4.35	0.75	1.07	1.03	2.34	1.47

Hypothesis B: Mechanism

Hypothesis B stated that appraisals of the stimulus video task would be the process by which trigger warnings have an effect on outcomes. To test Hypothesis B, I determined whether appraisals statistically mediated the effect of trigger warning on affect and knowledge retention. It might not seem reasonable to test Hypothesis B given that there was no evidence to support Hypothesis A; that is, there was no evidence for a direct effect of trigger warning on each outcome. In addition, a significant correlation was not present between threat appraisal and positive affect or knowledge retention. However, there were significant correlations between threat appraisal and negative affect ($r = .47$, $p < .01$) as well as between challenge appraisal and negative affect ($r = .56$, $p < .01$), positive affect ($r = .11$, $p < .05$), and knowledge retention ($r =$ -

.14, $p < .05$; see Table 25). I tested Hypothesis B primarily because I included the analysis in my proposal and there was a possibility of suppression or completely indirect effects.

Table 25

Means, Standard Deviations, and Correlations with Confidence Intervals[3]

Variable	1	2	3	4	5
1. Positive affect					
2. Negative affect	.20** [.09, .31]				
3. Threat appraisal	.06 [-.06, .17]	.47** [.37, .55]			
4. Challenge appraisal	.11* [.00, .23]	.56** [.48, .63]	.66** [.59, .72]		
5. Knowledge retention	-.07 [-.18, .04]	-.10 [-.21, .02]	-.08 [-.19, .03]	-.14* [-.25, -.03]	
M	1.03	2.31	2.04	1.71	4.33
SD	1.12	1.50	1.55	1.52	0.77

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation.

* $p < .05$. ** $p < .01$.

I initially predicted that the indirect effects would be statistically significant; that is, appraisals of the video as a challenge or threat would serve as a mechanism through which trigger warnings influenced the three outcomes (i.e., knowledge retention, positive affect,

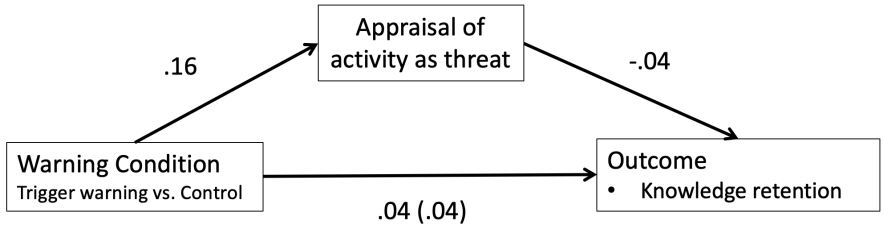
[3] When including careless responders, the correlations between knowledge retention and positive affect ($r = -.19$, $p < .01$) and negative affect ($r = -.12$, $p < .05$) were significant. See Table S25 in Supplemental Material for full details.

negative affect). For each outcome, I conducted a mediation analysis using the bootstrap method with 1,000 samples (Mediation Package in R; Tingley et al., 2013). Warning (Control: 1 or Trigger warning: 0) was the independent variable and appraisals the mediating variable in all models. Overall, the results do not support Hypothesis B.

The effect of receiving a trigger warning on knowledge retention was not mediated by threat appraisal. As Figure 3 illustrates, there was not a significant indirect effect (Path ab = -.01, CI [-.03, .01]) and no direct effect of trigger warnings (Path c' = .04, p = .62). With the increased power of a bootstrapped analysis, the total effect was not significant (Path c = .04, p = .34). See Table 26 for full details.

Figure 3

Mediation Model for Knowledge Retention by Threat Appraisal



Note. Unstandardized regression coefficients for the effect of warning condition on knowledge retention as mediated by threat appraisals. The regression coefficient between warning condition and knowledge retention, controlling for threat appraisals, is in parentheses.

Table 26

Unstandardized Betas (Standard Errors) and Explained Variance (R^2) for the Indirect Effects of Warning Condition on Knowledge Retention, Positive Affect, and Negative Affect via Mediation Through Threat Appraisals

	Outcome variables		
Predictors	Knowledge retention	Positive affect	Negative affect
B: Threat appraisals	-.04 (0.09)	.04 (0.04)	.45 (0.05)
C': Warning (D)	0.04 (0.07)	0.06 (0.11)	-.01 (.13) ***
C: Warning (T)	0.04 (0.09)	0.07 (0.13)	0.06 (0.17)
R^2 (T)	.01	.01	.22

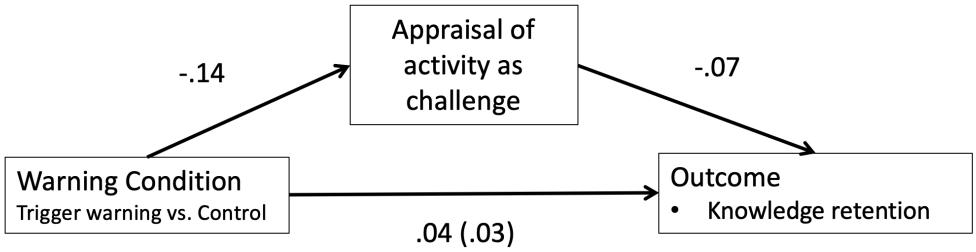
Note. D = direct effect; T = total effect.

* $p < .05$. ** $p < .01$.

The effect of receiving a trigger warning on knowledge retention was not mediated by challenge appraisal. As Figure 4 illustrates, there was not a significant indirect effect (Path ab = .01, CI [-.01, .04]) and the total effect was not significant (Path c = .04, $p = .69$). The direct effect of trigger warnings on knowledge retention when controlling for challenge appraisal was significant (Path c' = .02, $p < .001$). The results of the mediation analysis suggest that challenge appraisal suppressed the effect of trigger warning on knowledge retention. See Table 27 for full details.

Figure 4

Mediation Model for Knowledge Retention by Challenge Appraisal



Note. Unstandardized regression coefficients for the effect of warning condition on knowledge retention as mediated by challenge appraisals. The regression coefficient between warning condition and knowledge retention, controlling for challenge appraisals, is in parentheses.

Table 27

Unstandardized Betas (Standard Errors) and Explained Variance (R^2) for the Indirect Effects of Warning Condition on Knowledge Retention, Positive Affect, and Negative Affect via Mediation Through Challenge Appraisals

	Outcome variables		
Predictors	Knowledge retention	Positive affect	Negative affect
B: Challenge appraisals	-0.07 (0.03) *	.09 (0.04) *	.55 (0.05) ***
C': Warning (D)	0.02 (0.07) ***	0.08 (0.10) ***	.14 (0.11) ***
C: Warning (T)	0.04 (0.09)	0.07 (0.13)	0.06 (0.17)
R^2 (T)	.02	.01	.32

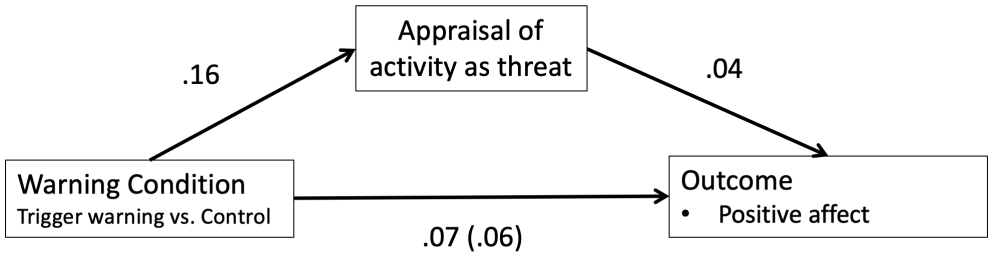
Note. D = direct effect; T = total effect.

* $p < .05$. ** $p < .01$. *** $p < .001$.

The effect of receiving a trigger warning on positive affect was not mediated by threat appraisal. As Figure 5 illustrates, there was not a significant indirect effect (Path ab = .01, CI [-.01, .04]) and no direct effect of trigger warnings (Path c' = .06, p = .51). With the increased power of a bootstrapped analysis, the total effect was not significant (Path c = .07, p = .61). See Table 26 for full details.

Figure 5

Mediation Model for Positive Affect by Threat Appraisals



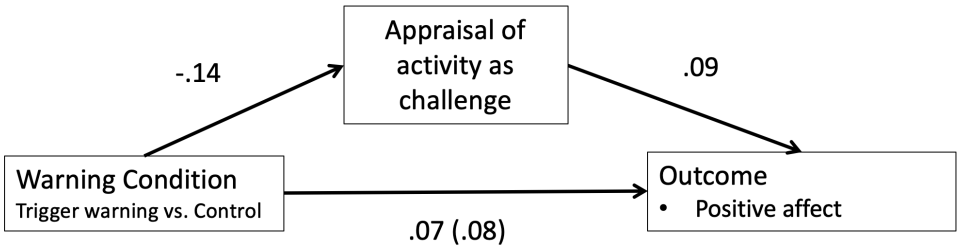
Note. Unstandardized regression coefficients for the effect of warning condition on positive affect as mediated by threat appraisals. The regression coefficient between warning condition and positive affect, controlling for threat appraisals, is in parentheses.

The effect of receiving a trigger warning on positive affect was not mediated by challenge appraisal. As Figure 6 illustrates, there was not a significant indirect effect (Path ab = -.01, CI [-.06, .02]) and the total effect was not significant (Path c = .07, p = .60). There was, however, a direct effect of trigger warnings on positive affect controlling for challenge appraisal

(Path c' = .08, p <.001). The results of the mediation analysis suggest that challenge appraisals suppressed the effects of trigger warnings on positive affect. See Table 27 for full details.

Figure 6

Mediation Model for Positive Affect by Challenge Appraisals

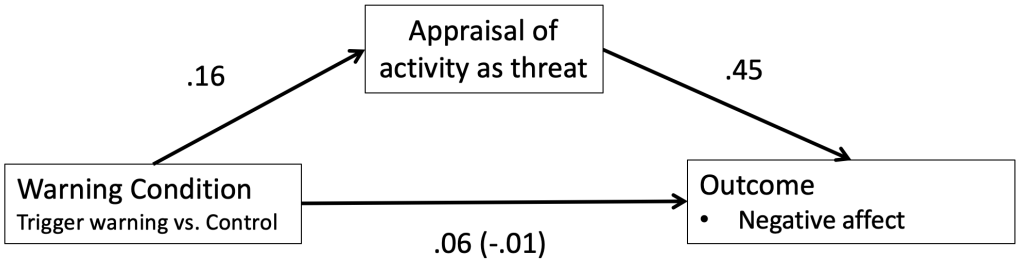


Note. Unstandardized regression coefficients for the effect of warning condition on positive affect as mediated by challenge appraisals. The regression coefficient between warning condition and positive affect, controlling for challenge appraisals, is in parentheses.

The effect of receiving a trigger warning on negative affect was not mediated by threat appraisal. As Figure 7 illustrates, there was not a significant indirect effect (Path ab = .07, CI [-.01, .25]) and no significant total effect (Path c = .06, p = .73). However, the direct effect of trigger warnings controlling for threat appraisal was significant (Path c' = -.01, p < .001). The results from the mediation analysis suggests that threat appraisal suppressed the effect of trigger warnings on negative affect. See Table 26 for full details.

Figure 7

Mediation Model for Negative Affect by Threat Appraisals

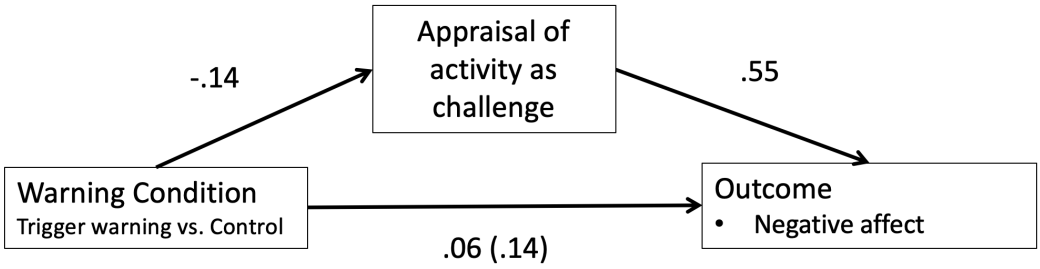


Note. Unstandardized regression coefficients for the effect of warning condition on negative affect as mediated by threat appraisals. The regression coefficient between warning condition and negative affect, controlling for threat appraisals, is in parentheses.

The effect of receiving a trigger warning on negative affect was not mediated by challenge appraisal. As Figure 8 illustrates, there was not a significant indirect effect (Path ab = -.09, CI [-.29, .09]) and the total effect was not significant (Path c = .06, p = .73). However, there was a significant direct effect of trigger warnings controlling for challenge appraisal (Path c' = .14, p < .001). The results of the mediation analysis suggest that challenge appraisals suppressed the effects of trigger warnings on negative affect. See Table 27 for full details.

Figure 8

Mediation Model for Negative Affect by Challenge Appraisals



Note. Unstandardized regression coefficients for the effect of warning condition on negative affect as mediated by challenge appraisals. The regression coefficient between warning condition and negative affect, controlling for challenge appraisals, is in parentheses.

Overall, the results of the mediation analyses did not support Hypothesis B: there was no evidence that appraisals of the activity as either a threat or as a challenge mediated the effect of trigger warning on knowledge retention or affect. However, the results suggested that appraisals occasionally suppressed the effect of trigger warnings. For negative affect, both threat and challenge appraisals suppressed the effects of trigger warnings. Challenge appraisal also suppressed the effect of trigger warnings on positive affect and knowledge retention. Although contrary to Hypothesis B, the results of the mediation analyses indicated that in order to understand the effects of trigger warnings on students' outcomes, we must also understand how students are appraising their course material.

Hypothesis C: Stress Mindset

Hypothesis C predicted direct and interaction effects of stress mindset on knowledge retention and affect. Hypothesis C1 predicted that inducing a stress-is-enhancing mindset (vs.

stress-is-debilitating mindset) would lead to more positive affect, less negative affect, and greater knowledge retention after students engaged with mildly distressing material. Hypothesis C2 predicted that there would be a significant interaction between trigger warning and stress mindset, such that inducing a stress-is-enhancing mindset would serve as a buffer to the negative impact of trigger warnings on outcomes.

I regressed each of the outcome measures on stress mindset. I created two contrasts to test differences between levels of stress mindset. The main contrast of interest compared participants in the stress-is-enhancing and stress-is-debilitating conditions (Contrast 1: coded 0.5 for stress-is-enhancing, -0.5 for stress-is-debilitating, and 0 for control). I included an additional contrast to compare participants in the stress-is-enhancing condition to the other two conditions (Contrast 2: coded 1 for stress-is-enhancing, -0.5 for stress-is-debilitating, and -0.5 for control). This contrast was included because previous work suggests that a stress-is-debilitating mindset is the baseline for most people and comparable to a control (Crum et al., 2017). Although using non-orthogonal contrasts decreased the power to detect interaction effects in the 2 x 3 design, such contrasts were necessary because I did not expect the two contrasts to be independent of each other.

The data do not support Hypothesis C1. Mindset condition did not have a significant effect on any of the outcomes regardless of the contrast (p's > .29). See Table 28 for full results of the regression model and Table 29 for the means and standard deviations. Post-hoc analyses did not reveal any significant differences between the three levels of mindset (p's > .13).

Table 28

Regression Models for Knowledge Retention, Positive Affect, and Negative Affect

	Knowledge retention			Positive affect			Negative affect		
Predictor	*b*	t (299)	*p*	*b*	t (298) [a]	*p*	*b*	t (298) [a]	*p*
Mindset contrast 1	-0.22	-1.06	.29	0.002	0.005	.99	0.08	0.19	.85
Mindset contrast 2	0.01	0.07	.94	-0.02	-0.06	.95	-0.06	-0.15	.88

Note. Standardized coefficients (betas), *t* statistics, and *p* values are reported. Contrast 1 was coded 0.5 for stress-is-enhancing, -0.5 for stress-is-debilitating, and 0 for control Contrast 2 was coded 1 for stress-is-enhancing, -0.5 for stress-is-debilitating, and -0.5 for control.

[a] One observation deleted due to missingness.

Table 29

Means and Standard Deviations for Knowledge Retention, Positive Affect, and Negative Affect by Mindset Condition

	Knowledge retention		Positive affect		Negative affect	
Mindset condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Stress-is-enhancing	4.22	0.80	1.02	1.06	2.31	1.57
Stress-is-debilitating	4.43	0.77	1.04	1.05	2.29	1.54
Control	4.32	0.72	1.04	1.24	2.33	1.39

I regressed knowledge retention on trigger warning, induced stress mindset, and their interaction. Neither trigger warning nor stress mindset had significant effects on knowledge retention as established by the tests of Hypotheses A and C1 (p's > .22). Tests of moderation were also not significant. See Table 30 for the means and standard deviations and Table 31 for the regression coefficients.

Table 30

Means and Standard Deviations for Knowledge Retention as a Function of a 2(Warning Condition) X 3(Mindset Condition) Design

	Mindset condition					
	Control		Stress-is-debilitating		Stress-is-enhancing	
Warning condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	4.40	0.67	4.44	0.84	4.21	0.74
Trigger warning	4.25	0.76	4.43	0.72	4.24	0.88

Note. M and *SD* represent mean and standard deviation, respectively. Higher scores indicate greater knowledge retention.

Table 31

Regression Models for Knowledge Retention, Positive Affect, and Negative Affect

	Knowledge retention			Positive affect			Negative affect		
Predictor	*b*	t (296)	*p*	*b*	t (296)	*p*	*b*	t (206)	*p*
Warning condition	0.05	0.52	.60	0.07	0.52	.61	0.05	0.30	.77
Mindset contrast 1	-0.36	-1.22	.22	0.11	0.26	.80	0.24	0.42	.68
Mindset contrast 2	0.17	0.66	.51	-0.09	-0.22	.83	-0.02	-0.05	.96
Warning condition X Mindset contrast 1	0.28	0.66	.51	-0.23	-0.37	.71	-0.34	-0.41	.68
Warning condition X Mindset condition 2	-0.33	-0.88	.38	0.14	0.25	.80	-0.04	-0.06	.96

Note. Standardized coefficients (betas), *t* statistics, and *p* values are reported. Contrast 1 was coded 0.5 for stress-is-enhancing, -0.5 for stress-is-debilitating, and 0 for control Contrast 2 was coded 1 for stress-is-enhancing, -0.5 for stress-is-debilitating, and -0.5 for control.

I regressed positive and negative affect on trigger warning, induced stress mindset, and their interaction. Neither trigger warning nor stress mindset had significant direct effects on positive affect (p's > .41). Stress mindset did not significantly moderate the effect of trigger warning on positive affect. Additionally, there were also no significant direct effects for trigger warning or stress mindset on negative affect (p's > .58). Stress mindset did not significantly moderate the effect of trigger warning on negative affect. See Table 32 for the means and standard deviations and Table 31 for the regression coefficients. Overall, Hypothesis C2 was not supported by the data.

Table 32

Means and Standard Deviations for Positive and Negative Affect as a Function of a 2(Warning Condition) X 3(Mindset Condition) Design

	Positive affect						Negative affect					
	Control		Stress-is-debilitating		Stress-is-enhancing		Control		Stress-is-debilitating		Stress-is-enhancing	
Warning condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	1.05	1.09	1.11	1.06	1.04	0.94	2.36	1.32	2.41	1.62	2.25	1.49
Trigger warning	1.03	1.38	0.97	1.04	1.00	1.20	2.29	1.47	2.17	1.47	2.39	1.67

Note. M and *SD* represent mean and standard deviation, respectively. Higher scores indicate feeling greater positive or negative affect.

Hypothesis D: Test of Full Theoretical Model

Hypothesis D tested the full theoretical model (see Figure 1) that predicted that appraisals are a process through which trigger warnings affect outcomes and stress mindsets are a condition under which these effects would differ. As with Hypothesis B, I tested Hypothesis D despite no significant direct effect of trigger warning and no significant moderation by induced stress mindset. I did so because I proposed these analyses. Specifically, I tested whether appraisals of the stimulus video as a threat or challenge mediated the effects of trigger warnings on outcomes for students who had been induced to view stress as enhancing. I tested my theoretical model through a statistical test of moderated mediation, whereby the effect of trigger warnings on outcomes would be mediated by appraisals and the effect of trigger warnings on appraisals and outcomes would be moderated by induced stress mindset (see Figure 1).

I tested the indices of moderated mediation at each level of stress mindset for both threat and challenge appraisals. Inconsistent with my initial hypotheses, I did not find significant conditional indirect effects of trigger warning and threat appraisal on knowledge retention for participants induced to view stress as enhancing (Path ab = -.002, p = .96), stress as debilitating (Path ab = -.004, p = .93), or in the control condition (Path ab = .001, p = .99). Similarly, there were not significant conditional indirect effects of trigger warning and challenge appraisals on knowledge retention for participants induced to view stress as enhancing (Path ab = -.005, p = .90), stress as debilitating (Path ab = -.001, p = .98), or in the control condition (Path ab = .002, p = .93). Indices of moderated mediation on knowledge retention were not significant for either threat or challenge appraisals (p's > .90), suggesting that the indirect effects of trigger warning on knowledge retention via appraisals did not vary significantly as a function of stress mindset.

These findings indicate that appraisals did not mediate the effects of trigger warnings on knowledge retention for participants induced to view stress as enhancing as predicted.

I did not find significant conditional indirect effects on positive affect for participants induced to view stress as enhancing (Path ab = -.01, p = .92), stress as debilitating (Path ab = -.001, p = .93), or in the control condition (Path ab = -.01, p = .93). Similarly, there were not significant conditional indirect effects of trigger warning and challenge appraisals on knowledge retention for participants induced to view stress as enhancing (Path ab = -.02, p = .81), stress as debilitating (Path ab = -.003, p = .92), or in the control condition (Path ab = -.01, p = .81). No indices of moderated mediation on positive affect for either threat or challenge appraisals were significant (p's > .77), suggesting that the indirect effects of trigger warning on positive affect via appraisals did not vary significantly as a function of stress mindset. These findings indicate that appraisals did not mediate the effects of trigger warnings on positive affect for participants induced to view stress as enhancing as predicted.

I did not find significant conditional indirect effects on negative affect for participants induced to view stress as enhancing (Path ab = -.52, p = .41), stress as debilitating (Path ab = -.16, p = .49), or in the control condition (Path ab = -.36, p = .44). Similarly, there were not significant conditional indirect effects of trigger warning and challenge appraisals on knowledge retention for participants induced to view stress as enhancing (Path ab = -.61, p = .43), stress as debilitating (Path ab = -.19, p = .47), or in the control condition (Path ab = -.40, p = .43). There were not significant indices of moderated mediation on negative affect for either threat or challenge appraisals (p's > .17), suggesting that the indirect effects of trigger warning on negative affect via appraisals did not vary significantly as a function of stress mindset. These findings indicate that appraisals of the stimulus video as either a threat or a challenge did not

mediate the effects of trigger warnings on negative affect for participants induced to view stress as enhancing as predicted.

Moderation analyses

As part of their background questions, participants indicated whether they had ever experienced a distressing event that exceeded their ability to cope. Of the participants who responded to this question, 43.9% indicated that they had experienced such an event (see Table S26 in the Supplemental Material for full table).

I ran moderation analyses to determine whether experiences with a difficult event that exceeded the participants' ability to cope moderated the effect of trigger warning condition on outcome measures. In the context of this study, I tested whether the effects specified in Hypotheses A or C were moderated by whether someone had experienced a distressing event. I initially predicted that the positive effect of inducing a stress-is-enhancing mindset would be more beneficial for those with a trauma history (i.e., as measured by those who indicated they had experienced a distressing event).

Experiencing a distressing event did not moderate the effect of warning condition on knowledge retention (b = -0.12, $F(3, 297) = 0.38$, p = .54), positive affect (b = -0.25, $F(3, 297) = 0.79$, p = .37), or negative affect (b = 0.63, $F(3, 296) = 2.70$, p = .10).

The effect of stress mindset on positive affect (Contrast 1) was moderated by distress experience, b = 1.40, $t(294) = 2.04$, p <.05. Students who were in the control and stress-is-enhancing conditions reported more positive affect when they experienced a distressing event (vs. not experiencing a distressing event or not sure if they had experienced a distressing event; see Figure 9). Experience with an overwhelmingly distressing event did not moderate the effect

of stress mindset on knowledge retention (p's > .52) or negative affect (p's > .09) for either contrasts (Hypothesis B). See Table 33 for full details.

Figure 9

Effect of Stess Mindset Condition and Distress Experience on Positive Affect

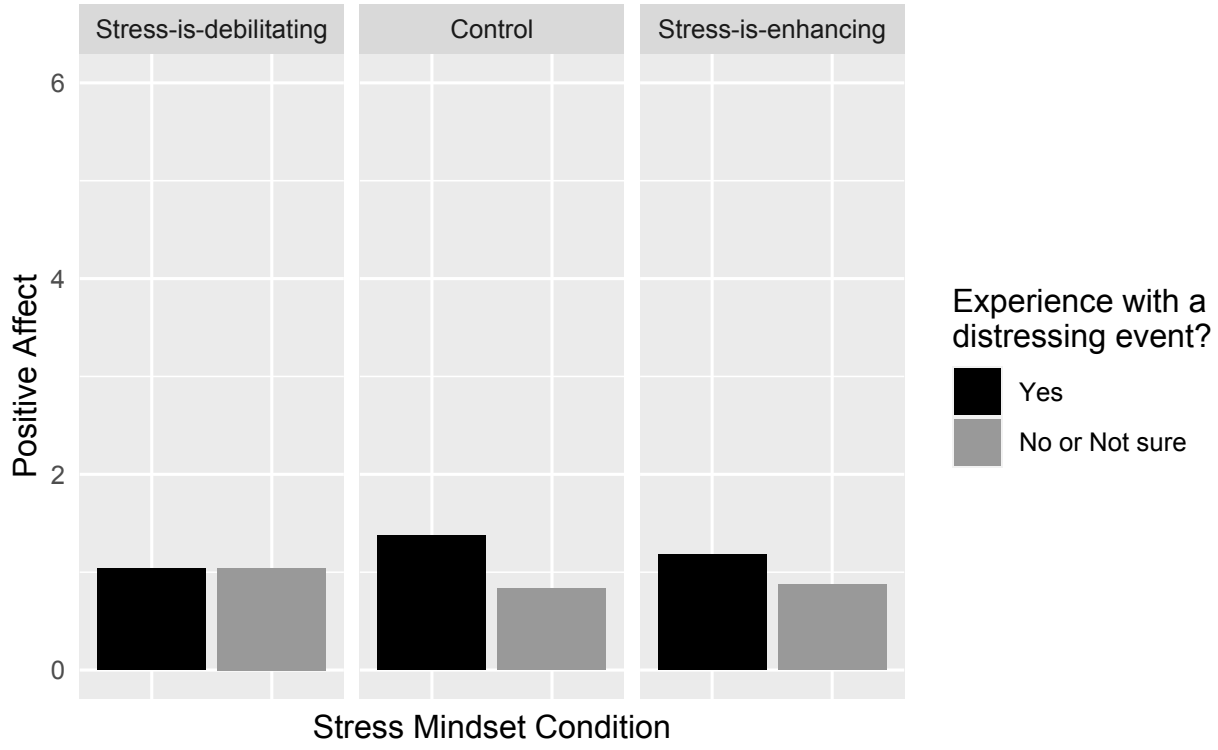


Table 33

Regression Models for Knowledge Retention, Positive Affect, and Negative Affect

	Knowledge retention			Positive affect			Negative affect		
Predictor	*b*	t (295)	*p*	*b*	t (294) [a]	*p*	*b*	t (294) [a]	*p*
Distress X mindset contrast 1	-0.29	0.639	.53	**1.40**	**2.04**	**.04**	-1.05	-1.14	.26
Distress X mindset contrast 2	0.26	0.64	.52	-1.01	-1.69	.09	1.38	1.72	.09

Note. Standardized coefficients (betas), *t* statistics, and *p* values are reported. Contrast 1 was coded 0.5 for stress-is-enhancing, -0.5 for stress-is-debilitating, and 0 for control Contrast 2 was coded 1 for stress-is-enhancing, -0.5 for stress-is-debilitating, and -0.5 for control. Bolded values are significant.

[a] One observation deleted due to missingness.

Futhermore, there was not a significant three-way interaction between experiencing a distressing event, warning condition, and stress mindset condition for any of the three outcomes (Hypothesis D). A marginally significant three-way interaction was present between experiencing a distressing event, warning condition, and Contrast 1 on knowledge retention, b = -1.38, t(289) = -1.67, p = .052. See Table 34 for full details.

Table 34

Regression Models for Knowledge Retention, Positive Affect, and Negative Affect

	Knowledge retention			Positive affect			Negative affect		
Predictor	*b*	t (289)	*p*	*b*	t (288) [a]	*p*	*b*	t (288) [a]	*p*
Distress X warning X mindset contrast 1	1.86	1.95	.052	1.09	0.79	.43	0.42	0.22	.82
Distress X warning X mindset contrast 2	-1.38	-1.67	.10	-0.88	-0.72	.47	-1.41	-0.88	.38

Note. Standardized coefficients (betas), *t* statistics, and *p* values are reported. Contrast 1 was coded 0.5 for stress-is-enhancing, -0.5 for stress-is-debilitating, and 0 for control Contrast 2 was coded 1 for stress-is-enhancing, -0.5 for stress-is-debilitating, and -0.5 for control. Bolded values are significant.

[a] One observation deleted due to missingness.

Discussion

The main goal of Study 2 was to determine if experimentally manipulating exposure to a trigger warning had positive, negative, or null effects on outcomes (knowledge retention, positive affect, negative affect). In addition, Study 2 tested whether a stress mindset intervention would mitigate any possible negative effects of trigger warnings and whether appraisals of course material would mediate the effect of trigger warnings on outcomes.

Building on five hypotheses, I tested a theoretical model proposing that appraisals are a mechanism through which trigger warnings have an effect on outcomes and that stress mindset is a condition that determines the strength of these effects . Overall, there was little evidence to support this theoretical model. The data suggested that neither trigger warnings nor stress

mindsets impacted the three outcomes investigated here (i.e., knowledge retention, positive affect, and negative affect). The non-significant correlations of knowledge retention with positive (r = -.07) and negative affect (r = -.10) suggest that students retained information regardless of their reported affect, which was minimal.

The Effect of Trigger Warning Condition on Outcomes

One of the primary purposes of Study 2 was to test the competing hypotheses that trigger warnings could have positive, negative, or null effects on knowledge retention and positive and negative affect (Hypothesis A; Research Question 2). Overall, the data suggest that the presence of a trigger warning before viewing distressing material had little effect on outcomes. This finding is consistent with a number of past studies that have found null effects of trigger warnings on outcomes (Bellet et al., 2018; Boysen et al., 2019; Sanson et al., 2019) and inconsistent with aspects of other studies that have found trigger warnings led to increased negative affect (Bridgland et al., 2019; Gainsburg & Earl, 2018). These various studies (summarized in Table 1) used a number of different measures of affect, with a focus on negative affect. Importantly, the results of Study 2 are consistent with the one previous study that used the same affect measure (though only the negative affect subscale; Sanson et al., 2019).

The Effect of Stress Mindset Condition on Outcomes

Contrary to Hypothesis C1, the data suggest that induced stress mindset did not have a significant effect on any of the outcomes in this novel application of the Stress Mindset Model in an academic setting. I predicted that it would be those who viewed a video suggesting that stress is enhancing (vs. that stress is debilitating or control) who would indicate more positive affect, less negative affect, and greater knowledge retention after engaging with mildly distressing material (Hypothesis C1; Research Question 4). However, there were no significant differences

across the three levels of stress mindset, suggesting that students performed equally well on knowledge retention and reported similar affect regardless of how they were encouraged to view stress. Although this was a novel application of the Stress Mindset Model in the contexts of classrooms and potentially stressful course material, it is inconsistent with some previous work on stress mindsets. This work on stress mindsets has established that participants perform better on tasks when viewing a video suggesting stress is enhancing (vs. debilitating or control; Crum et al., 2013; 2017), a result that was not replicated here.

Tests of Mediation, Moderation, and Moderated Mediation

The data did not support my prediction that appraisals would mediate the effects of trigger warning on knowledge retention and affect (Hypothesis B; Research Question 3). In the test of mediation for each outcome, none of the criteria for mediation were met. However, evidence from the mediation analyses suggest that the effect of trigger warnings on outcomes was suppressed by threat appraisals (for negative affect) and by challenge appraisals (for negative affect, positive affect, and knowledge retention). These results suggest that whether a student judges the course material (in this case, the stimulus video) as a challenge or as a threat can determine the impact of trigger warnings on knowledge retention or affect, which was a novel finding.

I hypothesized that there would be an interaction between trigger warnings and induced stress mindset (Hypothesis C2; Research Question 4). Testing the effects of an interaction between trigger warning and stress mindset on knowledge retention and affect was a novel aspect of Study 2. The data did not support this hypothesis: inducing a stress-is-enhancing mindset did not serve as a buffer to the negative impact of trigger warnings on knowledge retention and affect. This may be due to the fact that receiving a trigger warning did not have a negative

impact on knowledge retention or affect. Although a null effect, the data suggest that—in the context of this study—inducing a specific stress mindset did not influence the effect of trigger warnings.

I tested whether stress mindsets would moderate the mediated effect of trigger warning on outcomes through appraisals (Hypothesis D; Research Question 5). Contrary to my hypothesis, there was no evidence that the effect of trigger warnings on outcomes was mediated by appraisals nor that the effect of trigger warnings on appraisals and outcomes was moderated by induced stress mindset. Although the statistical test of moderated mediation did not support the proposed novel theoretical model, the theoretical model bears further scrutiny.

The Effect of Experiencing a Distressing Event

I initially predicted that the positive effect of inducing a stress-is-enhancing mindset would be more beneficial for those with a history of trauma (i.e., indicated they had experienced a difficult event). Although it does not seem as though a stress-is-enhancing mindset was beneficial at baseline, those who indicated experiencing a distressing event at some point in their lives benefited more from the stress-is-enhancing video or control (vs. the stress-is-debilitating video), at least for positive affect. Given that positive affect is just one of many outcomes that might be influenced by stress mindsets, and that this effect was not moderated by the presence of a trigger warning, it is not fully clear what impact experiencing a distressing event has on students' outcomes.

Strengths and Limitations

The main strength of Study 2 was that it experimentally manipulated both the presence of a trigger warning and stress mindset, to investigate a potential buffer to the effects of trigger warnings on outcomes. A distinction from past studies that strengthened the design of Study 2

was that I included two subscales of affect. All but one of the recent publications on trigger warnings focused on negative affect and other negative-valence outcomes, which limited the scope of the conclusions (see Table 1). It could be the case that trigger warnings have both negative and positive effects or only positive effects. The previous exclusion of positive affect presumes that trigger warnings only influence negative affect to the detriment of our understanding of trigger warnings in classrooms.

As in Study 1, I asked about students' experiences being distressed. Past studies largely focused on identifying which of a specific set of experiences students have had, which limits our understanding of the subjective nature of trauma and distress. Similar to Study 1, although the inclusion of an item about experiencing an overwhelmingly distressing event was itself a strength, the nature of the item's operationalization was a limitation. I address the operationalization of distress further in the General Discussion.

Another limitation was that the manipulations of trigger warning and of stress mindset appear weak given the results of the manipulation checks and low ratings on affect. Study 2 included on three outcomes that have been a focus in previous work: negative affect, positive affect, and knowledge retention. It could be the case that trigger warnings impact a wider range of outcomes than was the focus of this study. Although the control condition of stress mindset was meant to assess baseline stress mindset, it could be that in the novel academic context, the Stress Mindset Model was less applicable. It could be the case that stress mindsets in an academic context are not as malleable as in other contexts, such as work environments (Crum et al., 2013; 2017). In addition, after the exclusion of students who performed poorly on the knowledge retention questions, there was a restriction of range, which can limit our conclusions.

Finally, although Study 2 advanced our understanding of trigger warnings in classrooms, it was analog research and not conducted in actual classrooms, which limited the external validity. The stimulus video was less than five minutes long and did not reflect the quantity and variety of information learned over the course of a semester. Moreover, a 20-minute study cannot replicate all the nuances of a semester-long class, such as personal interactions.

Conclusions

Study 2 tested the effects of experimentally manipulated trigger warnings and stress mindsets on outcomes, if any. Moreover, Study 2 examined a theoretical model through a statistical test of moderated mediation, which determined whether appraisals mediated the effect of trigger warning on outcomes (knowledge retention and affect) and if stress mindsets would moderate these effects. Overall, the data suggest that students were not impacted by the presence of a trigger warning before viewing potentially distressing material. The empirical evidence did not support the theoretical model: there was no evidence for moderated mediation, or mediation through appraisals of course material in general. The results of Study 2 were largely inconsistent with my predictions; however, the results were consistent with previous work suggesting that trigger warnings have little, if any, effect on outcomes.

Chapter 4: General Discussion

The present research included two studies designed to answer five research questions related to how trigger warnings function in college classrooms. Across the two studies, the Transactional Model of Stress and Mindset Theory were applied in the novel context of addressing stress in academic settings. Study 1 was designed to collect descriptive data on students' experience with, and understanding of, trigger warnings. Study 1 also collected pilot data on students' mindsets about stress and appraisals of course material to give insight into whether manipulating stress mindsets would be an effective intervention in the context of a stressful academic setting. Study 2 tested the effects of trigger warnings (experimentally manipulated) and stress mindset (experimentally manipulated) on responses to a distressing video, with appraisals of the video as a hypothesized mechanism.

Research Question 1: Perceptions of and Experiences with Trigger Warnings

Study 1 was designed to address Research Question 1, which asked: "What are students' perceptions of and experiences with trigger warnings?" Overall, students indicated a moderate amount of familiarity with trigger warnings.

For topics that were covered in Fall 2019 that students viewed as needing a trigger warning, students indicated that trigger warnings were provided about 77.2% of the time (vs. trigger warnings not being provided 22.8% of the time), which is consistent with past surveys on trigger warnings (Boysen et al., 2018; Gainsburg & Earl, 2018). Study 1 expanded on past research on the presence of trigger warnings for specific content because it (1) included control topics to provide a comparison and (2) asked about the presence of trigger warnings in all classes the student was taking in Fall 2019, not just the psychology class in which they were recruited. I included the control topics of economic policies and global warning as a comparison to clearly

indicate that some students would like (and did receive) notices about all course content. This is particularly relevant in the context of definitions of trigger warnings: many instructors can provide what functionally serves as a trigger warning without labeling it as such, as discussed further below.

On average, trigger warnings were seen as functional, though students associated trigger warnings with anticipated negative affect more often than anticipated positive affect, which was consistent with a trend from one study, but a novel significant difference (Boysen et al., 2019). The current results were also consistent with the general focus in experimental research on trigger warnings on negative affect and negatively biased outcomes such as avoidance (vs. approach; Bellet et al., 2018; Gainsburg & Earl, 2018; Sanson et al., 2019).

The more that individuals had been triggered in the past by course material, the more trigger warnings were believed to facilitate course material. This result suggests that there is potentially a subset of individuals who would benefit the most from trigger warnings in college classrooms: students who are most vulnerable to being emotionally triggered by stressful course content. From the data in the current set of studies as well as previous empirical research, it does not appear that students are harmed by the presence of trigger warnings. Future research should investigate if there are any subgroups of students who might be negatively impacted by trigger warnings. Potential subgroups that might be impacted by trigger warnings differently than the general population of students include veterans, returning students, those impacted by community (vs. personal) violence, and students who grew up in poverty.

As addressed previously, being emotionally triggered can be distinct from experiencing a traumatic event and from having a clinical diagnosis. It is not the case that every individual who experiences a traumatic event makes the same appraisal of the event and thus every individual

does not react in the same manner (Lazarus & Folkman, 1984). An event that one person perceives as highly stressful may not seem stressful to another person. It is also not the case that everyone who has experienced a traumatic event meets diagnostic criteria for Post-Traumatic Stress Disorder or another trauma-related disorder immediately after the traumatic event or in the months and years following the traumatic event (McGrath et al., 2008; Powers et al., 2011). I did not assess whether the participants in Study 1 met the criteria for a clinical diagnosis; rather, I focused on students' subjective assessment of their own interactions with and reactions to course material.

Though not initially part of the theoretical framework for Study 1, a vulnerability—stress model can offer insight into the positive correlation between the frequency of being triggered in the current semester and perceived facilitation of course material by trigger warnings. One cognitive approach to a vulnerability—stress model is the learned hopelessness theory of depression, in which those who have a tendency to make negative inferences about events and then experience a negative event are more likely to have symptoms of depression (Abramson et al., 1989). The negative inferences in this case are a cognitive style and a vulnerability from the perspective of this model; the negative life event is the stress. To apply this model to the current study, one indicator of vulnerability in the present study is reports of being triggered in the past. In the face of stressful course material (the stress), students can then experience reactions that they would categorize as being emotionally triggered. It could be the case that trigger warnings, and specifically how trigger warnings influence appraisal tendencies, provide a buffer between past experiences of being triggered and the stressful course material to lower stress-responses associated with the course material.

The results from the content analysis of definitions of the word "trigger warning" support the distinction between being distressed and having experienced a traumatic event. Only 39.3% of the definitions of trigger warnings included a reference to a trauma. In comparison, 90.6% of definitions included a reference to impactful material. Although previous work has asked whether participants were familiar with trigger warnings with a forced choice question, no research to date has analyzed students' free responses and reported descriptive data about students' understanding of trigger warnings (Gainsburg & Earl, 2018).

The secondary purpose of Study 1 was to collect pilot data on students' appraisals of course material and their stress mindsets. With Study 1, I hoped to obtain information about stress mindsets and appraisals that would then inform Study 2. Specifically, I was interested in whether having a stress-is-enhancing mindset (vs. stress-is-debilitating or control) would be related to more positive outcomes associated with trigger warnings and appraisals and how appraisals of difficult courses was related to perspectives on trigger warnings. The results of these analyses would have then informed the proposed hypotheses, models, and measures in Study 2. However, because of time constraints of the semester and the limitations of the Psychology Participant Pool in Spring 2020, I needed to collect data for Study 2 before I could fully analyze the data from Study 1. Preliminary analyses from Study 1 before Study 2 was run did not indicate that anything should be changed about Study 2 with respect to study design. As addressed previously, I was hoping to get information from Study 1 about the relationship between stress mindset and appraisals. I found that the more students endorsed having a stress-is-debilitating mindset, the more they indicated appraising their most difficult course as demanding, which provides some support for my hypothesis that inducing a stress-is-enhancing mindset would lead to a greater likelihood of making challenge appraisals. Although the findings were

not consistent across all subscales, they did suggest that it was reasonable to try to manipulate stress mindset and assume that stress mindset might affect appraisals.

Research Question 2: Direction of the Effect of Trigger Warnings on Outcomes

Study 2 was designed, in part, to answer Research Question 2: "Do trigger warnings lead to positive or negative outcomes, as measured by knowledge retention and affect?" By experimentally manipulating the presence of trigger warnings, Study 2 tested the competing hypotheses that trigger warnings could have positive, negative, or null effects on the outcomes of knowledge retention, positive affect, and negative affect (Study 2, Hypothesis A).

Overall, the data indicated that the presence of a trigger warning (vs. no trigger warning) before viewing a disturbing video had little effect on knowledge retention, positive affect, and negative affect. This finding, and all others, held whether or not the sample included students who performed poorly on the knowledge retention questions. Excluding students who performed poorly can limit our conclusions due to a restriction of range on the knowledge retention variable. These null findings occurred, according to a post-hoc power analysis, in the context of a study with adequate power to detect the direct effect of trigger warnings (P = .69). The evidence for null effects across outcomes is consistent with a number of past studies that have found null effects of trigger warnings on various outcomes, including one previous study that used the same affect measure (though only the negative affect subscale; Bellet et al., 2018; Boysen et al., 2019; Sanson et al., 2019). However, these results are inconsistent with other studies that have found trigger warnings led to increased negative affect (Bridgland et al., 2019; Gainsburg & Earl 2018). Adding the results of Study 2 to the evidence from past research suggests that trigger warnings—at least in their most explicit form (see below for further discussion)—neither help nor harm students in college classrooms.

Research Question 3: Appraisal as a Mechanism for the Effect of Trigger Warnings

Research Question 3 initially addressed whether appraisals of course material as a challenge or a threat are a mechanism through which trigger warnings knowledge retention and affect (Study 2, Hypothesis B). I planned to test whether appraisal mediated the effect of trigger warning on outcomes. However, the basic analyses from Research Question 2 determined that trigger warnings had no effect on knowledge retention or affect, indicating that Research Question 3 could only test for complete mediation and suppression. In the tests of mediation for each outcome (i.e., knowledge retention, positive affect, negative affect), none of the criteria for mediation were met. There was evidence for suppression in analyses testing if threat appraisals mediated the effect of trigger warning on negative effect and if challenge appraisals mediated the effect of trigger warnings on positive affect, negative affect, and knowledge retention. These results indicated that whether a student judged the course material as a challenge or as a threat helped determine the impact of trigger warnings on knowledge retention or affect. Although this was a novel finding, the lack of mediation and evidence for suppression should be interpreted in the context of the absence of a direct effect of trigger warning on knowledge retention or affect.

Research Question 4: The Effects of Stress Mindset

Research Question 4 addressed whether induced stress mindset had a direct effect on knowledge retention and affect when viewing a mildly stressful video (Study 2, Hypothesis C1) and whether stress mindset interacted with trigger warning to moderate the effect of trigger warning on outcomes (Study 2, Hypothesis C2).

Contrary to Hypothesis C1, the data from Study 2 indicated that induced stress mindset did not have a direct effect on knowledge retention or affect. No differences emerged across the three levels of stress mindset, denoting that students performed equally well on knowledge

retention and reported similar affect regardless of whether they were encouraged to view stress as enhancing, debilitating, or neither (control). This result is inconsistent with past work on stress mindsets, which has established that participants perform better on tasks after viewing a video suggesting stress is enhancing (vs. debilitating or control; Crum et al., 2013; 2017). Although a significant portion of research on Mindset Theory has been with children in stressful academic contexts (Burnette et al., 2013; Chui et al., 1997; Dweck, 1999), Study 2 was a novel application of the Stress Mindset Model in an academic context. Future research can confirm whether Study 2 was an anomaly or if the Stress Mindset Model functions differently in stressful academic contexts. It should be noted that the manipulation check was not optimal, and it may be that the manipulation that was used was not very effective, especially in the context of a study that was conducted completely online.

The data from Study 2 also indicated that stress mindset did not moderate the effect of trigger warnings on appraisal or the effect of trigger warnings on knowledge retention and affect. It was plausible, for example, that a stress-is-enhancing mindset would buffer any negative effect that trigger warnings had on negative affect (Hypothesis C2). This was not the case. Although these are null effects and occurred in the context of a poorly powered study, the data support the conclusion that—in the context of this study—inducing a specific stress mindset did not influence the effect of trigger warnings.

Research Question 5: The Effect of Trigger Warnings as Mediated by Appraisals and Moderated by Stress Mindset

Research Question 5 addressed whether a test of moderated mediation would support the proposed theoretical model (see Figure 1), with appraisal as a mediator and stress mindset as a moderator of the effect of trigger warnings on knowledge retention and affect (Study 2,

Hypothesis D). There was no evidence to support the proposed theoretical model: appraisals did not mediate the effect of trigger warnings on outcomes as expected and a stress mindset intervention did not moderate this (lack of) effect. These null findings must be interpreted in the context that the primary manipulation – trigger warnings – and the secondary manipulation – stress mindset – had no discernible effect on knowledge retention or affect.

Strengths and Limitations

One of the strengths of this set of two studies was that it took a mixed-methods approach to further understanding trigger warnings in college classrooms. Study 1 provided both quantitative and qualitative descriptive data, whereas Study 2 experimentally manipulated both the presence of a trigger warning and stress mindset in a situation that drew parallels to an online learning environment. In the following subsections, I outline additional strengths and weaknesses of the present set of studies and potential future directions.

Definitions

Trigger warning. In both studies, although the definition of trigger warning was broadened to include distress beyond that associated with trauma, the definition still focused on explicitly using the phrase "trigger warning." Doing so allowed me to draw comparisons with previous empirical research since the definition used in both studies was used exactly (Study 1) or adapted (Study 2) from previous work (Gainsburg & Earl, 2018; Sanson et al., 2019). However, from a survey of instructors, we know that many instructors inform students of content without labeling that information as a trigger warning (NCAC, 2016). By honoring the more traditional definition of trigger warning used in previous empirical research, I may have reduced the ecological validity of this work by not addressing situations where trigger warnings are given but not labeled as such.

Stressful material. Previous research on trigger warnings that exposed participants to sensitive material has largely presented participants with material that is gendered and only moderately generalizable (Boysen et al., 2019; Gainsburg & Earl, 2018). Studies have focused heavily on videos and essays about domestic violence and sexual assault, both of which are gendered topics, meaning that domestic violence and sexual assault effect specific subsets of the population (and study samples) differently than other subsets. To increase ecological validity and generalizability, Study 2 was framed as a course on News Journalism with an assignment focused on domestic terrorism, which should be equally relevant to all genders. The stimulus video was selected to address domestic terrorism near a college campus, an event that should be particularly salient to college students (though see commentary below on the sample). These aspects of the design should increase ecological validity since people are more likely to encounter similar videos in real life and framing the study as a course was precisely the context for the study of trigger warnings in the classroom.

Manipulations in Study 2

Trigger warning. As addressed previously, the manipulation of trigger warnings in Study 2 was based on an adapted, traditional definition of trigger warning from previous work (Gainsburg & Earl, 2018; Sanson et al., 2019). Students who received a trigger warning were told about the content and that the content might lead to negative emotional responses. Furthermore, this information was labeled explicitly as a "**Trigger warning**". Despite attempts to clearly distinguish the content for those who received a trigger warning (vs. control), only 62.4% of those in the trigger warning condition indicated in a manipulation check that they had received a trigger warning. Although almost twice as many students who actually received a trigger warning indicated receiving a trigger warning compared to students in the control

condition (62.4% vs. 35.3%), the numbers are far from ideal for such a straightforward manipulation.

It could be the case that students hold negative associations with the phrase "trigger warning", either due to connections to the prevalence of trigger warnings in media or to their connection with a clinical diagnosis of Post-Traumatic Stress Disorder. As Gainsburg and Earl (2018) noted, trigger warnings – unlike other warnings – specifically focus the audience's attention on an anticipated negative affective response to the content that follows the warning. Many instructors effectively employ trigger warnings without using the explicit name "trigger warning," yet there has been no empirical work outside of traditional definitions of trigger warnings, as used in this study and other empirical research on trigger warnings to date (e.g., explicitly labeled as a trigger warning; NCAC, 2016). Future research should examine the effects of common framings of content where students are randomly assigned to see potentially sensitive material (e.g., a gory image, domestic terrorism) preceded by various messages that make salient whether students should be alarmed by the content or not (e.g., warning vs. notice; trigger vs. content).

Manipulating the presence of a trigger warning before specific content also ignores the broader framing of courses. As in Study 1, for students who had received trigger warnings in the past, most indicated that they received a trigger warning before specific content rather than a statement in a syllabus or announcement at the start of class. This question in Study 1 was based on the traditional definition of trigger warning and did not allow students to reflect on how their instructors talked about course content more broadly. To address this concern, future research might also test whether the timing of a trigger warning (or notice about content) matters.

Stress mindset. Another limitation was that the design did not include a robust manipulation check. A stronger manipulation of stress mindset might provide additional insight into the impact of stress mindset on outcomes following stress in college classrooms.

Moreover, the manipulation of stress mindset appeared weak. It could be the case that the stress-mindset video used in Study 2 was not effective at manipulating mindset in this novel context of an academic setting. Although I chose the stress mindset videos about learning (vs. health or performance; Crum et al., 2013), these videos were not specific to – nor developed for – college learning. Previous research has tested these manipulations in organizational settings and with in-lab stress-tests (Crum et al., 2013, 2017). As such, the videos might have limited relevance in an educational setting. However, the contexts the stress mindset manipulations have been tested in do share some similarity to a college setting: all are potentially stressful situations that involve interpersonal interactions and performance evaluations. Adapting the stress mindset manipulations to focus on learning in an educational setting might be one way to strengthen the manipulation of stress mindset.

Measurement

Study 2 focused on two outcomes that have been an emphasis of previous research on trigger warnings: knowledge retention and negative affect. Study 2 also tested the effect of trigger warnings on positive affect, a measure included less frequently in previous research. Trigger warnings likely impact a wider range of outcomes than was the focus of this study and future research should expand the outcomes that are measured.

Affect. As addressed in the individual discussions for Studies 1 and 2, a strength of the present work was that it did not focus solely on negative affect, which may have biased the results of previous studies to find only negative outcomes (or a lack thereof). All but one of the

recent studies on trigger warnings focused exclusively on negative affect and other negatively-valence outcomes, which limited the scope of the conclusions (Boysen et al., 2019).

In regard to the measurement of positive and negative affect, in Studies 1 and 2, one item on the PANAS-S was generally inconsistent with the standard scale: Alert. In both studies, Alert loaded onto the negative affect subscale rather than the positive affect subscale. One explanation for this is that emotions are context specific and there is significant overlap in the application of different affect labels (Cowen & Keltner, 2020). In the context of stressful classroom material, alert might be less associated with interest (positive valence) and more associated with vigilance (negative valence).

Distress and trauma. Past studies have generally asked students to identify from a set list which traumatic experiences they have had either over a set time period or their entire life (Sanson et al., 2019). In contrast, since I was interested in the effect of trigger warnings on appraisals, I asked students "Have you ever experienced a distressing event that exceeded your ability to cope with that stress?" Previous research that used a checklist assumes that a particular event is traumatic for everyone who experiences it, and the focus is on whether an event has been experienced or not. I was less interested in what the event was and more interested in students' appraisal of the event. As addressed in Chapter 1, the same event can be appraised by one person as a challenge and by another as a threat. To further understand the emotional repercussions of traumatic events, it is critical to focus on events that individuals appraise as threatening rather than focusing on events that experts label as "traumatic" but might not be threatening to some individuals.

Although including an item about experiencing an overwhelmingly distressing event strengthens the set of studies, the nature of the item's operationalization could be improved. In

future research, it would be beneficial to have a continuous measure to quantify the number of distressing events or a deeper qualitative assessment of the impact of the distressing events on students. As McLaughlin and colleagues found, there is a cumulative risk associated with having experienced more distressing events whereby more distressing events is correlated with more negative outcomes (2012; 2017). Although the measure of distress used in the present studies addresses the subjective aspects far better than asking a categorical question about having a particular experience, the current measure still lacks a way to tease apart differences across those who have experienced many or few distressing events.

Appraisal. Studies 1 and 2 did not use the same measure of appraisal, which can limit comparisons between the two studies and the use of the pilot data from Study 1 in informing Study 2 (though as addressed previously, there were limitations in my ability to use the pilot data to inform the models proposed in Study 2). In Study 1, students appraised their most difficult course this semester; in Study 2, students appraised the stimulus video. Although the different measures might pose a slight limitation, the contexts of the two studies required different measures to be used.

Unique to Study 2, the factor analysis for the appraisal measure did not suggest an interpretable scale: the items all loaded positively together, rather than on two distinct subscales as suggested by the standard scoring procedures (Williams & Cumming, 2012; Williams et al., 2010; McGregor & Elliot, 2002). Due to the lack of interpretability, I followed standard scoring procedures and created two subscales of appraisal. Despite the appraisal measure being chosen for fit with Study 2's design, I do not feel confident in its assessment of students' appraisals of the stimulus video.

Sample

College samples are often viewed as a limitation when attempting to generalize to the broader population; however, because the topic of this research was trigger warnings in college classrooms, the college sample was appropriate. The college sample was more appropriate in this context than using crowd-sourcing services like Amazon Mechanical Turk, which draw from wider sample pools, many of whom are not students.

Students in the present studies' samples had a large variety of majors and in Study 1, were reflecting on their experiences with trigger warnings in many different departments. Compared to other studies surveying students' perspectives in psychology classrooms, the results from Study 1 are far more generalizable across courses in many different departments (Boysen et al., 2018).

Although a sample of college students is appropriate for the questions addressed here, the results still cannot necessarily be generalized to all college students, or students in general. Previous research on trigger warnings, as well as the current studies, has all focused on college students, which limits our ability to draw conclusions about the use of trigger warnings in pre-college classrooms. The makeup of the student populations at different colleges can have a significant influence on whether students receive trigger warnings and how the students would be impacted by trigger warnings. For instance, colleges with a large population of returning veterans, colleges with a history of trauma on campus (Virginia Tech) or in the area (New York University), and colleges that serve more students who are underrepresented in higher education (Historically Black Colleges and Universities; two-year colleges) might all have student bodies that might have especially strong reactions to some course material. Furthermore, different

campuses have different climates and expectations for whether instructors should use trigger warnings.

Data Collection During a Pandemic

The generalizability of Study 2 was impacted by the novel coronavirus pandemic. Study 2 was designed to parallel a course on News Journalism. The shift to remote learning midway through Spring 2020 meant that more students in the sample likely had experience engaging with course material online than they would have otherwise, implying that conducting the experiment online more closely resembled their actual course experiences than would otherwise have been the case. Any positive impact on generalizability was likely overwhelmed by the negative impact that a pandemic and all of the ensuing upheaval and uncertainty had on students. Only 17.7% of students in the sample of Study 2 participated in the study before March 11th, 2020, when students in the sample received the first official indicator that the pandemic would impact their schooling. Post-hoc analyses indicated that whether students participated in the study before or after March 11th did not impact knowledge retention or positive affect (*p*'s > .60). However, students who participated in the study after March 11th indicated feeling marginally less negative affect after watching the stimulus video than those who participated before March 11th (b = -0.42, $t(300)$ = -1.87, p = .06). See Tables S28 and S29 in the Supplemental Material for full details of the post-hoc analyses for the impact of the pandemic.

Though the data cannot speak to the full impact that the pandemic, switch to remote learning, potentially forced relocation, and changes in financial stability had on students in the sample, the muted negative affective response post-March 11th supports the hypothesis that the pandemic might desensitize students to encountering stressful material. Regardless of how

students responded to the outcomes before and after March 11th, it is highly likely that students were participating in Study 2 in the context of atypical and unpredictable stressors.

Beyond the potential influence of these stressors on student attention to and persistence with Study 2, it could be the case that the trigger warning manipulation about the stimulus video would have been more powerful if Study 2 had been conducted in the previous semester. Relative to the personal and general impacts of the pandemic, an off-campus shooting at a different university might seem easy to grapple with compared to the pandemic.

Analog Research

Study 2 used an experimental design; however, it was analog research that was meant to parallel real-world settings, which limited the external validity.

All experimental investigations of trigger warnings (including the present research) have occurred in the context of the lab or online studies. However, we don't yet know the effect of trigger warnings (and stress mindsets) on how students interact with material over the course of a semester. Even with the strongest manipulations of trigger warnings and stress mindset, a 20-minute study cannot replicate the personal connections with the instructor and classmates, sustained engagement, or personal investment that students might have in a semester-long course.

Future studies should explore how trigger warnings function across a range of courses (e.g., Introductory Psychology vs. Human Sexuality) and actual behaviors. Canvas, or another learning management system, would be a straightforward way to randomize whether (or how) students receive trigger warnings. With the use of Canvas, researchers could measure actual behaviors such as engagement in a writing activity after viewing a short video identified as

containing sensitive material, page views on Canvas, discussion board participation, and exam grades.

Perceptions of Instructor Empathy as a Possible Mechanism

An additional mechanism to explain the effect of trigger warnings on student outcomes is student perceptions of instructor empathy. The hypothesis is that, when instructors give trigger warnings, it signals to students that the instructor is empathic. Instructor empathy entails not just understanding students' experiences, but being able to communicate that understanding to students (Feshbach & Feshbach, 2009). Instructor empathy and perceptions of instructor empathy are established areas of inquiry in fields related to education. A popular and well-validated measure of instructor credibility, the Measure of Source Credibility Scale, has 18 items that break down into three dimensions: competence, trustworthiness, and caring (McCroskey & Teven, 1999). The caring dimension is often used as a proxy for empathy as it focuses on goodwill that instructors have towards their students (McCroskey, 1992; McCroskey & Teven, 1999). Although perceptions of empathy have not been interrogated in empirical work on trigger warnings, the importance of the variable is consistent with past theorizing that trigger warnings are a way for instructors to communicate respect for student boundaries, experiences, and emotional reactions to course material (Rae, 2016). Trigger warnings – not necessarily with the label "trigger warning," but the overall notion of being open with students about course content and understanding of their emotional reactions to course material – might be a way for instructors to frame their overall course and influence the way that students feel about the instructor and the class climate.

Research on perceptions of instructor empathy and care has consistently demonstrated that perceptions of instructors as caring about students' outcomes has a positive effect on

outcomes such as student participation in and out of class, motivation, learning, and grades (Brann et al., 2005; Chang et al., 1981; Coffman, 1981; Myers, 2004; Myers & Goodboy, 2014; Thweatt & McCroskey, 1998). Based on research on empathy in educational contexts, the perception of an instructor as empathetic could help explain the effect of trigger warnings on outcomes such as knowledge retention, affect, performance, interaction with the course, feelings of belongingness, and persistence in a major.

Critically, instructor communication about course content that conveys empathy might be especially important for students who would not otherwise feel welcome in college classrooms. As illustrated by Stephens and colleagues (2014), the achievement gap between first-generation college students (i.e., no guardian with college education) and continuing generation college students (i.e., at least one guardian with college education) disappeared with an intervention designed to help first-generation college students feel like they belonged on campus. Two indicators of belonging, participation in class and attending office hours, are associated with increased perceptions of an instructor as caring (and as credible more broadly; Myers, 2004; Nadler et al., 2001). One study found that the positive association between perceptions of instructor empathy and attending office hours and emailing instructors was especially strong for women (Nadler et al., 2001). Furthermore, higher levels of student-instructor interactions (such as during office hours) and instructor emotional intelligence (i.e., empathy/caring) were associated with lower student dropout intentions at the college level (Lillis, 2012). It could be that empathy may play a role in diversifying STEM (Science, Technology, Engineering, and Mathematics) fields by working to retain more diverse students in STEM majors and in college more broadly. Although perceptions of instructor empathy have not been empirically tested in

the context of trigger warnings, the potential for positive impact on especially vulnerable students is worth investigating.

In order to empirically test whether students' perceptions of instructor empathy helps explain the effect of trigger warnings – and general communication about course material – on student outcomes, researchers can use both analog and in-vivo designs.

Analog research is beneficial in order to test proof of concept and maximize internal validity. As summarized previously, a significant body of research has measured student perceptions of instructor empathy. Although analog research has a number of limitations, especially regarding generalizability and external validity, it has the potential to manipulate instructor communication (e.g., the presence of a trigger warning) in a more controlled manner. As with Study 2, an analog study – either online or in-person – could manipulate whether students receive a message at the beginning of a "class" (e.g., by reading through a syllabus or watching a video from their "instructor") and throughout the "class" about specific content (e.g., standardized messages about class content). Whether the analog study was conducted in a single session or involved follow-up, the researchers would be able to control what material students engaged with in their "class."

To maximize external validity, a study measuring perceptions of instructor empathy in the context of trigger warnings could be conducted in-vivo, collecting data over the course of a semester or even a student's academic career. A preliminary in-vivo study might have the researchers look at instructors' syllabi and provide specific information for instructors to include at the beginning of class and before specific content. For example, in online classes, it would be simple to manipulate the presence of a video where the instructor talks about their class values using key language to convey empathy, as identified by the research team. Similarly, researchers

could manipulate the presence of a statement in the syllabus. Although it might be possible to standardize statements about accommodations, teaching philosophy, and course values, the inherent variability in course content is a major limitation to conducting in-vivo studies. Future research would need to address the development of a training program so that instructors could learn to identify content in need of a trigger warning (or similar message) and how to appropriately address this content on their own.

Overall, there a significant body of research indicating that student perceptions of instructor empathy are related to student outcomes such as learning, motivation, and participation in class. Trigger warnings, defined broadly as discussed above, are one way that instructors can convey information to students about their approach to teaching. Research on empathy supports the possibility that student perceptions of instructor empathy will help explain the effect of trigger warnings on student outcomes such as those investigated in the present set of studies (i.e., knowledge retention and affect).

Conclusions

The goals of the present research were to collect descriptive data on students' experiences with and understandings of trigger warnings (Study 1) and to test whether trigger warnings have an effect on knowledge retention and affect (both negative and positive) in a moderately stressful classroom-like situation (Study 2). Furthermore, Study 2 was intended to test a theoretical model, which proposed that appraisals would be a process through which trigger warnings affect knowledge retention and affect and that stress mindset would moderate this relationship.

Overall, these two studies indicated that, although students generally were familiar with and understood the purpose behind the use of trigger warnings in college classrooms (Study 1), trigger warnings—at least in the context of this experiment—had little effect on students'

knowledge retention and affect (Study 2). Counter to my predictions, there was no evidence to support the proposed theoretical model in which appraisals would mediate the effect of trigger warnings on knowledge retention and affect and induced stress mindset would moderate this effect. Although the results of Study 2 were largely inconsistent with my predictions, the results were consistent with previous work that found that trigger warnings have little, if any, effect on student outcomes, at least in the context of an online study.

Although the results of these two studies did not definitively end the debate about trigger warnings in college classrooms, they added more nuances to the research on trigger warnings. Appraisals of a stimulus video as a challenge or as a threat did not mediate — but rather suppressed — the effect of trigger warnings on outcomes in the present analog research. The lack of mediation does not mean that appraisals or another mediator would not explain the effect of trigger warnings on student outcomes in actual classrooms. The continued discussion about trigger warnings reflects a need for a deeper understanding of the mechanisms through which trigger warnings function.

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Appendices

Appendix A

Definition of Trigger Warning

(based, in part, on Gainsburg & Earl, 2018)

- Have you ever heard the term *trigger warning*?
    - Yes, No, Not sure
- In your own words, how would you define *trigger warning*?
    - Fill in the blank

Appendix B

Coding Manual for Definition of Trigger Warning

Quality of definition + wording [TWQuality#]

1. Accuracy (Not attempted, but text written = 1; Inaccurate, but attempted = 2; Partially accurate = 3; Accurate = 4; Missing = 9; Coder unsure = 8)
    a. A trigger warning can be defined as: "A statement at the start of a piece of writing, video, lecture, etc., alerting the student to the fact that it contains potentially distressing material."
    b. Not attempted = responses such as "I'm not sure", "I don't know" should be marked here as not attempted
    c. Inaccurate, but attempted = does not meet criteria for definition, but has something in the realm of triggered (e.g., "feeling things"; NOT I don't know)
    d. Partially accurate = mentions either distressing material /reaction OR statement on content. This applies to suggestions that the warning itself primes negative responses, rather than the future material
    e. Accurate = distressing material / leading to reaction + statement on content
    f. Missing = blank
2. Deterministic language (MAY = 1; WILL = 2; Missing = 9; Coder unsure = 8)
    a. May = may, might, could, can
    b. Will = is, will, affects, causes, triggers, produces, makes, would
    c. Missing = Missing sufficient information to make a conclusion about deterministic language

Who do trigger warnings affect? [TWWhoAffect#]

1. Education-related (Instructors = 1; Students = 2; Students & Instructors = 3; Missing = 9; Coder unsure = 8)
    a. Instructors: includes professors, lecturers, teachers, instructors, etc.
    b. Students: must talk specifically about how students are affected; it could be that "you" below is clearly referring to a student, such as "when you're in class". In that case, mark Item #1 as 2 and Item #2 as 2.
2. Non-education related ("Someone", unspecified = 1; singular "you" = 2; "Someone" & "You" = 3; Missing = 9, Coder unsure = 8)
    a. "Someone", unspecified = references to everyone, people, someone
    b. Singular you = definition phrased such as "when you feel….", "when one feels…"

How people are affected by trigger warnings [TWHowStudent#]

1. Forewarn about something bad happening (Unspecified something bad = 1; Encountering challenging material = 2; Encountering difficult emotional responses = 3; Both 2 + 3 = 4; Missing = 9; Coder unsure = 8)
    a. Unspecified: does not mention any particular bad thing that students will encounter
    b. Challenging material: References material. Focus on the content of the material presented. Material could be challenging, controversial, difficult, etc.
    c. Difficult emotions: Trigger warnings cause people to expect to feel negative emotions or warn about possible negative emotions
2. Type of reaction (Unspecified reaction = 1; Psychological reaction = 2; Physical reaction = 3; Both psychological and physical reaction = 4; Missing = 9; Coder unsure = 8)
    a. Unspecified reaction: A reaction clearly takes place (e.g., "when you're provoked") but it's unclear what form the reaction takes.

   b. Psychological reaction: emotional, cognitive, feelings, mental
   c. Physical reaction: behavioral reaction

Content of trigger warnings [TWAbout#]

1. Type of stimulus (Non-specific = 1; Material = 2; Event = 3; Both = 4; Missing = 9; Coder unsure = 8)
   a. Non-specific: does not reference material or event, but does suggest that the reaction originated with something. EX: "being provoked by something"
   b. Material: References content like readings, lectures, videos, such as "encountering challenging material"
   c. Event: references an event or experience, such as "being reminded of a past event". School function; Interactions with other people; would include discussions. Actions by another person
2. Controversial / counterideological material (Controversial = 1; Counterideological = 2; Both = 3; Missing = 9; Coder unsure = 8)
   a. Controversial: Prepare for engaging with unpopular material; material that people have strong, oppositional feelings for such as abortion, death penalty. Does not indicate personal opinion
   b. Counterideological: Prepare for engaging specifically with material that is counter to one's beliefs, but not necessarily controversial. "When you encounter material you might not agree with"
3. Material linked to past trauma that is…(Not specified = 1; Based on previous experience = 2; Generally disturbing = 3; Both = 4; Missing = 9; Coder unsure = 8)
   a. Not specified: Assume from the definition that there is a source, but it is not specified. There is not enough material to assume whether the material is generally disturbing or personally experienced, but trauma is mentioned. EX: Reminders of trauma are brought up
   b. Based on previous experience: Material that an individual is sensitive to based on previous experience. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #4 as 2. EX: "reminds you of something that happened before"
   c. Generally disturbing: Material that the general public would be sensitive to or disturbed by. Does not mention any specific individuals or their experiences. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #4 as 3. EX: "Material that people find offensive"
   d. If the word "triggered" is used without reference to trauma, please mark Item #4 as appropriate.
4. Impactful material that is… (Not specified = 1; Based on previous experience = 2; Generally disturbing = 3; Both = 4; Missing = 9; Coder unsure = 8)
   a. Not specified: Assume from the definition that there is a source, but it is not specified. EX: "Negative feelings are provoked". Definition should specifically NOT mention trauma.
   b. Based on previous experience: Material that an individual is sensitive to based on previous experience. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #3 as 2. EX: "reminds you of something that happened before"
   c. Generally disturbing: Material that the general public would be sensitive to or disturbed by. Does not mention any specific individuals or their experiences. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #3 as 3. EX: "Material that people find offensive", "Something that causes distress"

   d. If the word “triggered” is used while referencing trauma, please mark Item #2 as appropriate.
   e. Must include the word “trauma”

Topics that trigger warnings cover [TWTopics#]

1. Topic (Non-specific reference to a topic = 1; Sexual violence = 2; Non-sexual violence = 3; Gore = 4; More than one of these topics = 5; Other, specify = 6; Missing = 9; Coder unsure = 8)
   a. Non-specific: References something that we can assume has a topic, but response does not indicate a specific topic. EX: “someone reacts to a specific scene in a movie”
   b. Sexual violence: include rape, assault, harassment
   c. Non-sexual violence: all violence of a non-sexual nature; child, partner physical abuse
   d. Gore: specifically mentions things such as blood, guts, etc. Gore can be part of either violence (e.g., war; code 5) and can be separate from violence (e.g., medical procedures; code 4).

Breadth of topics impacted [TWBreadthTopic#]

1. Breadth of topic (One topic = 1; More than one topic mentioned = 2; Unspecified number of topics = 3; Missing = 9; Coder unsure = 8)
   a. One topic: References one specific topic
   b. More than one topic mentioned: References that trigger warnings are specific to a certain number of topics. Respondent might mention one or two topics specifically and suggest that trigger warnings are only for those topics.
   c. Unspecified number of topics: References that trigger warnings are broadly applicable; “something”

Appendix C

Exposure to Trigger Warnings

(some items adapted from Boysen at al., 2018; Gainsburg & Earl, 2018; and by the author)

- Text prompt (G):
    - A trigger warning can be defined as: "A statement at the start of a piece of writing, video, lecture, etc., alerting the student to the fact that it contains potentially distressing material."
- Based on this definition, have you had a trigger warning in any class **this semester**? (A)
    - Yes, No, Not sure
- If Yes or Not sure
    - For **each class this semester in which you received a trigger warning**, please indicate in the blank the department and an identifier to keep track of the course for yourself (e.g., if you took two classes in X Department, specify "X Department, Class 1"). Do NOT indicate the class number. This will be used to answer questions about each course further in the survey. [have up to 7 options] (A)
    - In {department, class}, **how** did the instructor provide a trigger warning? Check all that apply. (B, A)
        - A syllabus statement
        - A statement before a specific module, unit, or chapter
        - A statement before a specific lecture
        - A statement before specific sensitive topic
        - A statement before a specific homework assignment or project
        - A statement before engaging with specific content material (e.g., video, article)
        - Other
        - None of the above
- In {department, class}, **when** did the instructor provide a trigger warning? Check all that apply. (A)
    - Never, at the beginning of the semester, before a specific lecture(s) or specific course content, after a student was visibly distressed in class by a topic

Source of items: B = Boysen et al., 2018; G = Gainsburg & Earl, 2018; A = Author

Appendix D

Perceived Content of Trigger Warnings

(adapted, in part, from Boysen et al., 2018; and the author)

Thinking of the classes you are taking this semester…For each of the following topics, if the topic was covered, indicate whether an instructor issued a warning and it was necessary, an instructor issued a warning and it was unnecessary, an instructor did not issue a warning and it was necessary, and an instructor did not issue a warning and it was unnecessary. If the topic was NOT covered this semester, choose Not Applicable. [Questions were presented as a matrix. Some topics were included as a control. Items were randomized within block for each participant]

1. Non-sexual violence (e.g., imagery of guns, war) (B, A)
2. Sexual violence (e.g., rape, sexual assault) (B, A)
3. Abuse (e.g., physical, emotional) (B, A)
4. Offensive language (A)
5. Nudity (A)
6. Suicide / self-harm (B, A)
7. Gory imagery (e.g., blood) (B, A)
8. Consensual sexual acts (B, A)
9. Issues related to diversity (e.g., racism, classism, sexism) (B, A)
10. Mental health disorders (e.g., depression, anxiety, eating disorders) (B, A)
11. Economic policy (control) (A)
12. Global warming (control) (A)

Source of items: B = Boysen et al., 2018; A = Author

Appendix E

Perceived Function of Trigger Warnings

(three items adapted from Boysen at al., 2018; three items adapted from Beverly et al., 2018; other items developed by author based on theory)

Please rate the extent to which you agree or disagree with the following statements. For each question answer on a scale of 0 = *Strongly Disagree* to 6 = *Strongly Agree*. [Items were randomized within block for each participant]

1. Trigger warnings before a lecture, a reading, or a piece of writing or video are harmful (A)
2. Trigger warnings help people avoid distressing content (A)
3. Trigger warnings compromise the academic freedom of instructors (B, A) **
4. Trigger warnings are necessary before a lecture, a reading, or a video
5. Trigger warnings help people brace for distressing content (A)
6. Trigger warnings are helpful for those who need them (E, A)
7. Trigger warnings help students engage with course material (B, E, A)
8. Trigger warnings protect instructors from complaints (B, A)
9. Trigger warnings raise awareness of how course material may affect other students in the class (E, A)

Source of items: B = Boysen et al., 2018; E = Beverly et al., 2018; A = Author
** = Item removed after content analysis

Appendix F

Affective Response to Trigger Warnings

Items from the Positive and Negative Affect Scale-Short (PANAS-S; Mackinnon, et al., 1999; Watson et al., 1988). Prompt generated by author.

When or if you're given a trigger warning before class content, to what extent do you expect to feel each of the following when engaging with the content? Indicate your response on a scale from 0 = *very slight or not at all* to 6 = *Extremely*. [Items were presented as a matrix. Items were randomized within block for each participant]

1. Inspired
2. Alert *
3. Excited
4. Enthusiastic
5. Determined
6. Afraid
7. Upset
8. Nervous
9. Scared
10. Distressed

In original scale, Items 1 – 5 were positive affect and Items 6 – 10 were negative affect.

* = Item loaded with negative affect subscale

Appendix G

Perceived Facilitation of Interaction with Course Material

(four items adapted from Boysen at al., 2018; others are author written)

Please rate the extent to which you agree or disagree with the following statements. For each question answer on a scale of 0 = *Strongly Disagree* to 6 = *Strongly Agree*. [Items were randomized within block for each participant]

1. Seeing a trigger warning makes me more likely to avoid that material (B, A) **
2. Seeing a trigger warning makes me more likely to seek out the that material (A) **
3. Trigger warnings would be detrimental to my learning (B, A) **
4. Trigger warnings would be detrimental to my mental well-being (A) **
5. Having a trigger warning would reduce the amount I was distracted by that material (A)
6. Having a trigger warning would help me focus on that material more (A)
7. I would be less worried about watching a video in class if I knew I wouldn't be surprised by the content (A)
8. I would feel better prepared to discuss emotional issues from an academic perspective after having a trigger warning. (B, A)
9. I would feel more able to participate in the class discussion if a trigger warning was provided. (B, A)
10. I would feel more comfortable with course material if a trigger warning was provided. (A)

Source of items: B = Boysen et al., 2018; A = Author
** = Item removed after content analysis

Appendix H

Stress Mindset Measure – General (SMM-G)

(from Crum et al., 2013)

Please rate the extent to which you agree or disagree with the following statements. For each question answer on a scale of 0 = *Strongly Disagree* to 6 = *Strongly Agree*. [Items were randomized within block for each participant]

1. The effects of stress are negative and should be avoided.
2. Experiencing stress facilitates my learning and growth.
3. Experiencing stress depletes my health and vitality.
4. Experiencing stress enhances my performance and productivity.
5. Experiencing stress inhibits my learning and growth.
6. Experiencing stress improves my health and vitality.
7. Experiencing stress debilitates my performance and productivity.
8. The effects of stress are positive and should be utilized.

Items 1, 3, 5, and 7: Stress is debilitating
Items 2, 4, 6, and 8: Stress is enhancing

Appendix I

Appraisal of Course Material

(from Mendes et al., 2007; prompt adapted to current study by author)

Please answer the following questions about your course material for your **most difficult** course this semester on a scale from 0 = *Strongly disagree* to 6 = *Strongly agree*. [Items are randomized within block for each participant]

1. My course material is demanding
2. My course material is stressful
3. My course material is distressing
4. My course material is threatening **
5. I am uncertain how I am performing in this course **
6. My course material requires a lot of effort
7. I have the abilities to perform well in this course
8. I expect to perform well in this course
9. Performing well in this course is important to me
10. My course material is a positive challenge
11. I am the type of person who does well in my courses

Items 1 – 6 assess demand appraisals
Items 7 – 11 assess resource appraisals

** = Item removed after content analysis

Appendix J

Definition of and Experience with Distressing Events

(Items developed by the author)

1. In your own words, what does it mean to be emotionally triggered?
    a. Fill in the blank
2. Have you ever experienced a distressing event that exceeded your ability to cope with that stress?
    a. Yes, No, Not sure
3. How frequently have you experienced the feeling of being emotionally "triggered" by something in class **this semester**, according to your definition of what it means for someone to be 'triggered'?
    a. Never
    b. Once this semester
    c. 2 – 4 times this semester
    d. 5 – 8 times this semester
    e. 9 – 15 times this semester
    f. 16 - 20 times this semester
    g. More than 20 times this semester

Appendix K

Coding Manual for Definition of Triggered

Quality of definition + wording [TQuality#]

1. Accuracy (Not attempted, but text written = 1; Inaccurate, but attempted = 2; Partially accurate = 3; Accurate = 4; Missing = 9; Coder unsure = 8)
    a. Triggered can be defined as: "A response caused by a particular action, process, or situation. Typically, an intense emotional or physical reaction."
    b. Not attempted = responses such as "I'm not sure", "I don't know" should be marked here as not attempted
    c. Inaccurate, but attempted = does not meet criteria for definition, but has something in the realm of triggered (e.g., "feeling things"; NOT I don't know)
    d. Partially accurate = Reaction OR stimulus
    e. Accurate = Reaction AND stimulus
    f. Missing = blank
2. Deterministic language (MAY = 1; WILL = 2; Missing = 9; Coder unsure = 8)
    a. May = may, might, could, can
    b. Will = is, will, affects, causes, triggers, produces, makes
    c. Missing = Missing sufficient information to make a conclusion about deterministic language

Outcome of being triggered [TOutcome#]

1. Type of reaction (Unspecified reaction = 1; Psychological reaction = 2; Physical reaction = 3; Both psychological and physical reaction = 4; Missing = 9; Coder unsure = 8)
    a. Unspecified reaction: A reaction clearly takes place (e.g., "when you're provoked") but it's unclear what form the reaction takes.
    b. Psychological reaction: emotional, cognitive, feelings, mental.
    c. Physical reaction: behavioral reaction
2. Avoidance (Of specific materials = 1; Non-functioning = 2; Both = 3; Missing = 9; Coder unsure = 8)
    a. Of specific materials: response suggest that there are specific materials that are related to being triggered
    b. Non-functioning: Too emotional to do something; paralysis; avoidance of more than just specific materials; interference with daily functioning
    c. Both = mentions avoidance of specific materials AND lack of daily functioning
3. Approach (Purposeful engagement = 1; Alert to other threats = 2; Both = 3; Missing = 9; Coder unsure = 8)
    a. Purposeful engagement: Ready to handle the situation
    b. Alert to threats: Vigilant to stimuli around them

Emotions experienced while triggered [TEmotion#]

1. Non-specific emotion (No valence specified = 1; Negative = 2; Positive = 3; Both positive and negative = 4; Missing = 9; Coder unsure = 8)
    a. No valence specified: References an emotional reaction without clearly indicating whether it is positive or negative. EX: "an intense emotional reaction"
    b. Negative: Distress, bad, stressed
    c. Positive: Good, well
2. Anger / Mad (Present = 1; Missing = 9; Coder unsure = 8)
3. Contempt (Present = 1; Missing = 9; Coder unsure = 8)

4. Disgust (Present = 1; Missing = 9; Coder unsure = 8)
5. Embarrassment (Present = 1; Missing = 9; Coder unsure = 8)
6. Guilt (Present = 1; Missing = 9; Coder unsure = 8)
7. Interest (Present = 1; Missing = 9; Coder unsure = 8)
8. Sadness (Present = 1; Missing = 9; Coder unsure = 8)
9. Shame (Present = 1; Missing = 9; Coder unsure = 8)
10. Shyness (Present = 1; Missing = 9; Coder unsure = 8)
11. Surprise (Present = 1; Missing = 9; Coder unsure = 8)
12. Sympathy (Present = 1; Missing = 9; Coder unsure = 8)
13. Alert / Vigilant (Present = 1; Missing = 9; Coder unsure = 8)
14. Excited (Present = 1; Missing = 9; Coder unsure = 8)
15. Determined (Present = 1; Missing = 9; Coder unsure = 8)
16. Afraid (Present = 1; Missing = 9; Coder unsure = 8)
17. Upset / Hurt (Present = 1; Missing = 9; Coder unsure = 8)
18. Anxious / Nervous (Present = 1; Missing = 9; Coder unsure = 8)
19. Fear / Scared (Present = 1; Missing = 9; Coder unsure = 8)

Stimulus for feelings/outcomes [TStimulus#]

1. Type of stimulus (Non-specific = 1; Material = 2; Event = 3; Both = 3; Missing = 9; Coder unsure = 8)
    a. Non-specific: does not reference material or event, but does suggest that the reaction originated with something. EX: “being provoked by something”
    b. Material: References content like readings, lectures, videos, such as “encountering challenging material”
    c. Event: references an event or experience, such as “being reminded of a past event”. Interactions with other people; would include discussions. Actions by another person
2. Controversial / counterideological material (Controversial = 1; Counterideological = 2; Both = 3; Missing = 9; Coder unsure = 8)
    a. Controversial: Prepare for engaging with unpopular material; material that people have strong, oppositional feelings for (abortion, death penalty). Does not indicate personal opinion
    b. Counterideological: Prepare for engaging specifically with material that is counter to one’s beliefs, but not necessarily controversial.
3. Material linked to past trauma that is…(Not specified = 1; Based on previous experience = 2; Generally disturbing = 3; Both = 3; Missing = 9; Coder unsure = 8)
    a. Not specified: Assume from the definition that there is a source, but it is not specified. There is not enough material to assume whether the material is generally disturbing or personally experienced, but trauma is mentioned. EX: Reminders of trauma are brought up
    b. Based on previous experience: Material that an individual is sensitive to based on previous experience. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #3 as 2. EX: “reminds you of something that happened before”
    c. Generally disturbing: Material that the general public would be sensitive to or disturbed by. Does not mention any specific individuals or their experiences. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #3 as 3. EX: “Material that people find offensive”
    d. If the word “triggered” is used without reference to trauma, please mark Item #4 as appropriate.
    e. Must include the word “trauma”

4. Impactful material that is… (Not specified = 1; Based on previous experience = 2; Generally disturbing = 3; Both = 3; Missing = 9; Coder unsure = 8)
    a. Not specified: Assume from the definition that there is a source, but it is not specified. EX: Negative feelings are provoked. Definition should specifically NOT mention trauma.
    b. Based on previous experience: Material that an individual is sensitive to based on previous experience. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #2 as 2. EX: "reminds you of something that happened before"
    c. Generally disturbing: Material that the general public would be sensitive to or disturbed by. Does not mention any specific individuals or their experiences. Definition should specifically NOT mention trauma. If a specific topic is covered and labeled as a trauma, mark item #2 as 3. EX: "Material that people find offensive"
    d. If the word "triggered" is used while referencing trauma, please mark Item #2 as appropriate.

Topics that lead to being triggered [TTopics#]

1. Topic (Non-specific reference to a topic = 1; Sexual violence = 2; Non-sexual violence = 3; Gore = 4; More than one of these topics = 5; Other, specify = 6; Missing = 9; Coder unsure = 8)
    a. Non-specific: References something that we can assume has a topic, but response does not indicate a specific topic. EX: "someone reacts to a specific scene in a movie"
    b. Sexual violence: include rape, assault, harassment
    c. Non-sexual violence: all violence of a non-sexual nature; child, partner physical abuse
    d. Gore: specifically mentions things such as blood, guts, etc. Gore can be part of either violence (e.g., war; code 5) and can be separate from violence (e.g., medical procedures; code 4).

Breadth of topics impacted [TBreadthTopic#]

1. Breadth of topic (One topic = 1; More than one topic mentioned = 2; Unspecified number of topics = 3; Missing = 9; Coder unsure = 8)
    a. One topic: References one specific topic. EX: only mentions sexual violence; "someone reacts to a specific scene in a movie," which suggests that it that scene in particular that causes distress
    b. More than one topic mentioned: References that being triggered is specific to a certain number of topics. Respondent might mention one or two topics specifically and suggest that being triggered is only for those topics.
    c. Unspecified number of topics: References that many topics can lead to being triggered; "something"

Appendix L

Background Questions

(Items developed by author)

Please answer the following questions about yourself.

1. What is your major or intended major?
2. Counting only Fall and Spring terms, this is my _____ semester at UW-Madison.
    a. First through Ninth provided, Other (fill in blank)
3. How many classes are you currently enrolled in at UW-Madison this semester?
        a. Fill in the blank

What is your race/ethnicity? Select all that apply

a. Asian / Asian American
b. Black
c. White
d. Latinx
e. Middle Eastern
f. Other/Mixed
g. I choose not to respond

What is your gender? Select all that apply

- Man
- Woman
- Trans man
- Trans woman
- Non-binary / genderqueer
- A gender not listed here

What is your age? _____ years

Appendix M

Consent, Study 1

You have signed up for a UW-Madison research study. Thank you for being willing to participate in our research project. The purpose of the study is to better understand experiences, beliefs, and feelings about trigger warnings.

In the current session, you will be asked a number of different questions about your experiences in classrooms and with trigger warnings. Some of the material you see or questions you read may make you uncomfortable. In total, the session should take 45 minutes. For your completion of the questionnaire, you will receive 1.5 points of extra credit for your Introductory Psychology class.

Participation in this project is voluntary. At any point during the session you are free to withdraw from participating by exiting the survey. You may skip any of the questions you do not wish to answer or evaluate. Refusal to participate or withdrawing will not negatively affect your grade in your Psychology class.

There are no direct benefits to you for participating in this research project. There are a number of open-ended questions that might prompt you to include personal, sensitive, or identifiable information. This information will either be removed from the research record or, if such information is necessary to answer the research question, it will be stored separately from other study data and coded with the decryption key stored in a separate location.

The data will be stored on a password-protected computer owned by a member of the research team for the short-term; long-term storage will be done through a UW Box account. By consenting to participate in this study, you also consent to your responses being used for future research studies by the research team without additional informed consent. Only members of the research team will have access to your data.

Should you have questions about the research you can contact Sarah Gavac, the graduate student researcher, at gavac@wisc.edu. You may also contact the Principal Investigator, Janet Hyde, at jshyde@wisc.edu. If you are not satisfied with the response of the research team, have more questions, or want to talk with someone about your rights as a research participant, you should contact the Education and Social/Behavioral Science IRB Office at 608-263-2320.

CLICK HERE IF YOU AGREE TO PARTICIPATE AND ARE READY TO PROCEED

Appendix N

Debriefing, Study 1

Thank you for participating in our study. On the next page, you will be provided with instructions on how to receive your extra credit points through SONA for your participation as well as resources.

We are trying to understand how people perceive trigger warnings in the classroom and what factors influence their responses. We are specifically looking at how appraisals of course material and how people feel about stress influences their perceptions. This research will contribute to our knowledge of how appraisals and perspectives on stress influence the effect of trigger warnings on outcomes.

It's important that we ask you not to discuss the content of this study with anyone else. If other participants knew what you know now, our data would be invalid. We want accurate results and don't want all the time you spent to go to waste.

If you have any further questions or would like to see the results of the study please contact Sarah Gavac at gavac@wisc.edu.

Get connected to resources:

- University Health Services (UHS) has a page of Campus and Community Resources for victims and survivors of sexual assault, dating violence, domestic violence, and stalking are available on campus and in the Madison community.
    - https://www.uhs.wisc.edu/prevention/violence-prevention/resources/
    - These include Survivor Services, which provides confidential support to UW-Madison student victims/survivors of sexual assault, sexual harassment, dating violence, domestic violence, and/or stalking. **These services are available at no cost.** For appointments call 608-265-5600 (option 3)
- The Rape Crisis Center is a community agency providing free and confidential services for survivors of all forms of sexual violence, including medical and legal advocacy, support groups, short-term counseling, and community education.
    - 24-Hour Crisis Line: 608-251-7273
    - Campus Location: 608-265-6389
    - Community Office: 608-251-5126
- The Dean of Students Office and the Office of Diversity and Inclusion have put together a page of Campus Partnerships for students who have experienced bias. If a bias or hate reporter would rather utilize another campus resource, they can connect with any of the partners. These partners may have their own arsenal of resources, and can help fill out a Bias or Hate Reporting Form.
    - https://doso.students.wisc.edu/bias-or-hate-reporting/campus-partnerships/

- The Gender and Sexuality Campus Center has drop in hours 9:00am-5:00pm, Monday through Friday. You can also call the office at 608-265-3344, email lgbt@studentlife.wisc.edu
- The Multicultural Student Center has drop-in support hours at a variety of locations (https://msc.wisc.edu/mental-health-wellbeing/) and resources on hate and bias (https://msc.wisc.edu/hate-bias-resources/)
- Counseling for University of Wisconsin students is available through UHS Mental Health Services. Costs for these services are included in your tuition and fees so there is no cost to you as a student.
    - https://www.uhs.wisc.edu/mental-health/
    - For appointments call 608-265-5600
    - For 24-hour crisis services call: 608-265-5600 (select option 9)
- Counseling is also available for both students and community members through the Counseling Psychology Training Clinic (CPTC). The CPTC can provide individual, couples, and family counseling, and can serve children and adolescents as well as adults. The cost of service is on a sliding scale basis based on income.
    - http://eptc.education.wisc.edu/cptc/about
    - For appointments call 608/265-8779 or use the clinics contact form: http://eptc.education.wisc.edu/cptc/contact-us
    - No emergency services are available.
- The National Alliance on Mental Illness (NAMI) offers support services as well, including a texting service.
    - To contact the NAMI HelpLine, please call 800-950-NAMI (6264), Monday through Friday from 10 a.m. to 6 p.m., ET, or send an email to info@nami.org.
    - https://nami.org/Find-Support
    - Crisis Text Line – Text NAMI to 741-741
      Connect with a trained crisis counselor to receive free, 24/7 crisis support via text message.

Appendix O

Consent, Study 2

You have signed up for a UW-Madison research study. Thank you for being willing to participate in our research project.

In the current session, you will be asked to complete a number of different tasks using the Qualtrics program. First, you will be given directions, then engage with one or two different videos. Some participants may see a different video than you do. Then, you will answer a number of different questions. Some of the material you see or questions you read may make you uncomfortable. In total, the session should take less than 30 minutes. For your completion of the questionnaire, you will receive 1 point of extra credit for your Introductory Psychology class.

Participation in this project is voluntary. At any point during the session you are free to withdraw from participating by exiting the survey. You may skip any of the questions you do not wish to answer or evaluate. Refusal to participate or withdrawing will not negatively affect your grade in your Psychology class.

There are no direct benefits to you for participating in this research project. Your IP address and other identifying information are indirectly linked to your responses, so there is a slight risk of a breach of confidentiality. Identifiers will either be removed from the research record or, if such information is necessary to answer the research question, it will be stored separately from other study data and coded with the decryption key stored in a separate location.

The data will be stored on a password-protected computer owned by a member of the research team for the short-term; long-term storage will be done through a UW Box account. By consenting to participate in this study, you also consent to your responses being used for future research studies by the research team without additional informed consent. Only members of the research team will have access to your data and this data will not include identifiers.

To repeat: you can exit the study at any time and do not have to respond to any questions that you do not want to. Refusal to participate or withdrawing will not negatively affect your grade in your Psychology class.

Should you have questions about the research you can contact Sarah Gavac, the graduate student researcher, at gavac@wisc.edu. You may also contact the Principal Investigator, Janet Hyde, at jshyde@wisc.edu. If you are not satisfied with the response of the research team, have more questions, or want to talk with someone about your rights as a research participant, you should contact the Education and Social/Behavioral Science IRB Office at 608-263-2320.

CLICK HERE IF YOU AGREE TO PARTICIPATE AND ARE READY TO PROCEED

Appendix P

Debriefing, Study 2

Thank you for participating in our study. On the next page, you will be provided with instructions on how to receive your extra credit points through SONA for your participation as well as resources.

The true purpose of this study was not disclosed to you at the beginning of the study so that you would react naturally to the situations. We are trying to understand how people respond to trigger warnings. You were assigned to one of six conditions which determined whether you saw a trigger warning or not and what kind of stress mindset you were encouraged to take.

This research will contribute to our knowledge of how appraisals and perspectives on stress influence the effect of trigger warnings on outcomes.

It's important that we ask you not to discuss the content of this study with anyone else. If other participants knew what you know now, our data would be invalid. We want accurate results and don't want all the time you spent to go to waste.

If you have any further questions or would like to see the results of the study please contact Sarah Gavac at gavac@wisc.edu.

Get connected to resources:

- Counseling for University of Wisconsin students is available through UHS Mental Health Services. Costs for these services are included in your tuition and fees so there is no cost for you as a student.
    - https://www.uhs.wisc.edu/mental-health/
    - For appointments call 608-265-5600
    - For 24-hour crisis services call: 608-265-5600 (select option 9)
- Counseling is also available for both students and community members through the Counseling Psychology Training Clinic (CPTC). The CPTC can provide individual, couples, and family counseling, and can serve children and adolescents as well as adults. The cost of service is on a sliding scale basis based on income.
    - http://eptc.education.wisc.edu/cptc/about
    - For appointments call 608/265-8779 or use the clinics contact form: http://eptc.education.wisc.edu/cptc/contact-us
    - No emergency services are available.
- The National Alliance on Mental Illness (NAMI) offers support services as well, including a texting service.
    - To contact the NAMI HelpLine, please call 800-950-NAMI (6264), Monday through Friday from 10 a.m. to 6 p.m., ET, or send an email to info@nami.org.
    - https://nami.org/Find-Support

- Crisis Text Line – Text NAMI to 741-741
  Connect with a trained crisis counselor to receive free, 24/7 crisis support via text message.

Appendix Q

Stress Mindset Manipulation

(Crum et al., 2013)

The videos were embedded in the Qualtrics survey
https://mbl.stanford.edu/materials-measures/stress-mindset-manipulation-videos

Participants in the stress-is-enhancing and stress-is-debilitating conditions watched the videos specific to learning / growth. Participants in the control condition did not watch a video.

Appendix R

Trigger Warning Manipulation

(adapted from Gainsburg & Earl, 2018; Sanson et al., 2019)

Trigger Warning Condition: On the following page, you will watch a short video. The expectation is that you will watch the entire film and then complete comprehension questions about it. You will receive feedback about your responses to these questions and an overall score.

The video is about a recent school shooting and includes graphic imagery. This content may be difficult for some of you and you might experience discomfort and stress.

Control Condition: On the following page, you will watch a short video. The expectation is that you will watch the entire film and then complete comprehension questions about it. You will receive feedback about your responses to these questions and an overall score.

Appendix S

Stimulus Video

Video about the Greenville Shooting was embedded in the Qualtrics survey: https://www.cbsnews.com/news/greenville-shooting-texas-police-manhunt-2-dead-in-a-m-commerce-party-shooting-2019-10-27/

The criteria I (and my RAs) used to search for the video:

- Published since 2018.
- Can be from any source, but preferably something less partisan (Fox News and Slate are at extremes).
- Either 2 - 4 minutes or could be easily shortened to 2 - 4 minutes in length.
- About domestic terrorism in the U.S. (e.g., Parkland, Las Vegas, and University of Texas shootings).
- Not having religious motivation as a basis (e.g., shootings at Mosques, Synagogues, Temples, Churches).
- Have closed captions as an option.
- The video can be scary. It can include some imagery of weapons, injuries, and people being emotionally upset. It should NOT include imagery of people actually dying or anything that extreme.
- The more "objective" fact-based, the better; in the vein of documentaries.

Appendix T

Video Appraisal

(adapted from Williams & Cumming, 2012; Williams et al., 2010; and McGregor & Elliot, 2002 to reflect watching a video rather than another task)

Please indicate your agreement to each of the following on a scale from 0 (*not at all true*) to 6 (*very true*).

1. Watching the video presented itself as a challenge to me
2. I viewed watching the video as a challenge
3. I felt challenged by watching the video
4. Watching the video presented itself as a threat to me
5. I viewed watching the video as a threat
6. I felt threatened by watching the video

Note. Items 1 – 3 = Challenge appraisal; Items 4 – 6 = Threat appraisal

Appendix U

Knowledge Retention Questions

(all items were generated by the research team, specific to the video)

1. How many shootings were discussed in the video?
    a. 1
    b. 2*
    c. 3
    d. 4
2. What happened during the vigil for one of the victims?
    a. The vigil was interrupted by more gunfire*
    b. T-shirts were handed out
    c. The shooter was identified
    d. They went on a march
3. How many suspects have they identified?
    a. 0*
    b. 1
    c. 2
    d. 3
4. How many people were killed in the shooting?
    a. 0
    b. 2*
    c. 12
    d. 14
5. How did the gunman escape?
    a. They didn't; they were arrested
    b. Sped off in a get-away car
    c. By escaping through the back door and running away into the woods
    d. By blending into the crowd during the panic*

* = Correct answer

Appendix V

Trigger Warning Manipulation Check

(item developed by author)

1. Thinking back to the instructions, did the instructor give you a written warning about course content?
    a. Yes
    b. No
    c. Not sure

Appendix W

Affect

Items and prompt from the Positive and Negative Affect Scale-Short (PANAS-S; Mackinnon, et al., 1999; Watson et al., 1988).

Indicate to what extent you feel this way right now, that is, at the present moment. Please respond to each of the following questions on a scale from 0 = *very slight or not at all* to 6 = *Extremely*. [Items were presented as a matrix. Items were randomized within block for each participant]

1. Inspired
2. Alert *
3. Excited
4. Enthusiastic
5. Determined
6. Afraid
7. Upset
8. Nervous
9. Scared
10. Distressed

In original scale, Items 1 – 5 were positive affect and Items 6 – 10 were negative affect.

* = Item loaded with negative affect subscale