“Everything is Greyscaled”: Immigrant Mothers’ Experiences of Postpartum Distress

By

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Table of Content

Abstract

Background. Immigrant women are at least two times more likely to experience postpartum depression (PPD) than native-born women regardless of countries. However, little is known about immigrant women's experiences with PPD and their social psychological processes in response to PPD. This dissertation focuses on Chinese immigrant women as an example group, and includes four papers that address the following: (1) the health of a subset of immigrant women who migrate for marriage and often give birth to children once they arrive in the new country, based on a scoping review; (2) immigrant women's experiences with screening for PPD, based on a descriptive survey; (3) qualitative evaluation of an existing clinical screening tool for PPD, the Edinburgh Postnatal Depression Scale (EPDS), from the perspective of immigrant women; and (4) grounded theory study exploring 22 Chinese immigrant women's experiences with PPD and their response processes.

Results. The first paper synthetizes academic literature on the health of East and Southeast Asian marriage migrants. The second paper presents the process of developing and pretesting a survey. The survey aims to describe immigrant women's experiences with screening for PPD and their reasons to seek screening. The third paper evaluates how the EPDS function among immigrant women, using cognitive interviewing and reveals issues that are otherwise unnoticed using psychometric testing. The fourth paper addresses the knowledge gap about immigrant women's experiences with PPD and their response processes. The conceptual model developed from the grounded theory study explains how Chinese immigrant women experience postpartum distress, to various degree, and their strategies used in response to distress.

Conclusion. This dissertation study adds knowledge about immigrant women's experiences with postpartum depression and distress. This study also generates a concept model that adds depth and breadth to the existing substantive theory of PPD as well as middle range theory on loss and grief. Finally, this study can inform the development of an effective intervention for immigrant women on increasing distress knowledge, decreasing stigma, promoting care-seeking and reducing distress symptoms.

Chapter 1: Introduction

The United Nation's 2030 Sustainable Development agenda has a specific goal on health and a focus on migration (SDG 10.7) – "reducing inequalities, presents opportunities and challenges with respect to promoting the health of migrants (IOM, 2018a)." In line with the 2030 SDGs, my program of research focuses on developing and testing interventions that improve health care outcomes and reduce health disparities among vulnerable immigrant groups. And I launch this program of research with my dissertation study on one immigrant group—Chinese immigrant mothers, in one destination community—the United State., and one significant health concern—mental health during the postpartum period.

This dissertation started with a scoping review (Chapter 2) on the health of a subset of immigrant women who migrate for marriage and often give birth to children once they arrive the new country. Informed by this scoping review, I narrowed my dissertation focus to the mental health of immigrant women, particularly postpartum depression (PPD). To understand immigrant women's experience with PPD, I started with a descriptive survey exploration (Chapter 3-a and 3-b). This work shifted my focus from PPD to postpartum distress and prepared for the grounded theory study (Chapter 4). The grounded theory study provided analytical insights into the social-psychological processes of how immigrant women experience and resolve distress (including PPD). Thus, the introduction will provide broader context and background that encompass the population and phenomenon of interest.

Background & Significance

The Global Scenario

International migration is an age-old human phenomenon. However, within the context of current geopolitical conflicts and environmental changes, international migration has become increasingly more prominent. In 2015, there was an estimated 244 million international migrants in the world– almost 100 million more than in 1990 (when it was 153 million), and over three times the estimated number in 1970 (84 million) (Iom, 2018b). In addition to its numerical increase, international migration has also become a hotly contested public policy issue and newsworthy topic. Many governments, politicians, and the broader public around the world have as a result increasingly set migration as a high-priority concern.

And it will remain as a top priority for the foreseeable future given its significance to economic prosperity, human development, and safety and security (Iom, 2018b).

Were all the 244 million international migrants to live in a country other than their countries of origin, it would be the world's fifth largest, making up 3.3% of the world's population today (Pew Research Center, 2016). Nevertheless, they do not reside in one country but are dispersed across the world, with the majority moving from middle-income to high-income countries. India (15.6 million), Mexico (12.3 million), Russia (10.6 million), China (9.5 million) and Bangladesh (7.2 million) are the top five origin countries, whilst the U.S. (46.6 million-has more international migrants than any other country), Germany (12.0 million), Russia (11.6 million), Saudi Arabia (10.2 million) and the United Kingdom (8.5 million) are the top five destination countries (Iom, 2018b).

China-U.S. Migration

China-U.S. migration is one of the busiest international migration routes today. In 2016, there were approximately 44 million immigrants reside in the United States. Among these individuals, nearly 2.3 million were Chinese immigrants, comprising the third largest immigrant group in the U.S., after Mexican and Indians (Migration Policy Institute, 2017). And they make up nearly 23% of the total 10 million Chinese migrants living outside of China (Iom, 2018b). Although dispersed in all states, Chinese immigrants are predominantly concentrated in two states: California 31% and New York 20% (US Census, 2011). In terms of gender, over half of the Chinese immigrants to the U.S. are women (53%) (Sijapati, 2015). With respect to reasons for migration, Chinese immigrants mainly move for study, work, and family, with a small portion escaping political prosecution. In terms of immigration pathways, most Chinese nationals immigrate to the U.S. through immediate relatives of U.S. citizens 37%, employment 30%, family sponsorship 20%, and 13% refugees and asylees. My dissertation study focused on female Chinese immigrants who primarily migrate for family and have come to the U.S. within the last ten years.

Mental Health Challenges Experienced among Immigrants

While immigrants bring substantial social and economic improvement for communities of destination and origin, they also face challenges during the migration process that affect their health,

especially mental health. They often experience barriers in accessing care, financial difficulties, language barriers, cultural differences in health beliefs and practices, restrictive policies, discrimination, and a lack of migration-sensitive health systems and conducive policies across sectors, which thereby override the benefits received in the host community (IOM, 2018a). Consequently, immigrant's ability to remain healthy is compromised and their capacity in making a positive and productive contribution to communities of destination and origin is hindered.

With respect to mental health among immigrants, it is agreed upon that "mental health is broader than 'a lack of mental disorders,' and that mental health functioning is fundamentally interconnected with physical and social functioning and health outcomes (IOM, 2003)." This psychosocial approach to mental health is essential for understanding and promoting mental health among immigrants. Because it acknowledges that immigrants' mental health is affected by their social and cultural context which can be altered by the immigration process. The immigration process itself does not necessarily impair mental health among immigrants. However, it puts immigrants in specific psychosocial vulnerabilities that vary by a number of intersecting factors: nature of migration (voluntary or forced), reasons to immigrate (for work, study, family or survival and safety), the receiving country's immigration policies (strict or lax) and climate (welcoming or xenophobic), immigrant gender and age, and stages of the migration process (before, during and after migration) (IOM, 2003).

After settling in, immigrants often need to face tremendous losses—loss of home, community, belongings, job, career, identity, supporting networks, familiarities and certainties—that negatively affect mental health (Guruge, Thomson, George, & Chaze, 2015; Rew, Clarke, Gossa, & Savin, 2014; SAMHSA, 2015). Acculturation related stressors, economic uncertainties, and ethnic discrimination at host communities are some other significant factors influencing immigrant mental health (George, Thomson, Chaze, & Guruge, 2015). Women whose legal stay at the receiving countries are dependent on their partners often experience tentative rights to stay, family violence, discrimination and lack of social/financial support (Chong, 2014; Huang & Mathers, 2008; Kim, Kim, Moon, Park, & Cho, 2013;

Kim & Kim, 2013). Consequently, these intersecting psychosocial vulnerabilities can have profound impact on their mental health.

Mental health challenges among Chinese immigrants in the U.S. The National Latino and Asian American Study (N = 2,095), the first national epidemiology study on the mental health of Asian Americans including Chinese, Filipino, Vietnamese, and other Asian American groups, shows an estimate of 17.91% lifetime prevalence of any mental disorder (i.e., affective, anxiety, and substance abuse) among the population (Takeuchi, Hong, Gile, & Alegria, 2007). Also, first-generation immigrants are reported to be 2.3 times more likely to develop psychotic disorders than second-generation immigrants (native-born population) (Bourque, van der Ven, & Malla, 2011).

Chinese immigrants in the U.S. tend to have a higher rate of developing psychological distress than the general U.S. population (22.3% in comparison to 12.4% in general native population) (Lee et al., 2015). A study conducted in a primary care setting in Boston showed that 19.6% of under-served Chinese immigrants have major depressive disorder (MDD) and that most hold strong stigmas against depression (Yeung et al., 2012). Notably, data points were often collected at primary care or clinic settings—many depressed foreign born Chinese immigrants residing in the community could have been missed because of a lack of knowledge and/or access to local healthcare services as well as the resistance to seek care as the result of strong stigma. Therefore, distress among Chinese immigrants residing in community is potentially even higher than what have been reported. My dissertation study focused on Chinese immigrants who reside in the community.

PPD among Immigrant Women

Postpartum period is a particularly vulnerable time for immigrant women. PPD is more prevalent among immigrant mothers as 10-12.4% of native mothers develop PPD (about 1 in 10) in the U.S. (Ko, Rockhill, Tong, Morrow, & Farr, 2017; Le Strat, Dubertret, & Le Foll, 2011) while it is 20-42% (at least 1 in 5) for immigrant mothers regardless of receiving country (Collins, Zimmerman, & Howard, 2011; Falah-Hassani, Shiri, Vigod, & Dennis, 2015). Thus, immigrant mothers are at least twice as likely to develop PPD as compared to mothers in the U.S.

Postpartum depression among Chinese immigrant women. Chinese immigrant mothers have a higher PPD rate, 24.4% (Dennis, Merry, Stewart, & Gagnon, 2016), than Chinese mothers who remain in China (6.7%-13.5%) (Lee, Yip, Chiu, Leung, & Chung, 2001; Liu et al., 2017), native born mothers in the U.S. (10%) (Ko, Farr, Dietz, & Robbins, 2012), and native born mothers in Canada (7.9%) (Public Health Agency of Canada, 2018). Thus, Chinese immigrant mothers are two times more likely to develop PPD than Chinese mothers in China and native born mothers in the U.S. However, Chinese immigrants are often reported to be better off than overall foreign-born immigrants in the U.S., with higher level of education[1], household income, and health insurance coverage (Jie Zong & Jeanne, 2017). Because of this "halo effect" and the stigma associated with mental illnesses among this group, some "hidden vulnerable groups" such as Chinese immigrant mothers and their health needs, especially mental health needs, can be easily overlooked (O'Mahony, Donnelly, Este, & Bouchal, 2012). To date, no study has specifically explored Chinese immigrant mothers' PPD experience and response processes in the U.S.

Gaps in literature

Research on PPD has proliferated since the 1980s, however, most of the studies have been conducted on native populations residing in western societies. PPD experiences among mothers from a different culture have been much less explored. Despite PPD affecting all mothers, the conditions resulting in PPD, as well as how mothers respond to it, vary depending on their personal experiences and sociocultural contexts. Therefore, it is dangerous to generalize findings from western societies to mothers from a different culture without discern.

There has been little scholarly attention given to PPD among immigrant mothers compared to native-born mothers. Moreover, within the small amount of literature focusing on immigrant mothers, a large proportion used an epidemiological approach to investigate the rates and risks of developing PPD or its risk factors. Although a few studies explored immigrant mothers' PPD experiences, their response

[1] Chinese immigrants tend to have higher levels of education due to the specific entrance mechanisms, that is, entering the U.S. as international college students or high-skilled H-1B working visa holders which requires a university degree (Jie Zong & Jeanne, 2017).

processes from the mothers' perspective remain undiscovered. On a different note, some scholars argue that academic literature often portrays immigrant women's actions as structurally compelled, rather than as positive and proactive. This means that most literature often cast roles and motivations upon them and position immigrant women in informational, economic, cultural, and legal vulnerabilities that they have little leverage of. However, immigrant mothers are active participants in their social processes. Studying PPD experience from mothers' perspective gives a space for them to construct their identities and represent themselves in their own way (Chong, 2014), which is particularly well suited and much needed for immigrant mothers.

Approach to the Problem

This dissertation used mixed methods, with a goal of developing a conceptual model that describes Chinese immigrant mothers' PPD (later shifted to distress) experience and their social psychological processes in response to PPD (distress). This dissertation study had four phases and its goal was ultimately achieved by grounded theory analysis in phase IV. The entire study process is illustrated in **Figure 1**.

Specifically, in preparation of phase IV, I conducted a three-phase, descriptive survey study; phase I: developing, phase II: pretesting, and phase III: disseminating. The purpose of the survey was to explore Chinese immigrant mothers' experience with PPD and PPD screening. In phase I, I developed the survey based on literature and the theory of care seeking behavior (Lauver, 1992). In phase II, I pretested the survey with both content experts (n=9), using content validity testing, and potential respondents of the survey—Chinese immigrant mothers (n=12), using cognitive interviewing (Hak, Van der Veer, & Jansen, 2008; Willis, 2004). The results of phase II informed survey revision. In addition, I included nine out of twelve interviews conducted during phase II to phase IV, during axial coding (this is explained in detail in Chapter 4). In phase III, I disseminated the revised survey to Chinese immigrant mothers (N=134). The revised survey contained two checklists and some open-entry inquiries. One such inquiry was "What does postpartum depression look like for you?" The analysis of responses (n=50) to this inquiry informed the shift in eligibility criteria for phase IV from women diagnosed with PPD to women who had experienced

distress following childbirth. In phase IV, grounded theory (Bowers, 1990; Strauss & Corbin, 1998) was used to develop the conceptual model that describes the social-psychological processes of how immigrant mothers experience and resolve distress (including PPD)

Overview of the Chapters

Chapter 2 provides a scoping review of the health of East and Southeast Asian female marriage migrants (Yu, Bowers, & Yeoh, 2019). The research question guiding this review is: what has been reported about the health of East and Southeast Asian marriage migrants in academic literature. Thus, this review aims to synthesize knowledge from academic literature on the health of East and Southeast Asian marriage migrants and provide recommendations for health care practice and future research.

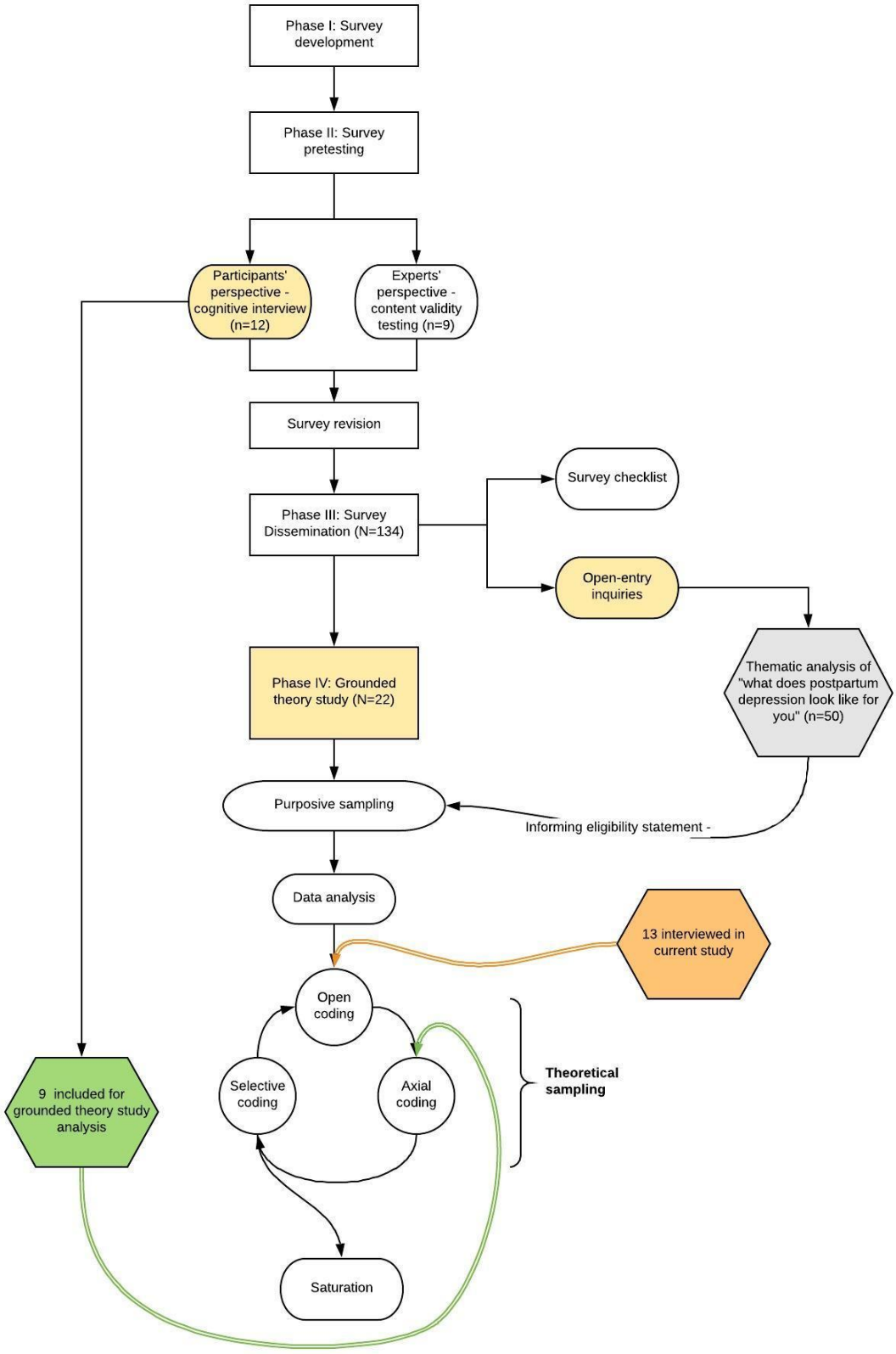
Chapter 3-a details phase I-II of this dissertation study. The purpose was to develop a survey about immigrant women's experiences with and reasons for seeking postpartum depression (PPD) screening, to assess content validity of the survey, and to evaluate the cultural and linguistic appropriateness and acceptability for immigrant women of the survey (Yu, Lauver, Wang, & Li, 2019).

Chapter 3-b details a unique section of phase II of this dissertation study. It focused on using cognitive interviewing to qualitatively evaluate the Edinburgh Postnatal Depression Scale and on making the data analysis process transparent. The purpose was to examine immigrant mothers' response processes when completing the scale. Specifically, I explored (a) whether they understood and responded to EPDS both consistently and as intended; and (b) that their experiences were reflected by the scale. Results of this paper explains the rationale of *not* using the EPDS as a tool to screen for participant eligibility in phase IV.

In Chapter 4, I present findings from the grounded theory study with a goal of developing a conceptual model that describes Chinese immigrant mothers' processes of experiencing and resolving postpartum distress.

In Chapter 5, I summarize the findings from Chapters 2 to 4 and discuss implications for future research.

Figure 1. Study process



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Chapter 2 : A Scoping Review of the Health of East and Southeast Asian Female Marriage Migrants

Abstract

Background. The number of female marriage migrants in East and Southeast Asia has grown significantly over the past three decades. However, little is known about the health of this population.

Methods. Following Arksey and O'Malley's (2005) framework, a scoping review of English language research databases was used to synthesize knowledge on the health of Asian marriage migrants. This will be used to inform recommendations for health care practice and research.

Results. Fifty-five eligible studies were included and presented using five identified categories—mental health, women's health & maternal-child health, public health, general well-being, and social challenges.

Discussion. Overall, studies consistently document that marriage migrants experience worse health outcomes, multiple barriers to health care services, and multilevel social challenges compared with the native population in the receiving countries.

Key words: Asia, immigrant health, marriage migrants, scoping review.

Introduction

Over the past three decades, cross-border marriage migration between countries within East and Southeast Asia has increased significantly. This phenomenon emerged from Japan in the 1970s and spread to other more developed Asian countries, including Taiwan, Hong Kong, South Korea, Malaysia, and Singapore. For example, in 2011, international marriages involving Southeast Asian brides accounted for one-third of all marriages in Taiwan [1]. In 2009, 35.5% of all marriages taking place in Hong Kong involved men from Hong Kong and women from Mainland China [2] . In South Korea, 8% of all marriages in 2013 were international marriages [3]. And in Singapore, marriage involving at least one non-citizen comprised more than a third of all marriages in 2014 [4]. Marriage migration in East and Southeast Asia is characterized by a gender imbalance (i.e., marriage migrants are predominantly female) and often involves a mediated marriage. This is where couples are connected through marriage brokers or existing social networks, and is usually accompanied by little or no courtship [5, 6].

Who Are the East and Southeast Asian Female Marriage Migrants?

For the purpose of this review, East and Southeast female marriage migrants (hereafter marriage migrants) refer to women from developing East and Southeast Asian countries who migrate for the purpose of marriage into a wealthier East and Southeast Asian family. Geographically, these women mostly come from Vietnam, Mainland China, Philippines, Cambodia, and Indonesia [5]. And their plight has garnered increasing attention and growing concerns from the general public, academics, and policymakers. Scholarly interests in this population have focused on demographic patterns, such as fertility and divorce, as well as social and financial implications, with one particular instance being the impact of remittances sent by marriage migrants to their families of origin.

Driving Forces Behind Marriage Migration

A significant factor behind marriage migration is that most of the receiving countries are experiencing a “marriage deficit”. This is a scenario in which an imbalance exists between men and women eligible for marriage. As these receiving countries tend to have fewer available women relative to men, this results in the marriage deficit, and creates a strong demand for female marriage migrants.

Typically, the marriage deficit from these receiving countries is caused by the following factors. Firstly, improved career and educational opportunities for women contribute to increasing rates of delayed marriage and non-marriage. Next, there exists a cultural norm of "marrying down", where men are generally expected to marry younger and less educated women. This is exacerbated by the last factor, where declining birth rates amongst these receiving countries leads to aging populations and a smaller pool of eligible women. Collectively, this places men, particularly those from a lower socioeconomic status (SES), at a disadvantage within their country's marriage market. Consequently, these men increasingly seek their wives from less wealthy East and Southeast Asian countries. To clarify the demographic profile, these men tend to be poorer, less educated, older, and more likely to hold odd jobs (i.e., lower SES) than those marrying local women, despite having higher economic power within the husband-wife dyad.

On the other hand, women from the "sending countries" often regard marriage migration as a solution to poverty and poor quality of life. They choose to marry foreigners from more developed countries not only to pursue a better life for themselves, but also to act as "dutiful daughters" or "sacrificial sisters" to lift their families out of poverty and finance their siblings' education by sending home remittances, often funded by their husbands [7]. Studies have revealed that despite living with abusive husbands, some marriage migrants decide to endure the suffering as a trade-off for financial assistance to and respect from their natal families [7, 8]. Further, most developed Asian countries tend to have strict immigration policies. For impoverished women with little to offer economically, this makes marriage the easiest and cheapest route for permanent migration within Asia. As a result, marriage brokers and, increasingly, existing social networks of marriage migrants, play important roles in channeling the marriage migrants to receiving countries.

Ordeals in Receiving Countries

Studies have described challenges for marriage migrants ranging from nuanced cultural differences to human trafficking and violence [9, 10]. As "purchased" wives and daughters-in-law,

marriage migrants often find themselves at the bottom of the familial order in their marital family [11]. As immigrants, they experience challenges such as a precarious residency, as their continuing residence is dependent on their husbands' sponsorship prior to naturalization, language barriers, acculturation, and lack of social support as most migrate alone. Because the husbands of marriage migrants tend to have a lower socioeconomic status, financial difficulty is also common. Therefore, marriage migrants are likely to face intersecting hardships from their different roles as a commercially "purchased" wife and an immigrant, which poses a significant threat to their physical and psychosocial health.

Health of Marriage Migrants

Although some scholarly attention has been given to the health issues of marriage migrants, the knowledge gained from these various studies have not been synthesized. As marriage deficits and the marriage migrant population is expected to continue growing, the cumulative impact of these hardships on individuals, families and local communities should be examined further. Since marriage migrants play important roles in contributing to population growth in receiving countries, their health is likely to bear broader implications in the economy, public health, and the future demography of these countries.

Purpose

The research question guiding this review is: what has been reported about the health of East and Southeast Asian marriage migrants in academic literature. Thus, this review aims to synthesize knowledge from academic literature on the health of East and Southeast Asian marriage migrants and provide recommendations for health care practice and future research.

Method

Rationale for Using a Scoping Review

A scoping review aims to 'map' relevant literature in the field of interest and seeks to present a "narrative account of existing literature," without assessing the quality of the evidence [12]. While a systematic review focuses on the depth of available literature, a scoping review draws attention to the breadth [12]. As this study focuses on synthesizing the existing academic literature on the health of marriage migrants, i.e. breadth, rather than investigating or evaluation a specific health problem or

intervention, i.e. depth, a scoping review is more appropriate. In addition, a scoping review is particularly useful when no prior literature review is available, such as is the case here [12]. A search of published literature on the health of East and Southeast Asian female marriage migrants in academic databases did not yield any reviews of literature. Further, the findings from this scoping review can generate more focused questions related to the health of marriage migrants that guide systematic reviews. Audiences for this review may include academics, immigration policymakers in Asian countries, local groups serving marriage migrants, and health practitioners providing care to this population.

Stages of the Review

Arksey and O'Malley's methodological framework, the most frequently employed scoping review method [13], guided our process. This framework is comprised of five stages as discussed below. Figure 1 illustrates the literature search and selection process. The process is iterative and authors have reflexively engaged with each stage to ensure the comprehensiveness of the covered literature [12]. Because this is a scoping review study and no human subjects are involved, no ethics review and approval are acquired by the relevant institutional review board/ethics review committee.

Stage 1: Identifying the research question. The research question for this scoping review was "what has been reported about the health of East and Southeast Asian marriage migrants in academic literature?" This question was developed and refined through literature review team meetings. Two doctoral nursing students: one PhD nursing student and one Doctor of Nurse Practitioner (DNP) student comprised the literature review team. Search strategies were then delineated and employed to identify relevant literature.

Stage 2: Identifying relevant literature. The literature review team used search keywords shown in table 1 and applied them to search all selected databases shown in Table 2. Due to the broad, comprehensive nature of scoping reviews, a large body of literature is generated after initial search.

Stage 3: Selecting relevant literature. The literature review team then developed inclusion and exclusion criteria to eliminate irrelevant literature, shown in Table 3. Articles were screened first by title

and abstract, then by full text. Reference lists from identified articles was searched as well to ensure that other relevant articles would be included.

The literature review team engaged in the article analysis process. When they disagreed on whether to include an article, they re-read the article in full text and discussed the article during at the next meeting. They used the agreed-upon inclusion/exclusion criteria to decide whether to include an article. If the disagreement remained unsolved, the issue would be brought up to the research group, consisting of the other two authors and three other PhD nursing students, and discussed and voted by the entire group using the same inclusion/exclusion criteria.

Stage 4: Charting the data. Authors (year), study aims, geographic location, marriage migrant ethnicities, methodology/nature, major findings, and first author's discipline were extracted. These information were recorded in an "evidence table" using the Microsoft program Excel, shown in Table 4.

Stage 5: Collating, summarizing and reporting the results. This scoping review first presented a summary of the charted data and identified major categories of studies. Note that these categories were not preconceived but inductively emerged from the data (i.e., included studies). This inductive process of generating categories is similar to generating categories in conventional content analysis, a qualitative data analysis method [14]. Subsequently, significant research gaps were identified. Next, implications for future practice and studies were discussed.

Optional stage: Consultation exercise. A consultation exercise was conducted with two stakeholder groups comprised of experts on migration and family health (three people)/community providers that serve marriage migrants (five people). The consultation offered additional dimensions to the review process [12], providing confirmation to the review findings and practical insights into service effectiveness and cost-effectiveness.

Results

In total, 55 studies were included in this review. In terms of study populations, most studies included marriage migrants from multiple countries (e.g. China, Indonesia, Philippines, Vietnam, and Thailand). Vietnamese marriage migrants, as a single ethnic group, were the most frequently studied

marriage migrants. Geographic locations represented in the 55 studies included: South Korea (49%) and Taiwan (43%), China (4%), and Hong Kong (4%). For studies using primary data, a majority of these (n=33) collaborated with community groups or agencies. These include Multicultural Family Support Centers in Korea and community health centers in many countries who played essential roles in facilitating the recruitment of marriage migrants. National registry or census data (n=11), such as the Taiwan Birth Registry and the register of residential addresses in Hong Kong served as important sampling frames. On the other hand, studies that conducted secondary data analyses (n=12) used national data, such as the National Survey of Multicultural Families in Korea and the National Surveillance Network of Communicable Disease in Taiwan, or hospital or medical records.

With respect to research methodology, most were quantitative studies (87%), whereas a small portion was qualitative (11%), while one used mixed methods. Further, most studies were descriptive or exploratory in nature, while only five were interventional studies. Nearly all studies used a cross-sectional design. Nurses were 44% of first authors on published manuscripts, followed by those from public/community health (15%), those in the field of medicine/oral health/Obstetrics and gynecology (OB GYN), and social welfare/Social work (10% each). Figure 2 shows the distribution of first authors' disciplines among the included studies.

Five categories were identified from included studies (shown in Figure 3). 33% focused on mental health (n=18), 27% on women's health and maternal-child health (n=15), 16% focused on public health concerns (n=9), 16% on general well-being (n=9), and finally 7% on social challenges marriage migrants encountered (n=4).

Mental Health

Marriage migrants were found to have higher rates of depression, higher levels of anxiety, and higher level of stress compared with native married women and the general population in the receiving country [15-19]. Researchers described some marriage migrants' suicide attempts as a result from feeling overwhelmed by social pressures and difficulties (e.g. loss of support, loneliness, and suffering from abuse), with suicide offering an escape [20]. However, two outlier studies from Taiwan showed that

despite considerable acculturation stress and poorer family functioning, marriage migrants had a better mental health related quality of life with a lower prevalence of depression [21] and fewer depressive symptoms [22] as compared to the native population.

Several predictors or correlates of poor mental health and depression among marriage migrants have been identified. These include language difficulties and the lack of family support, acculturation stress and low levels of life satisfaction, family life stress, and differences in values between the spouses [16, 23-29]. Social support has been found to play a particularly important role in marriage migrants' mental health [16, 23, 28]. However, few marriage migrants have close relationships with their marital family members, resulting in low levels of family support, which increases their risk for mental health problems [27]. There were few interventional studies examining strategies to improve marriage migrants' mental health. One 8-week anxiety support group in Taiwan significantly decreased marriage migrants' social interaction anxiety [30]. In south Korea, the Psychological Adaptation Improvement Program had a positive effect on self-esteem and reducing depression in marriage migrants [31], while a group Sandplay therapy was effective in producing positive self-expressions and reducing negative emotions related to anxiety and loneliness [32].

Women's and Maternal-child Health

Given that most marriage migrants are at a reproductive age and often give birth soon after arrival, many studies also focused on women's health and maternal-child health [33]. Studies found higher levels and a greater frequency of postnatal depression as well as lower parental self-efficacy amongst marriage migrants relative to native mothers [34, 35]. Also, marriage migrants were shown to have lower health literacy regarding pregnancy and preventative cancer screenings (e.g. pap test) as compared to the native population, as well as lower healthcare utilization rates in prenatal care [36-39].

Paradoxically, a healthy immigrant effect on maternal-child health has also been described. For example, in one study, marriage migrant mothers had significantly lower rates of preterm birth compared with native Taiwanese mothers [40]. Additionally, babies born to marriage migrant mothers had lower neonatal mortality rates compared with those born to native Taiwanese mothers [41]. Also, marriage

migrant mothers were more inclined to breastfeed for 4 and 6 months relative to native Taiwanese mothers [42]. Interestingly, one study documented how this healthy immigrant effect fades away—with risks of adverse neonatal outcomes gradually increasing—as marriage migrants stay longer in Taiwan [41]. Finally, there was an educational intervention that was conducted amongst Vietnamese marriage migrants in Taiwan. The study revealed that the intervention was able to effectively increase knowledge and positive attitudes to cervical cancer while also changing the willingness of women to receive Pap tests [43].

Public Health

Public health aims to promote and protect the health of people and the communities where they live, learn, work and play. Communicable disease, nutrition, dental health, and environmental health are some of the public health foci that are important for marriage migrants as well as the local communities in which they reside. Communicable diseases like HIV and tuberculosis (TB) were found to disproportionately affect marriage migrants. For example, Burmese marriage migrants in China had higher rates of HIV infection than the native Chinese population [44]. There was also a severe lack of response capability due to low AIDS awareness and low involvement with prevention services in the receiving country [45]. Another study showed that marriage migrants aged 20-49 in Taiwan had 1.7 to 7.3-fold higher rates of TB than native females of a matching age [46].

Next, there was an observed detrimental effect on the nutritional health of marriage migrants. Some factors for this include significant changes in dietary habits or a lack of access to food from their native countries, and marital family's resistance to or intolerance of new dietary habits. In one study, marriage migrants were shown to have decreased overall food intake and decreased overall nutrient intake over time, with most having an energy intake lower than the estimated energy requirements [47]. Further, those experiencing higher stress were found to have low meal regularity and diversity, low milk and dairy product consumption, and inadequate overall nutritional intake [48]. Finally, one study found an increasing prevalence of obesity for Vietnamese marriage migrants the longer they remained in South Korea [49].

Moreover, dental health, such as dental caries, has been studied as another often-overlooked public health topic. One study showed that marriage immigrant mothers have poorer dental caries-related knowledge, more negative attitudes, and greater passive oral health behaviors than native ones [50]. Lastly, marriage migrants are more vulnerable to environmental health risks prior to migration. This is because marriage migrants tend to come from resource-limited countries with relatively lax environmental regulation, which exposes them to harmful chemicals or substances. For example, marriage migrants in Taiwan were shown to have higher blood lead levels than the native population, thus causing worse DNA damage amongst this population [51].

General Well-being

Studies in this category did not have a focus on specific health concerns or illnesses. For instance, one line of research focusing on marriage migrants' quality of life [52-56] found that compared with native Taiwanese women, marriage migrants had a generally lower health related quality of life. Several significant factors for this include health problems and poor relationships with their children, lack of social support, acculturative stress, and depression [56, 57]. However, the study also added a caveat that amongst marriage migrants, those with higher education and higher family monthly income tended to have a higher quality of life [54].

Another line of research looked at marriage migrants' overall subjective health [58-60]. It found that higher levels of subjective health were significantly associated with a higher post-migration social status, perceived higher social status within the natal and marital family, as well as more frequent social contacts [58, 59]. Interestingly, more social contacts with friends from the marriage migrants' country of origin did not have a significant impact on their overall subjective health. Addressing marriage immigrants' health needs, a health empowerment program in Taiwan was developed and has been shown to yield increased health literacy and improved healthcare access [61].

Social Challenges

Marriage migrants are thrust into the social fabric of their receiving countries, and consequently face a myriad of post-migration social challenges both in the home and within society. At the individual

level, marriage migrants were found to be more socially isolated than native women as a result of having less social capital in terms of friends and family [62]. At the family-level, they were found to be more vulnerable to spousal violence, which was especially the case for those who had stayed in the receiving countries for less than three years [59, 63]. On the broader community/society level, they were faced with racial prejudice, negative stereotypes, and discrimination from the receiving society [64]. This is due in part to the fact that a "marriage migrant" is a stigmatized social identity in the receiving communities: South Korea [64], Taiwan [65], Hong Kong, China, and Singapore (indicated elsewhere [66]). Notably, some were able to reconstruct their social identities by assimilating into the local culture. Typically, this involves behavior such as learning the local language or by accepting familial identities of being faithful wives and mothers [64].

Discussion

Health research on marriage migrants has focused on mental health, women's and maternal-child health, public health, general well-being, and social challenges. Included studies compared marriage migrants with native populations in the receiving country and concluded that overall, they have worse health outcomes, experience multiple barriers to health care services, and experience multilevel social challenges. Among all included studies, mental health received more attention from researchers than other categories. However, there is still much not known in mental health. For instance, it is unclear what strategies marriage migrants use to cope with stresses within their new environment, particularly during vulnerable times such as the postpartum period. Further, what constitutes an effective, culturally appropriate, and financially viable intervention in addressing marriage migrants' mental health needs is still a question that remains to be answered. On the other hand, general well-being, public health concerns and social challenges were less explored. This was particularly true with regards to specific public health concerns as well as to interventions in efforts to reduce large health disparities.

Studied on women's and maternal-child health revealed marriage migrants' vulnerabilities with being a new mother in a new place. Nevertheless, the health immigrant effect (HIE)—immigrants on average having better health outcomes than the native population—was observed, if only for a limited

period of time. This phenomenon has been observed in immigrant populations to Western countries [67] but is rarely explored among immigrants in Asia, particularly amongst marriage migrants. The Theory of Positive Self-selection has been extensively used to explain the HIE, positing that those who choose to migrate are the healthiest, most motivated and most capable of surviving the tremendously stressful experience of migration [68]. The relevance of self-selection theory to this particular population is not clear however, as existing health research only addresses marriage migrants in the receiving countries, not sending countries. Further, the diminishing of HIE observed in this review is consistent with studies in Australia [69], Europe [70], and Canada [71]. This might be explained by the Assimilation Hypothesis, which suggests that the longer immigrants stay in their host countries, the closer immigrants' health approximate native's health [69].

Further, cross country inconsistencies existed in the researched health issues. For example, while some studies showed better mental health and favorable maternal-child health among marriage migrants than native population in Taiwan, studies in South Korea showed the opposite. This suggests a South (better) to North (worse) gradient in immigrant health status, reflecting marriage migrants' geographic migration pattern. This cross-country heterogeneity in immigrant health is consistent with a study in European countries [72]. In this study, a South to North gradient in immigrant health was also observed; immigrants in Italy has better health status than those in France, Belgium, and Spain. The inconsistencies were partially explained by variation in *native* population's health among the host countries. Thus, differences in native population's health in Taiwan and South Korea may contribute to the inconsistencies observed in this review. In addition, immigration policy and history [73], which determine immigrants selection process, public attitudes toward immigrants, healthcare systems, living condition, working condition and language distance [74, 75] all could contribute the inconsistencies seen in the published research. Cross-country comparisons on selected health topics among both marriage migrants and native population, as well as identifying the sources of these differences, would contribute to our understanding of these variations in health issues and outcomes.

Limitations

One limitation of this review involves the language inclusion criteria. Only articles written in English were included, thus evidence in other languages such as those in Korean and Chinese were excluded, which could have caused us to miss valuable information on the health of marriage migrants. Another limitation is that the review only addressed East and Southeast Asian female marriage migrants and not those of the full continent of Asia nor those who migrate to western countries, thereby limiting the generalizations of findings to other marriage migrant population. Finally, this study explored the health of marriage migrants as a collective, in which subgroups of marriage migrants were not extracted and compared. In reality, marriage migrants tend to be a heterogeneous group with different cultural beliefs and practices, particularly with regards to health, disease, and treatment. Future research should draw attention to these potential differences to facilitate the delivery of culturally competent care.

Implications

Implications for research. There are substantial knowledge gaps in each category of health issues mentioned in this review. Furthermore, there is little known about marriage migrants' prior health, the effect of prior health on later health outcomes, or how this may have changed after arriving in the receiving countries. Additionally, included studies have only compared the health of marriage migrants with that of the native population in the receiving countries, and not with that of their counterparts who remain at their countries of origin. Thus, further exploration could help in clarifying whether marriage migrants are a select group with inherent health advantages or disadvantages (i.e., do marriage migrants positively or negatively self-select to migrate?) which will bolster the findings of HIE in this review. Future studies on cross-country variations, and potential ethnic/racial variations among the sub-groups would contribute to an in-depth understand of marriage migrants' health.

Given the many social and health challenges that marriage migrant face, they are considered as a vulnerable [76] and hard-to-reach [77] population for research. This review has shown that community partners, such as local health centers, play important roles in gatekeeping and recruiting for studies on marriage migrants. This is consistent with strategies recommended in the literature on recruiting vulnerable or hard-to-research populations [78]. In terms of recruitment approach, future studies on

marriage migrants may benefit from employing a combination of strategies, such as immersing in the community, establishing trust with marriage migrants and community partners early on, utilizing community partners as gatekeepers, and developing a community advisory board to provide feedback on study design, recruitment and result dissemination [78]. In terms of research methodology, more future studies may consider using a qualitative method or include a qualitative component to better understand marriage migrants' health, thereby giving them the "voice" and a space to construct their identities and represent themselves in their own way [8]. Because marriage migrants' stories have rarely been heard, storytelling itself can be therapeutic for marriage migrants, as a part of "reclaiming a sense of self [8]." Lastly, almost all included studies are cross-sectional (single time study). Future studies with longitudinal designs can therefore be helpful in understanding how and why the health of marriage migrants varies over time, which is crucial in designing timely interventions.

Implications for practice. Marriage migrants create a challenge for healthcare providers in receiving countries, particularly those which are used to having a homogenous society and/or have a low tolerance of cultural diversity, such as South Korea. Thus, to ensure positive health outcomes for this population, healthcare providers in receiving countries need to be equipped to provide care in a culturally and linguistically sensitive manner. More importantly, healthcare providers need to be aware of the social context that marriage migrants are embedded in and understand the daily social challenges affecting their health. For example, husbands and in-laws of marriage migrants influence their health—directly (e.g. domestic violence) or indirectly (e.g. forbid them to meet friends). Additionally, since the husbands are likely to be from disadvantaged groups within the receiving society, they may have serious health concerns themselves (e.g. mental illnesses and alcoholism). Therefore, healthcare providers can provide better care through a better understanding of the effect that marital family relationships have on the health of marriage migrants. Consistently, health interventions developed by healthcare providers need to be culturally competent at both the individual and family levels to ensure the effectiveness of interventions.

In order to reduce health disparities, healthcare providers and systems in the receiving communities also need to be cognizant about the barriers to healthcare services faced by marriage

migrants. Low health literacy creates barriers within clinical encounters, reduces the probability of accessing necessary and timely care and is inversely associated with healthcare expenditures. In addition to lower health literacy, marriage migrants faced other barriers to healthcare, such as economic hardship, poor language proficiency, and perceptions towards care that were out of sync with those of receiving countries. More programs and efforts in reducing these barriers to healthcare services are needed to achieve desirable health outcomes.

Finally, this review highlighted nurses' significant contribution towards understanding the health of marriage migrants—nurses represent almost half of the first authors of the included studies. This might be the case because nurses tend to spend more time with patients especially public health nurses who are more likely to detect existing and potential health problems of marriage migrants in the community. In response to increasing diversity, immigration, and globalization, educational reform with an emphasis on cultural competency and diversity is needed to prepare healthcare providers, especially nurses, in these receiving countries so that they may provide high quality care for diverse populations, including marriage migrants, with complex needs at various settings.

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TABLES

Table 1. Search keywords used for scoping review

What	Who	Where
Health	Marriage immigrant/migrant	Asia
Medical	Foreign spouse/wife/bride	East Asia
Disease	International marri*	Southeast Asia
Well-being	Transnational marri*	Singapore
Medicine	Intermarried	South Korea
Psychological		Taiwan
Depression		Japan
Anxiety		Vietnam/Vietnamese
Stress		Malaysia/Malaysian
Sexual*		China/Chinese
Reproduct*		Indonesia/Indonesian
Cancer		Philippines/Pilipino
Disorder		Myanmar
		Thailand/Thai
		India/Indian

Table 2. Databases searched for scoping review

Academic Databases
EBSCOhost (all databases)
PubMed
PsychINFO
BioMed Central
Cochrane Library
Web of Science
WHO Global Health Library

Table 3. Article inclusion and exclusion criteria

Dimensions	Inclusion Criteria	Exclusion Criteria
Areas of Focus	Focused on health status (e.g. prevalence of depression), related social factors or conditions (e.g. perceived discrimination) or health interventions (e.g. breast cancer screening);	Did not focus on health (e.g. focused only on residency rights) of marriage migrants,
Population of Interest	Studied East or Southeast Asian female marriage migrants moving within East and Southeast Asia region	Did not study population of interest (e.g. studied other migrant population moving to other regions or studied infants or children rather than marriage migrants themselves)
Full Text Availability	Available in full text	Not available in full text
Language	English	Non-English languages
Publication Dates	Published from 1970-present	Published prior to 1970
Types of articles	Primary studies or secondary data analysis	Discussion paper or commentary articles

Table 4. Evidence table of included studies

Category	Study focus	Authors (year)	Aims of the study	Study geographic location	Marriage migrants' ethnicities	Study methodology/nature	Major findings	First author's discipline	Reference
Women's health, Maternal-Child health	Mothering experience	Bih-Ching, S., Li-Yu, C., Li-Ling, L., & Kai-Ling, L. (2008)	To explore the mothering experiences	Taiwan	Indonesia	Qualitative (semi-structured interviews)/ descriptive	2 common themes: 1) Reflection: searching for self-worth through the mothering role and; 2) Projection: spending all of the "self" for their children.	Nursing	[33]
General well-being	Self-rated health	Chang, H. C., & Wallace, S. P. (2016)	To examine the link between migration processes and the self-rated health of targeted population	South Korea	Korean-Chinese, Vietnamese, And Han Chinese	Quantitative/ descriptive	Migration and health policies that reduce ethnicity-specific barriers and offer integration programs in early post-migration stages may offer a pathway to good health among marriage migrants.	Community Health	[58]
Public health	Oral Health	Chen, C.-C. et al. (2014)	To examine immigrant-native differences in oral health behaviors of urban mothers and their children	Taiwan	Not Specified	Quantitative/ descriptive	The level of caries-related knowledge, attitudes and oral health behaviors were found lower in immigrant mothers than native ones.	Dental Medicine	[50]
General well-being	Subjective health.	Cheon, Y. M., & Chung, G. H. (2016).	To examine the frequency of social contact with various social groups as a protective factor against the negative association between perceived discrimination and subjective health.	South Korea	Korean-Chinese, Han-Chinese, Vietnamese, And Filipino	Quantitative/ descriptive	Ethnic discrimination negatively influences subjective health; more frequent social contact predicted better subjective health	Child Development and Family Studies	[59]
Women's health, Maternal-child health	Reproductive Health	Chiang, H. J., Huang, F. J., Lan, K. C., Lin, P. Y., Sung, P. H., & Kung, F. T. (2012)	To determine if differences in clinical characteristics, embryonic development, and pregnancy outcomes exist between infertile foreign and native brides undergoing assisted reproductive technology (ART) treatment	Taiwan	Not Specified	Quantitative/ descriptive	The cause of infertile foreign bride couples requiring assisted reproductive technology (ART) treatment had a higher percentage of tubal and combination factors, but similar ART outcomes.	Obstetrics and Gynecology	[79]
Social challenges	Social Isolation, Spousal violence	Choi, S. Y. P., Cheung, Y. W., & Cheung, A. K. L. (2012)	To examine how social network, social support, and social control shape violence victimization	Hong Kong	Chinese	Quantitative/ descriptive	Marriage migrants are more vulnerable to spousal violence and are more socially isolated compared with local women	Sociology	[62]
Social challenges	Spousal violence, social capital	Choi, S. (2009)	To examine the intersection between migration, access to social capital and the risk of spousal violence.	Hong Kong	Chinese	Quantitative/ descriptive	Foreign wives were more vulnerable to spousal violence, had less access to social capital than the locally born.	Sociology	[63]
Mental health	Quality of life and depression	Chou, F. H., Chen, P. C., Liu, R., Ho, C. K., Tsai, K. Y., Ho, W. W., . . . Chen, C. C. (2010).	To compare the quality of life (QOL) and prevalence of depression between female married immigrants and native married women.	Taiwan	Vietnamese, Indonesian, Chinese	Quantitative/ descriptive	Fewer married immigrants had stressful life events or depression, and they reported higher QOL.	Nursing	[21]

Women's health, Maternal-child health	Perceived discrimination, maternal depression, parenting behaviors	Chung, G., & Lim, J. (2016).	To test a hypothesized model of maternal experience of perceived discrimination relating to adolescent psychological adjustment	South Korea	Not Specified	Quantitative/ descriptive	The perceived discriminatory experience of marriage immigrant mothers was indirectly but significantly associated with adolescent children's psychological adjustment through maternal depression and mothers' permissive parenting behaviors.	Child Development and Family Studies (Human Ecology)	[34]
Public health	HIV	Duan, S., Ding, Y., Yang, Y., Lu, L., Sun, J., Wang, N., . . . He, N. (2012).	To investigate factors correlated with HIV discordance and concordance within Chinese–Burmese mixed couples in Dehong prefecture, Yunnan province, China.	China	Burmese	Quantitative/ descriptive	4.7% of the mixed couples were affected by HIV and most were discordant. Significant factors correlated with HIV include: low rate of condom use for marital sex, being remarried, widowed or divorced individuals, lifetime commercial sex by male spouse, lifetime injection drug use by male spouses.	Public health (CDC)	[44]
Mental health	Anxiety Support group	Huang, S.-Y. (2014).	To determine whether the support group intervention would effectively help the Vietnamese immigrant women deal with anxiety.	Taiwan	Vietnam	Quantitative/ interventional (pre- and post-test)	The anxiety support groups can provide a source of help and support for Vietnamese immigrant women suffering from social interaction anxiety	Educational Psychology and Counseling,	[30]
Women's health, Maternal-child health	Postnatal depression	Huang, Y. C., & Mathers, N. J. (2008)	To determine 1) their experiences and health beliefs during the postnatal period and their uptake of health care; 2) the number of women with positive screening scores for postnatal depression.	Taiwan	Vietnamese And Indonesian	Mixed method (thematic analysis and quantitative)/ descriptive	Marriage migrant women in Taiwan have a higher frequency of a positive screen for postnatal depression than indigenous women; they experience communication problems and difficulties with their new families and health care practitioners, which affect their access to health care; they also find it difficult to adjust to the new environment and develop individual coping strategies to deal with the challenges they face.	Nursing	[15]
Public health	Dietary changes/nutrition health	Hwang, J.-Y., Lee, H., Ko, A., Han, C.-J., Chung, H. W., & Chang, N. (2014)	To compare changes in dietary intake between baseline and follow-up periods.	South Korea	Vietnamese	Quantitative/ descriptive	1) Daily food intake: Overall food intake, cereal, vegetables, fruits, decreased from baseline to follow-up. 2) Daily nutrition intake: Overall nutrient intake decreased over time, mostly had energy intake below the EER at both the baseline and follow up, but consumption of milk and dairy products increased.	Nutritional Science and Food Management	[47]
Public health	Psychological distress and inadequate dietary intake	Hwang, J.-Y., Lee, S. E., Kim, S. H., Chung, H. W., & Kim, W. Y. (2010).	To examine an association between psychological distress and inadequate dietary in-take in Vietnamese female marriage immigrants	South Korea	Vietnamese	Quantitative/ descriptive	The psychological distress of female Vietnamese marriage immigrants in Korea was negatively associated with dietary intake	Nutritional Science and Food Management	[48]

Mental health	Acculturation Stress and Mental Health	Im, H., Lee, K., & Lee, H. (2014).	To investigate mental health and associated factors, esp. Acculturation stress and coping resources	South Korea	Chinese, Vietnamese, Filipino, Mongolian, Japanese And Russian	Quantitative/ descriptive	Many factors were related to mental health, with marital satisfaction showing the strongest relationship with mental health. Core cultural shock and self-rated economic status, interpersonal stress, and social support were also significantly associated with mental health.	Social Welfare	[23]
Women's health, Maternal-child health	Dysmenorrhea	Jang, I. A., Kim, M. Y., Lee, S. R., Jeong, K. A., & Chung, H. W. (2013).	To find factors associated with dysmenorrhea among targeted population	South Korea	Vietnamese	Quantitative/ descriptive	Incidence of dysmenorrhea was significantly correlated with age, menstrual history and obstetric history as well as socioeconomic factors, such as resident region, education and religion.	Obstetrics and Gynecology	[80]
Metal health	Social anxiety, loneliness and self-expression	Jang, M., & Kim, Y.-h. (2012).	To implement group Sandplay therapy on migrant women in international marriages in Korea and Verify that this intervention was effective in relieving the women's social anxiety and loneliness and improving the self-expression.	South Korea	Chinese, Vietnamese, Filipino, Japanese And Kyrgyzstani	Quantitative/ interventional (control group; pre- and post-test)	Sandplay can reduce negative emotions related to anxiety and loneliness, and produce positive self-expressions, while making their own world.	Child Welfare, Child& family counseling	[32]
Mental health	Psychological adaptation	Jun, W. H., Hong, S. S., & Yang, S. (2014).	To develop and evaluate the Psychological Adaptation Improvement Program (PAIP) for international marriage migrant women in South Korea.	South Korea	Vietnamese Filipino Japanese Han Chinese, Chosun Chinese Uzbekistani	Quantitative/ interventional (quasi-experimental)	PAIP was effective in increasing self-esteem and reducing depression, and partially showed significant positive effects on participants' social problem-solving ability.	Nursing	[31]
Social challenges	Social identities and coping strategies	Kim, H. (2012).	To address the social contexts of Korean society in which diverse social interactions of foreign wives take place and to identify coping strategies to construct positive social identities.	South Korea	Filipino And Vietnamese	Qualitative (case study--in depth interview and focus group)/descriptive	Social context: racial prejudice, negative stereotypes, and discrimination led participants to social isolation not only from Korean society, but also from their own ethnic groups. Coping strategies: mastering the Korean language and learning Korean culture, recreating positive images by devoting themselves to their family and being faithful wives and mothers.	Social Welfare	[64]
Women's health, Maternal-child health	Health beliefs and practices related to breast cancer screening	Kim, J., Lee, S. K., Lee, J., Choi, M. Y., Jung, S. P., Kim, M. K., . . . Kil, W. H. (2014).	To identify health beliefs and practices related to breast cancer screening in immigrant women in Korea	South Korea	Cambodian, Chinese, Japanese, Mongolian, Vietnamese, And Filipino	Quantitative/ descriptive	Country of origin and education level influenced breast cancer-related knowledge, beliefs and attitudes, and perception of the benefits of breast cancer screening.	Surgery/Medicine	[36]

Mental health	Depression	Kim, J. A., Yang, S. J., Kwon, K. J., & Kim, J. H. (2011).	To investigate the prevailing rate of depression in female marriage immigrants in Korea and the predictive factors of their rates of depression.	South Korea	Chinese, Japanese, Filipino Thai, And Mongolian	Quantitative/ descriptive	Female marriage immigrants have higher depression rates than women in the general Korean population; highest in the Chinese, lower in those with competent Korean speaking ability and family support. Predictive factors of depression included their country of origin, Korean speaking ability, and family support.	Nursing	[16]
General well-being	Self-rated health, ethnic discrimination	Kim, Y., Son, I., Wie, D., Muntaner, C., Kim, H., & Kim, S.-S. (2016).	To examine how ethnic discrimination and response to the discrimination are related to self-rated health and whether the association differs by victim's gender.	South Korea	Not specified	Quantitative (secondary data analysis: two-step analysis)/descriptive	Ethnic discrimination was sig. related to poor self-rated health among female marriage migrants, but not among male marriage migrants; female marriage migrants who asked for fair treatment were more likely to report poor self-rated health than those who do not ask for fair treatment; not sig; but reversed relationship in male counterparts.	Public Health	[60]
Public health	TB screening	Kuan, M. M., Yang, H. L., & Wu, H. S. (2014)	To estimate the TB burden among new entry foreign spouses and their close contacts	Taiwan	Chinese, Vietnamese, Indonesia, Filipino, Thai And Malaysian	Quantitative/ descriptive	TB prevalence among the 2698 close contacts of 768 foreign spouse index cases was 1.2%	Public health (CDC)	[46]
Women's health, Maternal-child health	Pap testing	Lee, F. H., Wang, H. H., Tsai, H. M., & Lin, M. L. (2016)	To explore the factors associated with Pap testing among married immigrant women of Vietnamese origin residing in Taiwan	Taiwan	Vietnamese	Quantitative/ descriptive	Having no children, less knowledge of Pap tests, and barriers to receiving Pap tests were negatively related to having participated in Pap testing	Nursing	[37]
Women's health, Maternal-child health	Cervical screenings	Lee, F. H., Wang, H. H., Yang, Y. M., & Tsai, H. M. (2014)	To assess and understand the barriers faced by Vietnamese marital immigrant women who do not regularly undergo cervical screenings in Southeast Taiwan.	Taiwan	Vietnamese	Qualitative/descriptive	The barriers to receiving cervical screening were lack of health literacy, lack of female healthcare providers, negative perceptions of cervical screening and personal reasons.	Nursing	[38]
Women's health, Maternal-child health	Cervical cancer, pap test	Lee, F. H., Wang, H. H., Yang, Y. M., Tsai, H. M., & Huang, J. J. (2016)	To conduct and evaluate an educational intervention on preventing cervical cancer among married immigrant women of Vietnamese origin	Taiwan	Vietnamese	Quantitative/ interventional (quasi-experimental)	The health education brochure can effectively increase knowledge and positive attitudes to cervical cancer and change women's willingness to receive Pap tests.	Nursing	[43]
Mental health	Mental health (anxiety)	Lee, S. H., Park, Y. C., Hwang, J., Im, J. J., & Ahn, D. (2014)	To examine the mental health status of immigrant women through international marriages and its effects on emotional and behavioral problems of children	South Korea	Vietnamese, Filipino, Chinese, Russian/Uzbekistani, Cambodian, Mongolian, Japanese And Thai	Quantitative/ descriptive	Intermarried immigrant women in South Korea might have higher levels of anxiety than Korean native women; children of immigrant women were likely to have more emotional and behavioral symptoms relative to native children	Psychiatry	[17]

Women's health, Maternal-child health	Obstetric health (Preterm delivery)	See, L. C., Shen, Y. M., & Lo, Y. J. (2007)	To compare preterm birth rate among Foreign-born status (FBM)) of moms and Taiwan-born mothers (TBM)	Taiwan	Southeast Asian And Chinese	Quantitative/ descriptive	The preterm birth rate was lower in FBMs than that in TBMs	Public health	[40]
Mental health	Mental health	Shu, B.-C., Lung, F.-W., & Chen, C.-H. (2011)	To investigate the mental health status, and the risk factors associated with mild psychiatric disorders, of female foreign spouses in southern Taiwan, and to understand the mental health needs of these women	Taiwan	Vietnamese, Indonesian, And Chinese	Quantitative/ descriptive	Indonesian or Vietnamese spouses tend to more likely degree in mental health care needs than Chinese spouses; individuals with a neurotic personality are exposed to high risk and might suffer from mild psychiatric symptoms.	Psychiatry	[81]
Public health	Blood lead levels and DNA damage	Wu, W.-T., Liou, S.-H., Lin, K.-J., Liu, T.-E., Liu, S.-H., Chen, C.-Y., . . . Wu, T.-N. (2009)	To explore differences between immigrant women and native women in demographic characteristics, blood lead levels, and DNA damage levels. And to identify risk factors that are associated with blood lead concentrations and DNA damage levels after immigration.	Taiwan	Vietnamese, Chinese, And Other Southeast Asians	Quantitative/ descriptive	Blood lead levels for marriage migrants were higher than the levels of native women. DNA damage was positively associated with blood lead and family income, and a negative degree with number of pregnancies, vitamin intake, and blood zinc	Public health	[51]
Public health	HIV	Xu, Y., Fu, L. R., Jia, M., Dai, G., Wang, Q., Huang, P., . . . Wang, N. (2014)	To assess the prevalence of HIV and knowledge related to AIDS, as well as to discover possible risk factors of HIV infection among foreign brides from Bur ma in Yunnan Province.	China	Burmese	Cross-sectional study	Burmese brides in China are not only exposed to a high risk of HIV infection, but also seriously lack response capabilities	Public health	[45]
General well-being	Acculturation and Health-Related Quality of Life	Yang, Y.-M., & Wang, H.-H. (2011)	To examine associations between demographic variables, acculturation, and health-related quality of life among Vietnamese immigrant women in transnational marriages in Taiwan.	Taiwan	Vietnam	Quantitative/ descriptive	Acculturation also has a significant relationship with mental health, bodily pain, vitality, and social functioning in health-related quality of life for Vietnamese immigrant	Nursing	[52]
Public health	Hepatitis B infection & vaccination program	Lin, C.-C., Hsieh, H.-S., Huang, Y.-J., Huang, Y.-L., Ku, M.-K., & Hung, H.-C. (2008)	To evaluate the effect of hepatitis vaccination program on women of child-bearing age and further explored the potential impact of immigration on the hepatitis B public health policy in Taiwan.	Taiwan	Vietnamese Indonesian, Filipino, Cambodian, And Thai	Quantitative/ descriptive	The national vaccination program has successfully prevented the vertical transmission from mother to child and reduced the incidence and mortality of hepatocellar carcinoma in Taiwan.	Medicine	[82]
General well-being	Life satisfaction	Sung, M., Chin, M., Lee, J., & Lee, S. (2013)	To examine the factors associated with the level of life satisfaction among migrant wives in South Korea.	South Korea	Chosun-Jok, Han Chinese, Vietnamese, And Filipino	Quantitative/ descriptive	Migrant wives' life satisfaction was significantly associated with health, Korean proficiency, relationship satisfaction with the husband, family material hardship, and family social status change regardless of ethnicity or nationality.	Child Development and Family Studies	[53]

General well-being	Life and health concerns	Yang, Y., & Wang, H. (2003)	To explore their life and health concerns.	Taiwan	Indonesian	Qualitative (content analysis)/descriptive	Four themes for health concerns: immigrant adaptation, communication difficulty, family continuity, and barriers to healthcare system utilization.	Nursing	[55]
General well-being	Health related quality of life	Yang, Y.-M., & Wang, H.-H. (2011).	To compare HRQL values between the general Taiwan female spouse population and the female Vietnamese spouses living in Taiwan.	Taiwan	Vietnamese	Quantitative/ descriptive	Vietnamese immigrant women have a generally lower HRQL mean score than Taiwanese women in terms of seven dimensions, including physical functioning, role limitations due to physical health, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health.	Nursing	[54]
General well-being	Health empowerment	Yang, Y. M., Wang, H. H., Lee, F. H., Lin, M. L., & Lin, P. C. (2015)	To develop, implement, and evaluate a theory-based intervention designed to promote increased health empowerment for marriage migrant women in Taiwan.	Taiwan	Diverse	Qualitative (participatory observation and in-depth individual interviews, thematic analysis)/interventional	Through a PAR-based project, participants received positive outcomes. Four outcome themes were identified: (a) increasing health literacy, (b) facilitating capacity to build social networks, (c) enhancing sense of self-worth, and (d) building psychological resilience.	Nursing	[61]
Women's health, Maternal-child health	Breastfeeding practice	Wu, W.-c., Wu, J. C.-L., & Chiang, T.-l. (2015)	To describe differences in breastfeeding practices between native-born Taiwanese mothers and immigrant mothers in Taiwan and to investigate any differences in the relationship between SES and breastfeeding practices by immigration status.	Taiwan	Chinese, Southeast Asian	Quantitative/ descriptive	Immigrant mother more likely to breastfeed for 4 and 6 months than native born mothers; higher education was associated with higher breastfeeding in native but not in immigrant mother, higher monthly income was associated with higher breastfeeding in the native but not in immigrant mothers.	Public health/health policy and management	[42]
Women's health, Maternal health	Postpartum depression and parental self-efficacy	Choi, S. Y., Kim, E. J., Ryu, E., Chang, K. O., & Park, M. N. (2012).	To compare postpartum depression and parental self-efficacy between married immigrant women from Vietnam and native Korean mothers	South Korea	Vietnamese	Quantitative/ descriptive	Vietnamese mother have higher levels of postpartum depression & lower parental self-efficacy than native mothers.	Nursing	[35]
Mental health	Life stress and coping style for stress	Kim, C., & Lee, H. S. (2016)	To survey female Vietnamese marriage immigrants' life stress and to analyze factors influencing their life stress and coping strategies.	South Korea	Vietnamese	Quantitative/ descriptive	Vietnamese marriage immigrants' stress level were above average and are sig. varied according to their health and economic status; Coping strategies: assistance seeking, problem avoidance, wishful thinking, problem solving and emotional alleviation in the order of frequency.	Nursing	[18]

Mental health	Depressive symptoms	Kim, G. S., Kim, B., Moon, S. S., Park, C. G., & Cho, Y. H. (2013).	To identify the correlates of depressive symptoms among women who have immigrated to Korea for marriage.	South Korea	Chinese, Vietnamese, Filipino And Japanese	Quantitative/ descriptive	Korean acculturation and marital satisfaction were negatively associated with depressive symptoms; however, acculturative stress and general stress was positively associated with these symptoms and were also strong predictors of depressive symptoms.	Nursing	[24]
General well-being	Children's behavior & Quality of life	Kim, H. J. K., Yoo, E. K., & Jung, E. S. (2015).	To find out how the children's behavior affects the foreign wives' quality of life, thereby attempting to provide basic data for developing new programs to help improve the foreign immigrant wives' and their children's quality of life.	South Korea	Vietnamese And Chinese	Quantitative/ descriptive	Childcare stress and the relationship between the moms and their children are two of the most significant factors that affect the foreign immigrant wives' quality of life	Nursing	[57]
Mental health	Depression	Kim, H.-S., & Kim, H.-S. (2013).	To examine the roles of acculturative stress, life satisfaction, and language literacy in depression in non-Korean women residing in South Korea following marriage to Korean men.	South Korea	Chinese, Japanese, Filipino, Vietnamese, Mongolian	Quantitative/ descriptive	9.2% had depression, which was almost twice the rate of depression found in the general Korean population. Acculturative stress and life satisfaction were significantly associated with the level of depression.	Nursing	[19]
Mental health	Depression	Kim, J. A., Yang, S. J., Chee, Y. K., Kwon, K. J., & An, J. (2015).	To examine the effects of health status and health behaviors on depression in married female immigrants in South Korea.	South Korea	Filipino, Chinese, Japanese, Vietnamese, Mongolian, Thai	Quantitative/ descriptive	After adjusting for sociodemographic variables, stillbirth experience, poorer perceived health status, more meal skipping, and less physical activity were associated with greater depressive symptoms.	Nursing	[83]
Mental health	Acculturative stress and depression	Lee, H. H. Y., & Chang, S. (2015).	To identify the depression level among immigrant women in marriage, analyze the structural relationship between the influencing variables on depression	South Korea	Diverse	Quantitative/ descriptive	This study found a mediating effect of hope and family cohesion, in the relationship between acculturative stress and depression.	Child and Adolescent Welfare	[25]
Mental health	Acculturative stress, family life stress and depression	Thao, N. T. P. (2016)	To identify the different influences of acculturative and family life stress on depressive symptoms among Vietnamese immigrant wives.	South Korea	Vietnamese	Quantitative/ descriptive	Both acculturative and family life stress are positively related to depressive symptoms. Family life stress influences depressive symptoms to a greater extent than acculturative stress.	Social Welfare	[26]
Mental health	Depression	Won, S., & Kim, H. (2014).	To investigate the effect of family values differences between Korean husbands and foreign wives on depression of the wives.	South Korea	Not Specified	Quantitative/ descriptive	Family values differences affected the wives' depression and family support had a significant moderating effect	Social work	[27]

General well-being	Acculturative stress, depression, social support, health related quality of life	Chae, S.-M., Park, J. W., & Kang, H. S. (2014)	To evaluate the level of HRQOL and its relationships with social support, acculturative stress, and depression among Vietnamese immigrant women	South Korea	Vietnamese	Quantitative/ descriptive	Acculturative stress and depression directly influenced the mental health component of HRQOL, whereas social support indirectly influenced HRQOL through acculturative stress and depression.	Nursing	[56]
Women's health, Maternal-child health	Neonatal outcome	Hsieh, W.-S., Hsieh, C.-J., Jeng, S.-F., Liao, H.-F., Su, Y.-N., Lin, S.-J., . . . Chen, P.-C. (2011).	To assess the neonatal outcomes among live births to married immigrant mothers in recent years in Taiwan.	Taiwan	Not Specified	Quantitative/ descriptive	Despite lower parental education, advancing paternal age, and spatial distribution disparity, babies born to married immigrant mothers in Taiwan had favorable neonatal outcomes.	Pediatric/Medicine	[41]
Women's health, Maternal-child health	Social support, stress and prenatal care	Kim, Y. A., Choi, S. Y., & Ryu, E. (2010)	To identify the correlations among social support, stress, and practice of prenatal care and elucidate the predictors affecting the practice of prenatal care in married immigrant women in Korea.	South Korea	Vietnamese, Chinese And Filipino	Quantitative/ descriptive	Social support and prenatal-care practice was positively correlated, and stress was negatively correlated with both prenatal-care practice and social support.	Nursing	[84]
Mental health	Social support, depression	Lin, L.-H., & Hung, C.-H. (2007).	To explore the relationships between life adaptation, social support, and depression among migrant Vietnamese women	Taiwan	Vietnamese	Quantitative/ descriptive	Social support and life adaptation had significantly negative correlations with depression.	Nursing	[28]
Public health	Nutrition	Lyu, J. E., Yang, Y. J., Lee, S. E., Chung, H. W., Kim, M. K., & Kim, W. Y. (2009).	To assess the nutritional status of Vietnamese immigrants to Korea through marriage and to examine the association between their nutritional status and their length of residence in Korea.	South Korea	Vietnamese	Quantitative/ descriptive	BMI, WHR and blood profiles of most subjects were in the normal ranges. As the length of residence in Korea increased, the prevalence of obesity increased.	Nutritional Science and Food Management	[49]
Women's health, Maternal-child health	Reproductive health	Miao-Ling, L., Shieh, C., & Hsiu-Hung, W. (2008).	To compare pregnant Southeast Asian immigrant and Taiwanese women in terms of their respective pregnancy knowledge, attitudes toward pregnancy, medical service experiences and prenatal care behaviors.	Taiwan	Vietnamese, Indonesian And Thai	Quantitative/ descriptive	Pregnant Southeast Asian marriage migrants had poorer knowledge, more passive health behavior and more negative attitude toward pregnancy than native counterparts.	Nursing	[39]
Mental health	Depression, discrimination	Yang, H.-J., Wu, J.-Y., Huang, S.-S., Lien, M.-H., & Lee, T. S.-H. (2014).	To examine the moderating effect of family functioning on the relationship between perceived discrimination and depressive symptoms in immigrant women.	Taiwan	Chinese, Vietnamese, Cambodian, Thai, Filipino, Burmese	Quantitative/ descriptive	Higher level of perceived discrimination among immigrant women is associated with more severe depressive symptoms, while family function moderating this relationship.	Public health	[29]

Mental health	Suicide	Yao-Yu, L., Xuan-Yi, H., Chung-Ying, C., & Wen-Chuan, S. (2009).	To explore the lived experiences of brokered brides who have attempted suicide in Taiwan.	Taiwan	Vietnamese, Chinese, Indonesian, Thai	Qualitative (phenomenology)/descriptive	Three themes and the sub-themes identified were: being a chrysalis (loss of support, loneliness, suffering abused experience, loss of self-esteem), death of a chrysalis (loss of hope and seeking salvation) and birth of a chrysalis (regaining hope and sense of self-worth).	Nursing	[20]

FIGURES

Figure 1. Literature Search and Selection Process

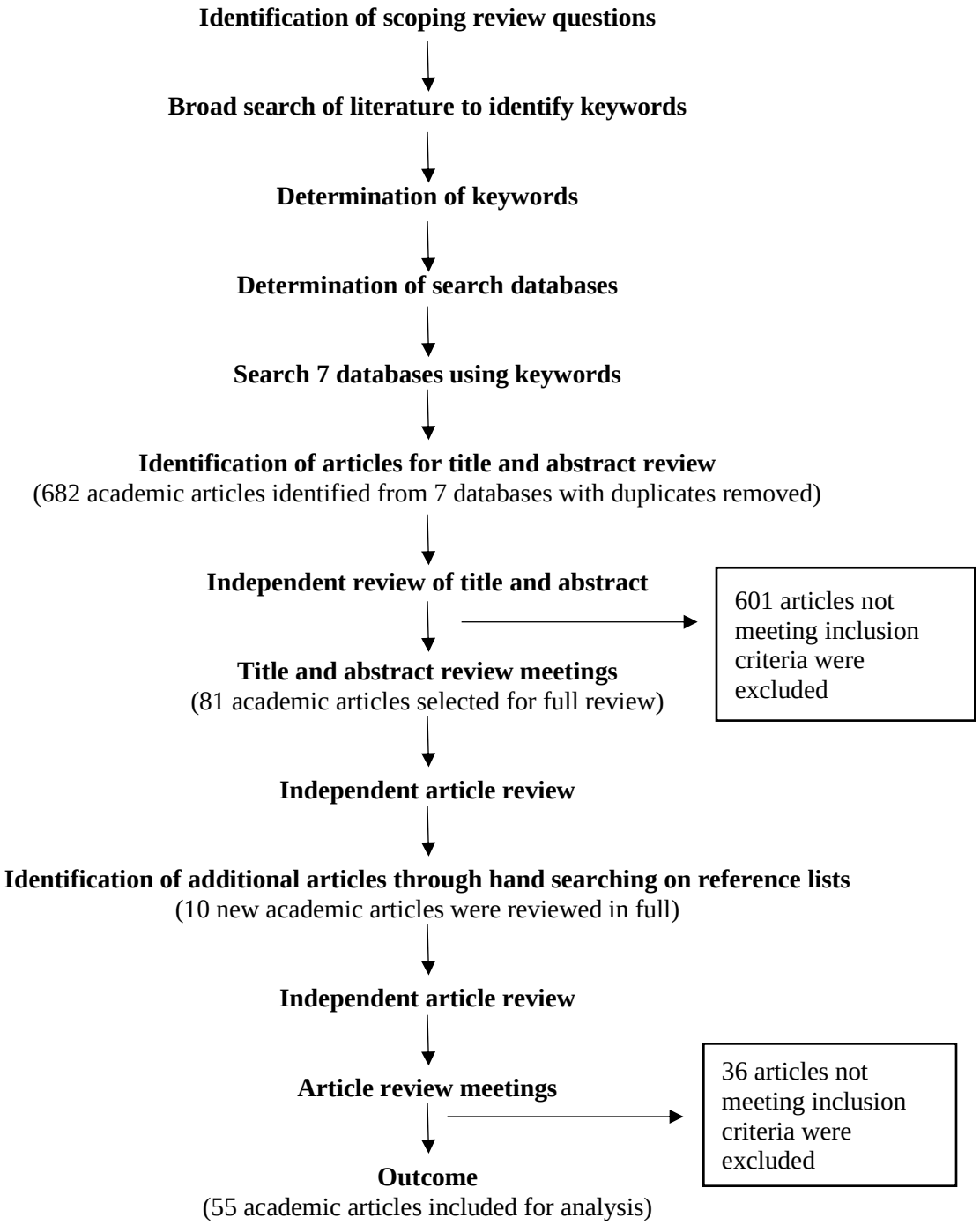


Figure 2. First authors' disciplines among included studies

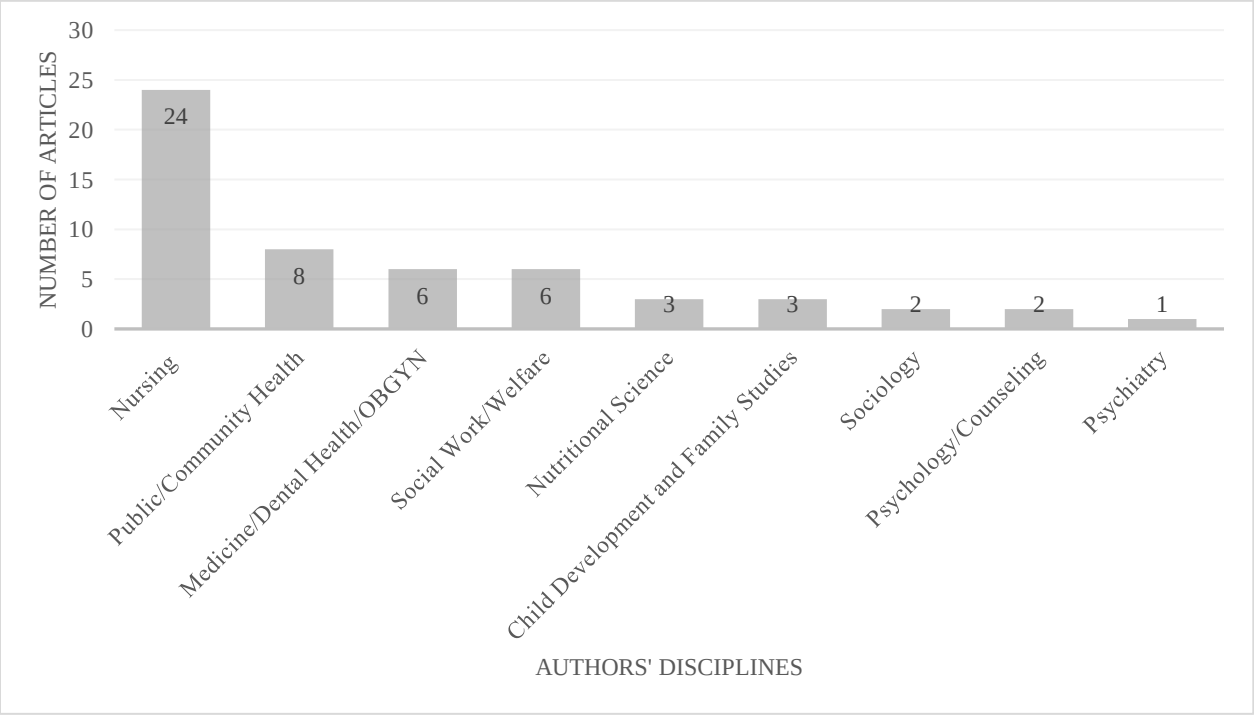
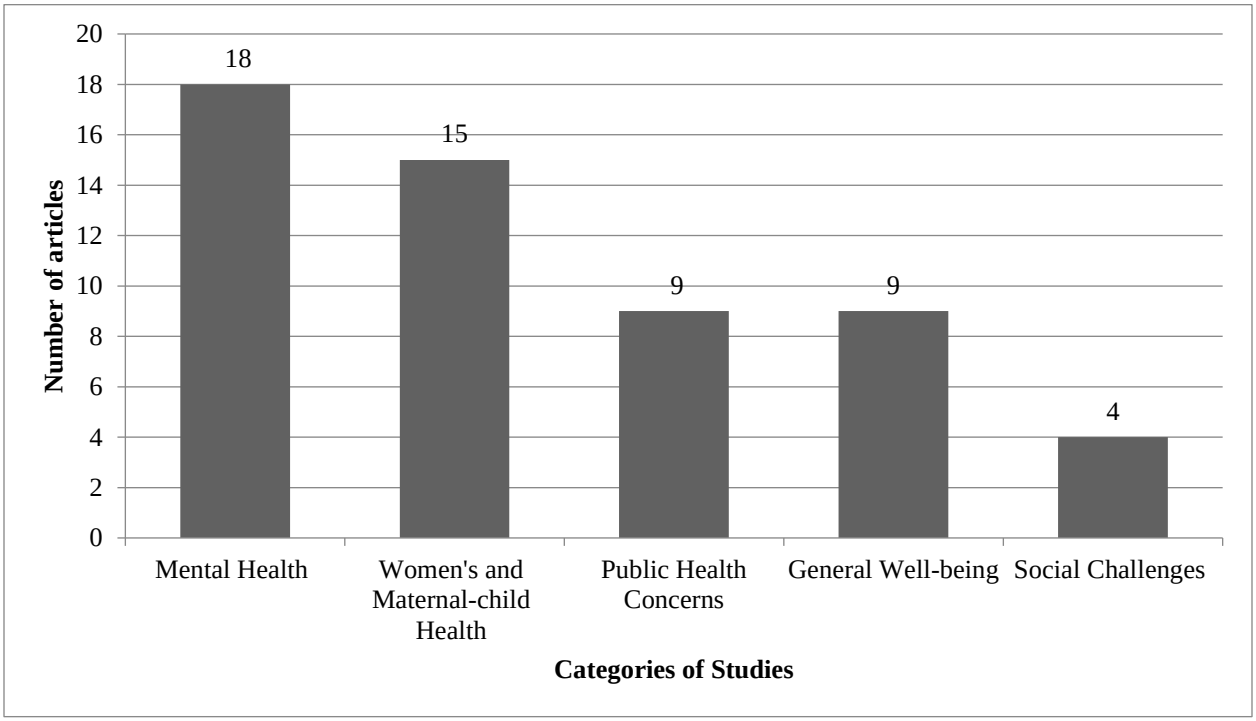


Figure 3. Identified categories of studies on health



Chapter 3-a: Developing and Pretesting a Survey about Immigrant Women's Experiences with Postpartum Depression Screening

Abstract

Objectives. To develop a survey about immigrant women's experience with and reasons for seeking postpartum depression (PPD) screening, to assess content validity of the survey, and to evaluate the cultural and linguistic appropriateness and acceptability for immigrant women of the survey.

Design. Guided by the Theory of Care Seeking Behavior, this three-phase descriptive study involved survey development, pretesting, and revisions.

Setting. A Midwestern, university town.

Participants. Nine experts rated content validity, and 12 participants who were Chinese immigrant women provided feedback on the survey.

Methods. Experts rated items on relevance. Participants provided feedback through cognitive interviews. We revised items, based on experts' ratings and participants' feedback.

Results. The average content validity index for items was .88. Participants suggested improvements: editing items for use of more common terms; reducing the number and length of items; revising flow of survey; reformatting some questions; and clarifying items to yield desired information. Participants' spontaneous comments affirmed the importance of studying PPD among immigrant women.

Conclusion. Findings about validity, acceptability, and cultural and linguistic appropriateness informed our revisions of a new survey about immigrant women's experiences with and reasons for seeking or not seeking PPD screening.

Key words

Depression, Postpartum, Surveys and Questionnaires, Emigrants and Immigrants, Mothers

Callouts

1. **A valid survey about screening for postpartum depression that is culturally and linguistically appropriate for immigrant women is needed.**
2. **Cognitive interviews can be useful to evaluate existing measures before using them with special populations, such as Chinese immigrant women.**
3. Clinicians can assess immigrant women's knowledge about postpartum depression and screening and provide education as needed.

Worldwide, one in seven women develops postpartum depression (PPD), a mood disorder that affects women across socio-cultural and economic backgrounds (American Psychological Association, 2017; National Institute of Mental Health, 2017). Less than half of women with PPD are recognized and treated (Pooler, Perry, & Ghandour, 2013; Tandon, Leis, Mendelson, Perry, & Kemp, 2014). Left untreated, PPD can have devastating effects on women, their infants, and families, and is associated with lower levels of bonding and reduced breastfeeding initiation and duration (Kingston, Tough, & Whitfield, 2012; Wouk, Stuebe, & Meltzer-Brody, 2017). Children of mothers with PPD are at greater risk for cognitive, emotional, developmental, and verbal deficits as well as impaired social skills than those of mothers without PPD (Brand & Brennan, 2009; Field, 2010).

The postpartum period is an especially vulnerable time for immigrant women, and the transition from woman to mother can be more stressful when combined with the transition from local to immigrant. Whereas approximately one woman in 10 develops PPD overall in the United States (Ko, Rockhill, Tong, Morrow, & Farr, 2017; Le Strat, Dubertret, & Le Foll, 2011), at least one immigrant woman in five (20%-42%) experiences PPD in her receiving country (Collins, Zimmerman, & Howard, 2011; Falah-Hassani, Shiri, Vigod, & Dennis, 2015). Thus, immigrant women have a much higher rate of experiencing PPD than native-born women.

Immigrant women are at greater risk for PPD for several reasons (Almeida, Costa-Santos, Caldas, Dias, & Ayres-de-Campos, 2016). These include irregular residency status, low levels of income and employment, language barriers and cultural differences, and health care providers' attitudes (Rumbold et al., 2011). Immigrant women also frequently experience a sense of isolation from key relationships (Almeida et al., 2016) and a lack of social support. Because immigrant women and their children are disproportionally affected by PPD, understanding PPD in this population is important to reduce health disparities.

CALLOUT 1

PPD Screening

Screening is critical for early detection of and intervention for PPD. The US Preventive Services Task Force (2017) concluded with at least moderate certainty that there is a moderate benefit of depression screening, including among women during pregnancy and the postpartum period. The American College of Obstetricians and Gynecologists (2018) proposed that clinicians see all women during the fourth trimester of pregnancy, i.e., the weeks following birth, to assess for alterations in moods and emotional well-being.

To address PPD adequately, health professionals need to implement screening along with support and referral services for women who screen positive for symptoms of PPD (US Preventive Services Task Force, 2017). In the health care context, screening refers to standardized evaluation to identify clinical problems if they are present but not yet identified to take steps for secondary prevention. Nevertheless, screening cannot prevent clinical problems from starting, and its results are not diagnostic. Screening can be a confusing concept to patients. For example, patients often confuse screening results with a definitive diagnosis. Further,

patients often assume that only people with risk factors should get screening. Little is known about immigrant women's experiences with PPD screening and their reasons for seeking such screening. If nurses have a deeper understanding of immigrant women's perspectives about screening for PPD, then nurse leaders could take steps to implement PPD screening in a culturally and linguistically appropriate manner and tailored support and referral for this vulnerable population.

Review of Literature

Little research on PPD screening has been conducted among immigrant women. In one study, researchers focused on instrument testing or translating screening instruments (e.g., the Edinburgh Postnatal Depression Scale; Playfair, Salami, & Hegadoren, 2017). Other researchers described challenges encountered during or after PPD screening, such as the use of an interpreter, cultural beliefs about mental illness, shame, negative experiences during the screening interaction, and inadequate follow-up (Playfair et al., 2017; Skoog, Berggren, & Hallstrom, 2018). Thus, the breadth of challenges with and reasons for PPD screening from immigrant women's perspectives have not been studied.

Surveys can be useful to gather descriptive information about a phenomenon that has rarely been studied (Groves et al., 2009). Clinician researchers need a survey that has relevant and valid questions but is also culturally and linguistically appropriate for collecting quality data from an immigrant population (Chan & Pan, 2011; Willis, 2015).

Chinese Immigrant Women as an Exemplar Population

Chinese immigrants comprise the second largest immigrant group in the United States (Pew Research Center, 2015), and rates of PPD among Chinese immigrant women are higher

than rates in native-born women in receiving communities. For example, in Canada, Kingston et al. (2011) reported 6.0% in native-born women during the first six months postpartum while Dennis et al. (2017) reported 24.4%, 20.3%, and 17.9% in Chinese immigrant women at 4 weeks, 12 weeks, and 52 weeks postpartum. Chinese culture is salient to women's care-seeking behaviors during the postpartum period. For example, the concept of *face*, or dignity, is important in Chinese culture; women may not seek necessary care for symptoms of PPD to save face (Lam, Wittkowski, & Fox, 2012; Morrow, Smith, Lai, & Jaswal, 2008).

Theory

We used the Theory of Care-seeking Behavior (TCSB, see Figure 1) to guide our study (Lauver, 1992) because it was developed to explain people's use of recommended screening tests. Also, it encompassed a greater breadth of concepts relevant to screening behaviors than other popular health behavior theories. In TCSB, *clinical variables* include a history of related disease and experiences with seeking care. *Affect* refers to feelings associated with care-seeking behavior. *Beliefs* refer to expected useful outcomes. *Norms* refer to social and personal norms and interpersonal agreements to engage in care-seeking. *Habits* refer to how individuals usually act in similar situations. Additionally, the TCSB includes *external conditions* as objective factors relevant to seeking care, such as accessibility, affordability, and acceptability of health care. These conditions can serve as facilitators or barriers for women who seek PPD screening. According to TCSB, clinical variables and demographic factors may directly influence care-seeking behaviors but more often influence behavior indirectly through the set of psychosocial variables (i.e., affect, beliefs, norms, habits). Also, the influence of psychosocial variables on care-seeking behaviors can be dependent upon (i.e., moderated by) the presence or absence of external conditions (e.g., lack of transportation or health insurance).

We propose that these concepts are relevant to Chinese immigrant women who are new mothers. Chinese women may not seek PPD screening because of the fear of losing face, which relates to *affect* or *beliefs* that seeking care for symptoms of PPD would bring shame to their families (; Lau & Wong, 2008a). In terms of *norms*, Chinese women typically do not seek PPD care until symptoms are identified by screening (Lau & Wong, 2008a). For *habits*, they often rely first on friends and families rather than health professionals (Lau & Wong, 2008b). Furthermore, immigrant women may experience barriers to health care in a new country (Zhang, Smith, Swisher, Fu, & Fogarty, 2011), which reflects *external conditions*.

Our study purposes were as follows: to develop a survey about immigrant women's experience with screening for PPD and their reasons for seeking such screening, to assess the survey's content validity, and to report immigrant women's perceived acceptability and cultural and linguistic appropriateness of the survey.

Methods

This descriptive study involved three phases as shown in Figure 2 and described below.

Phase I: Survey Development

Development process. First, we reviewed literature about PPD and PPD screening among general and immigrant populations. We identified factors in the literature that corresponded to concepts in the TCSB and could influence women in general in seeking care for symptoms of PPD. Based on ideas from the literature and theory, we developed items in English about women's reasons for seeking and not seeking PPD screening. We later revised items for health literacy. This process was guided by a nurse-researcher who had expertise in the TCSB.

Then, items were translated into Chinese by a bilingual (English and Chinese) registered nurse who was also a PhD student and a nurse-researcher who was experienced with survey research. Any differences in translation were discussed until consensus was reached. Finally, the Chinese version of the survey was created in an online platform that is used to create surveys, collect and store data, and produce reports.

Survey content and organization. Originally, we started the survey with two questions on knowledge of PPD and PPD screening: "Have you heard of PPD?" and "Have you heard of PPD screening?" If participants chose *no* to either question, then a text box would appear to explain PPD and PPD screening in lay terms. We included these two questions to improve the accuracy of participants' responses.

First, in an open-ended question, we asked participants to describe reasons why they would seek PPD screening in their own words. Second, they selected reasons from a checklist of 34 items that corresponded to TCSB concepts. We used the checklist only after the open-ended question so as not to influence participants' responses to items in the checklist. Examples included the following: "I would feel reassured if the screening result shows that I do not have PPD or that there's nothing wrong with me" (*affect*) and "Knowing whether I have PPD is important for me" (*beliefs*). Participants could endorse as many items as they deemed appropriate. Third, we asked participants to rank their selected items from *least important* to *most important*.

In a similar manner, in an open-ended question we asked participants to describe reasons for not seeking PPD screening in their own words. They selected reasons from a 48-item checklist that corresponded to TCSB concepts. Examples included the following: "People all think that depression is normal during a few months after giving birth" (*norms*) and "I try to hide

my depressive symptoms or feelings from others" (*habits*). Participants could endorse as many items as they deemed appropriate. Then we asked participants to rank their selected items from *least important* to *most important*.

Next, we asked participants to report whether or not they had been screened for PPD. If their answers were *no*, then we asked them to describe the situation(s) that kept them from getting screened using an open-ended question. If participants answered *yes*, then we asked them an open-ended question to describe reasons that led to their screening. The overall survey consisted of four open-ended questions and two checklists. Finally, we asked about participants' clinical and demographic information such as age, length of stay in the United States, and education level.

Phase II: Pretesting with Experts

Sample. In total, nine multidisciplinary experts rated proposed items for content validity. Lynn (1986) recommended more than three but less than 10 experts for assessing content validity. One expert had developed and tested the TCSB in health care contexts and had worked as a nurse practitioner in women's health settings, one was a psychiatric/mental health nurse practitioner and health disparity expert, two were survey experts, and six were experienced nurses or nurse managers in obstetrics and gynecology or birthing sites and were familiar with PPD and the Chinese population. Seven experts were Chinese-speaking from China; two were English-speaking from the United States. Phase II of this study was deemed exempt by the University Health Sciences Institutional Review Boards.

Measures. Experts rated the relevance of our proposed items on reasons to seek or not to seek PPD screening, using a four-point scale (1 = *not relevant*, 2 = *somewhat relevant*, 3 = *quite*

relevant, and 4 = *highly relevant)*. Experts were asked to suggest a revision of all items for clarity and cultural or linguistic appropriateness.

Data collection and analysis. Experts provided feedback through email. We computed item content validity indices (I-CVI) for each proposed item. We also computed the average scale content validity index (S-CVI) across all items for the survey (Polit & Beck, 2006).

Phase III: Pretesting with Participants

Design. This phase of our study was a within-country (United States), single site (midwestern university town), monolingual (Chinese) cognitive interview with a single testing round, that is, one interview per participant. With skills in cognitive interviewing and survey methods, the first author (ZY) conducted all the interviews. Phase III was approved by the University Health Sciences Institutional Review Board.

Sample. A convenience sample of participants was obtained from Chinese immigrant women who had given birth in the United States within the past 2 years. In total, 12 participants were recruited by word of mouth over 3 months. This number was determined by data saturation, that is, the interview data revealed no new issues about the survey (Strauss & Corbin, 1998). Participants were asked to engage in the cognitive interview if they (a) were foreign-born Chinese (i.e., Chinese born in Mainland China, Taiwan, Hong Kong, or Macau), (b) had full-term pregnancies within the last 2 years, (c) lived in the U.S. for less than 10 years, and (d) had some symptoms of PPD. Potential participants were excluded if they (a) were born in the U.S., (b) reported histories of major depression or mental disorders (e.g., schizophrenia) other than PPD, (c) had no symptoms of PPD, (d) lived in the U.S. for more than 10 years, or (e) declined to participate.

We determined eligibility of potential participants by asking them to complete some questions online. Four questions addressed country of birth, history of childbirth, length of stay in the U.S., and history of mental disorders; the responses to these questions were either *yes* or *no*. The last set of 10 questions for eligibility included the validated Chinese version (Pen, Wang, & Jin, 1994) of the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987). The EPDS is a commonly used screening measure (US Preventive Services Task Force, 2017), and its Chinese version was validated with sensitivity of 0.82 and specificity of 0.86 (Lee et al., 1998). Total scores are determined by addition of the corresponding scores to selected responses. A score of 1-30 indicates minimal to severe symptoms of depression (McCabe-Beane, Segre, Perkhounkova, Stuart, & O'Hara, 2016).

We programmed the eligibility questions so that respondents who did or did not meet eligibility criteria saw different screens. Respondents who were eligible proceeded to start the survey as participants. Participants were shown their EPDS scores at the end of our survey with an interpretation of their scores. By including all women whose scores indicated some symptoms, we intentionally included participants with a breadth of scores on the EPDS. Respondents who were not eligible received a note of appreciation for their time and were informed of their scores of 0 on the EPDS.

Measures. We used a cognitive interview with participants to evaluate whether proposed items functioned as planned (Boeije & Willis, 2013; Willis, 2005). Cognitive interviews are useful to collect rich data from members of a target population about how particular questions provide or fail to provide desired information (Boeije & Willis, 2013). This is a qualitative method that can help researchers gain a "window into the mind" of members of their targeted

population (Boeije & Willis, 2013). This approach enabled us to understand PPD screening and its sociocultural context from the participants' perspectives.

Data collection. Cognitive interviews were conducted in participants' homes or in an interview room in the School of Nursing. We chose the Three-Step-Test-Interview (Hak, Veer, & Jansen, 2008) to guide the stages of the interviews. This systematic approach is described as a hybrid approach because it involves think-aloud, interviewer probing, and debriefing (Hak et al., 2008). Cognitive interviews can be useful to evaluate self-administered surveys from the participant perspective. We used a guide for our interviews (see Figure 3) and made audio-recordings of the interviews with a computer. The stages of the interview are described below.

Introduction. Each cognitive interview started with a short introduction and one standard think-aloud exercise because many people experience difficulties when participating in think aloud (Willis, 2005). Also, there is not a direct translation for think aloud in Chinese (Pan, 2004).

Respondent-driven think-aloud. With minimal interviewer interruption, participants answered the survey questions and verbalized their thought processes (Hak et al., 2008). The interviewer attended to participants' verbalization and took notes on their behaviors, such as skipping questions, hesitation, and distress. If there were moments of silence, the interviewer encouraged participants to share by saying, "Please say aloud what you are thinking."

Interviewer-driven probing. After participants completed the survey, the interviewer asked questions based on the observed behaviors of participants and notes from the think-aloud process taken by the interviewer. For example, the interviewer asked questions such as, "Did I hear you say…?" or "You stopped for a while there, what were you thinking of?" The interviewer's goal was to clarify uncertainties noted in her observations (Hak et al., 2008).

Interviewer-driven debriefing. The interviewer asked participants to explain their response behaviors. For example, she asked what problems the participants saw in the survey, if any. If the interviewer noted some participants making non-verbal responses when completing the surveys, she asked participants more about these. The interviewer also asked participants semi-structured questions (shown in Figure 3) about their perceptions of PPD and screening for PPD to gain a contextual understanding of participants' reasons to seek or not to seek such screening.

Data analysis. We transcribed the audio-recordings verbatim from the cognitive interviews and analyzed the transcripts using conventional content analysis (Hsieh & Shannon, 2005). We did not have preconceived categories of problems with the survey before analysis. We generated categories inductively from transcripts. Our analysis of problems with the survey guided our revision of items.

Results

Phase II: Experts' Perspectives

In total, 76 of 82 items had I-CVIs higher than .78. Six of 82 items had I-CVIs lower than .78; three of these six items were dropped because of the low I-CVIs. One example of a deleted item was, "My friends think getting checked out for postpartum depression is important." Although the I-CVIs for three items were less than an ideal .80, we retained them; these items reflected important concepts from TCSB. For example, one of the retained items was, "People say that PPD is normal for a few months after a new baby." Also, one item was added to reflect *affect* based on an expert's suggestion: "Through screening, I would feel relieved to know my terrible state is caused by illness." The average CVI across all survey items was .88, greater than

an acceptable .80 (Polit & Beck, 2006). Based on experts' recommendations, two items were revised for clarity.

Phase III: Participants' Perspectives

Participants in the cognitive interviews were all married, between the ages of 25-34, and resided in the U.S for more than one year. Other characteristics of the participants are presented in Table 1. Each interview lasted about 36 minutes.

Areas of improvement for survey design. First, participants identified linguistically unnatural wording and awkward sentence structure. For example, participants commented on a question from one measure, the Chinese version of the EPDS, "I have blamed myself unnecessarily when things went wrong." One participant shared, "Unnecessarily means...is this saying that under some conditions it is ok to blame myself? I think sometimes." Another participant asked: "Does this mean I don't blame myself?" Interviewer: "Means that you will overly blame yourself." Participant: "Oh yes, I do this most of the time. If I did something wrong, I would blame myself continuously." To address this problem, we added explanatory notes: "I have blamed myself unnecessarily (or overly blame yourself) when things went wrong."

Second, participants commented on the number and length of items. For example, some participants were intimidated by the length of checklists: "There are too many items…maybe you should divide them into three major categories, such as individual, family, and external conditions." Based on such feedback, we divided checklists into three sections to make the survey seem more feasible (i.e., individual, interpersonal, and external conditions).

Participants also identified that some questions and responses were cognitively demanding. For example, participants commented on the 4-point rating scales of the importance

of each of the reasons for seeking and not seeking PPD screening: “I was so conflicted… if I select them, they are all important. If they are not important I would not select them at all.” To reduce such cognitive demand, we deleted the ranking scales but kept the items in the checklists which in itself was a dichotomous scale of *yes* or *no* because participants had difficulty differentiating the level of importance of reasons that they had selected.

Third, participants suggested that we change the sequence of some items to improve flow in the survey. Some participants did not understand the parts in the original survey that included eligibility questions, requests for informed consent, and the actual survey items. One participant asked, “Why does this [informed consent] show up in the middle of the survey?” To address this issue, we added a diagram to explain the parts of the survey.

Fourth, based on participant feedback, we observed that the format of some questions prevented participants from providing an accurate or full range of responses. This occurred when we asked about external conditions regarding seeking or not seeking screening, such as financial cost, in a checklist format. Some participants were uncertain about the application of these factors to them, “I’m not sure about the cost; my insurance should be able to cover it.” We revised the type of response for external conditions to include three rather than two options: *yes*, *no*, and *unsure*.

Lastly, based on participant feedback, we identified how we might have difficulties getting desired information. Although all participants had heard about PPD through multiple venues (e.g., internet and health providers), screening for PPD remained an unfamiliar concept to them. Although some participants had been screened for PPD, they had difficulties linking their PPD screening experiences (e.g., having completed PPD screening questionnaires at postpartum visits) with the concept of PPD screening itself. One participant shared, “I don’t think I’ve heard

of this [PPD screening] … I remember the clinic mailed some questionnaires asking about my mood. Would this count as PPD screening?" We revised the type of response to history about PPD screening to include six rather than two options; we offered four possible scenarios suggested by participants in addition to *no* and *other* with a text-entry box for comments.

Feedback on survey content. Participants provided feedback on the item content, that is, reasons to seek or not to seek PPD screening. Table 2 shows examples of original and revised checklist items by TCSB concept and the rationale for revisions. After revisions, the items for reasons to seek and not to seek PPD screening consisted of 37 and 44 items, respectively.

Participants suggested that parents or parent-in-laws had lack of knowledge or awareness of PPD and PPD screening and little influence on their decisions to go for screening: "My parents don't understand [PPD and screening] … my parents-in-law, they know even less… if my mother-in-law knew about this, she would not have argued with me." Another stated, "My parents won't affect me [to go for screening] … my parents in law also will not affect me." Thus, we deleted items that were included originally to reflect social norms, such as "My parents/parents-in-law think that PPD is/is not real and serious," "My parents/parents-in-law think that screen for PPD is/is not important," "My parents/parents-in-law encourage/oppose me to do PPD screening."

Participants suggested new items to add regarding reasons to seek or not to seek PPD screening. Table 3 shows the added items, by theoretical concept, with participant feedback. Participants stated that maintaining their relationships with friends and families were important motives to seek screening. Regarding social norms, one participant shared, "I don't want to keep giving negative energy to friends and families, so I went to seek professional help." In addition to the concepts we intended to measure, participants suggested two new concepts: lack of

knowledge ("I have never heard of PPD screening" and "I don't know that PPD can be treated or how it's treated") and lack of trust ("I don't trust doctors or nurses").

Behaviors of participants during cognitive interview. Most participants understood the cognitive interview approach and engaged in it. However, several participants were initially hesitant about engaging or did not fully engage in the think-aloud process. One participant asked, "Do I need to read out loud all these [checklist items], just like earlier?" Of note, all participants asked the interviewer for assurance during survey completion: "Is this right?" or "Can I choose this one?"

Acceptability of survey to participants. Lastly, participants welcomed and appreciated the interviews and study topics. Most participants shared that they saw PPD as a serious illness and wanted more knowledge on PPD treatment and coping strategies:

> We all know that PPD is serious and can have negative influences in your life, but there's little information about treatment options or effective coping strategies. I feel insecure or anxious that doctors would take control of my life, and I'm just sitting there waiting to be sentenced. It's as if you are struggling in a swamp and can't find a way out. I hope to gain more knowledge (about PPD).

Another participant said, "I'm so happy that you are asking us these questions! I'm glad that someone finally paying attention to this." Another stated, "This topic is very important. I fully support it!"

Discussion

We report the development of a survey about immigrant women's perspectives regarding screening for PPD. By doing so, we address a meaningful clinical concern in an especially

vulnerable population. We generated items for the original survey based on concepts from theory about care seeking and relevant research about PPD.

To assess the content validity of the original survey, we sought feedback from two complementary sets of people. Professional experts rated the proposed items highly for content relevance, as indicated by the high item CVIs. Through cognitive interviews with participants who were Chinese immigrant women, we elicited their ideas about how we could improve the original survey for acceptability as well as cultural and linguistic appropriateness. Feedback from experts and participants informed our revisions to the original survey. We have documented that the revised survey has content validity and improved language for cultural and linguistic appropriateness. In addition, the revised survey flows more smoothly and has sections to guide respondents through the survey. Although we sampled one group of immigrants, our study can serve an example for others to replicate with other immigrant groups, such as Latino immigrants, or other vulnerable populations in general, particularly those with cultural and/or linguistic backgrounds different from norms in the receiving country.

Interestingly, our descriptive data indicated that most of our lay participants did not grasp the concept of screening. Although participants had an appreciation for PPD and its consequences in the abstract, most did not know about whether or not they had been screened for PPD or what to do if they had PPD. They had difficulties associating their PPD screening experience with the concept of screening. This suggests that education about PPD and PPD screening have been inadequate for Chinese immigrant women. This finding is consistent with findings from other research on women's screening behaviors (Lor, Khang, Xiong, Moua, & Lauver, 2013). Thus, nurses can view perinatal visits as opportunities to assess immigrant

women's knowledge of the concept of screening in general, PPD itself, and the usefulness of PPD screening; nurses can follow up with individualized education as needed.

We observed that participants often asked for reassurance when completing the survey. This finding reflects the concept of social norms in the TCSB. Nurses and clinicians need to spend time explaining the purpose, clarify the value of honest answers, and be available for answering questions with self-administered screening measures.

Surprisingly, our results suggest that currently recommended and validated PPD screening tools can be problematic in populations from different cultural and linguistic backgrounds. For example, the EPDS is a validated (Heh, 2001; Lee et al., 1998) and frequently used clinical screening tool for identifying women who may be at risk of developing PPD. However, our participants reported that several items included confusing terms or linguistically unnatural language. Thus clinician-researchers can determine whether or not a measure actually functions as intended from the perspectives of the intended respondents; findings from prior instrument evaluation may not always generalize to a new sample (Godderis, Adair, & Brager, 2009). Further, clinicians and researchers need to be sensitive to translations and ensure that such translations are linguistically accurate. Without adequate or accurate translations, the interactions between clinicians and patients could have serious, clinical biases. Future researchers can evaluate the cultural and linguistic terminology within screening measures that are used with special populations (Lor et al., 2013).

We demonstrated that with adequate preparation, the cognitive interview can be a useful method for evaluating a new or existing measure from participants' perspectives. Findings from our cognitive interviews provided rich and relevant information to revise our measure for future use among Chinese immigrant women. Consistent with prior research (Pan, 2004), we found that

a practice exercise could be helpful for orienting Chinese immigrant women for the think-aloud process. The cognitive interview also provided Chinese immigrant women a window of opportunity for explaining PPD screening from their own perspectives. This qualitative approach gives a space for participants to construct their identities and represent themselves in their own ways (Chong, 2014). Future researchers in women's and children's health could utilize the cognitive interview as a method to evaluate a new or existing measure among vulnerable groups, such as immigrant women, to help to reduce health disparities.

Limitations

Our study had several limitations. One limitation involved the demographic and other characteristics of our cognitive interview participants. For instance, while it would have been ideal for these participants to be representative of future, intended participants (Willis, 2005), they were mostly highly educated and had stayed in the U.S for more than a year. As such, they were likely to be more literate, acculturated, and familiar with survey language than immigrant women with less education and shorter length of residence in the United States. The other limitation involved the use of a single interviewer. Although successful cognitive interviews have used a single interviewer and using multiple interviewers could lead to interviewer induced errors (Willis, 2005), multiple interviewers could potentially provide additional perspectives. Lastly, we used Chinese immigrant women as an exemplar immigrant population and recognize that these findings are representative of our sample and not all immigrants. However, to the extent that immigrants are more likely isolated because of language, culture, or being new to an area, the experience of isolation among immigrants and the influence of isolation on depression is not dissimilar (Tobin, Di Napoli, & Beck, 2018; Wittkowski, Patel, & Fox, 2017).

Conclusion

We developed and pretested a survey about Chinese immigrant women's experiences of screening as well as their reasons for seeking PPD screening based on theory and PPD research. Content validity assessment and findings from cognitive interviews richly informed the development of a more relevant, culturally and linguistically tailored, and acceptable survey. Because most participants indicated that PPD was a meaningful topic that requires more attention, further studies exploring PPD and PPD screening among immigrant women would thus be beneficial. Nurses and clinicians need to assess immigrant women's knowledge and provide adequate education on PPD, recognize women's potential difficulties interpreting screening questions due to cultural and linguistic background, be explicit about the screening purpose, and be available to answer questions throughout the screening process. Our study has generated rich information on immigrant women's experiences with current screening for PPD. Future researchers could use our revised survey with immigrant Chinese women in the U.S. to address the need to screen for PPD among this special population and to reduce maternal health disparities.

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Figure 1. Theory of Care-seeking Behavior

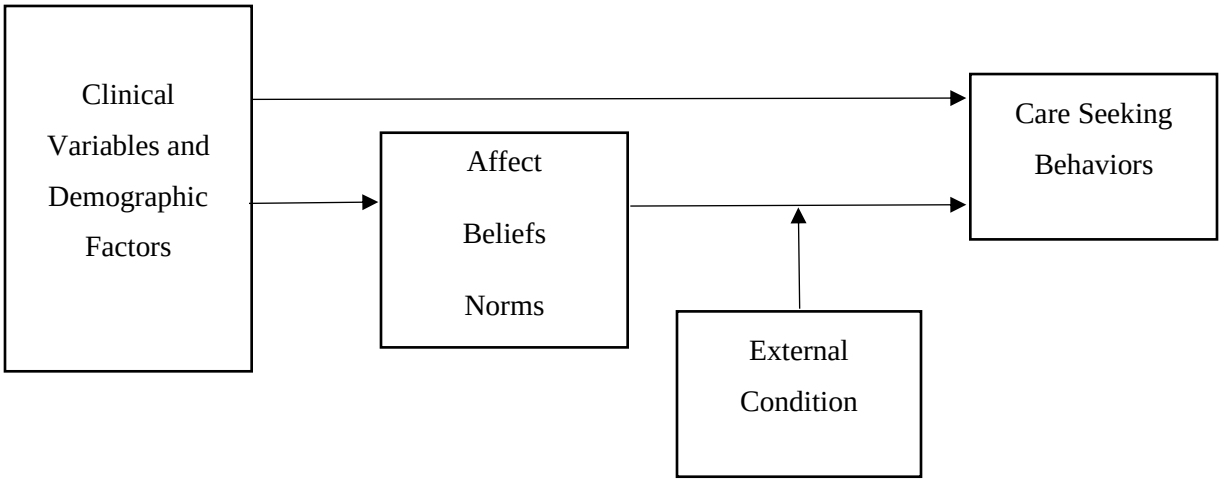

Figure 2. Study Process

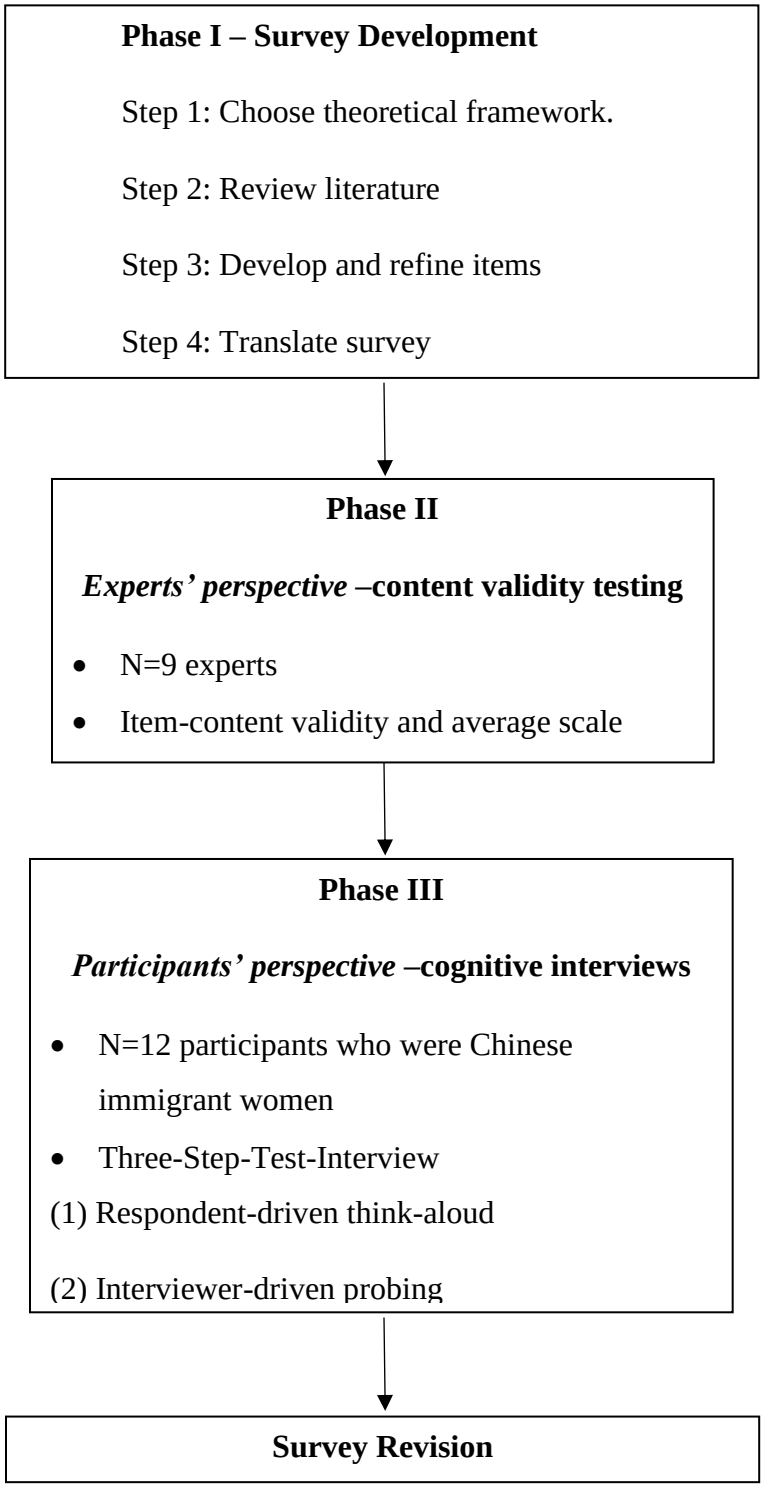

Figure 3. Cognitive Interview Guide

Interview #_____ Date _____ Location _____

Interview Package Checklist:

☐Inform consent forms ☐Printed survey form ☐Screen recorder ☐Community/online resource sheet ☐Laptop and charger

Stages	Content	Interviewer Notes
1	**Introduction** ☐What is think-aloud ☐Think-aloud practice exercise	
2	**Respondent-driven think-aloud** ☐Turn on recorder ☐Turn on Microphone **Turn to printed survey form** ☐Initiate cognitive interview ☐Provide feedback and encouragement	
3	**Interviewer-driven probing** Refer to notes on the printed survey form	
4	**Interviewer-driven debriefing** ☐Participant questions from think-aloud ☐Participant feedback or comments on survey (e.g. wording or layout) ☐Semi-structured interview questions 1. What does postpartum depression mean to you? 2. What do you think about postpartum depression screening? 3. What was it like when you were feeling down? 4. What have been helpful for you when you were feeling down? 5. Do you have any other recommendations about the survey or about the interview? 6. Is there anything you would like to tell me that I have not asked?	

Table 1. Characteristics of cognitive interview participants who were Chinese immigrant women

ID	Number & sex of child(ren)	Highest level of education	Current employment status	Length of stay	Residency status	Self-rated English proficiency
#01	1 boy	Master	Student	Over 3 years	Student visa	Average
#02	1 girl	PhD	Full time	Over 3 years	Student visa	Average
#03	2 girls	Junior College	Homemaker/part time	1-3 years	Spouse visa	Not well
#04	1 girl	College	Homemaker	Over 3 years	Permanent Resident	Not well
#05	1 girl	Technical College	Homemaker	Over 3 years	Spouse visa	Not well
#06	1 boy	PhD	Homemaker	1-3 years	Spouse visa	Average
#07	1 boy	Master	Homemaker	Over 3 years	Spouse visa	Not well
#08	1 boy	Master	Homemaker	Over 3 years	Permanent Resident	Average
#09	1 boy	Master	Homemaker	Over 3 years	Spouse visa	Average
#10	1 girl	Master	Homemaker	Over 3 years	Permanent Resident	Average
#11	1 girl	PhD	Homemaker/part time	1-3 years	Spouse visa	Not well
#12	1 boy	College	Homemaker	1-3 years	Spouse visa	Average

Table 2. Examples of the original and revised items *about reasons for seeking/not seeking postpartum depression screening*, by concept

TCSB Concepts	Original	Participants' responses guiding revision	Revised
		Reasons for *seeking* PPD screening	
Clinical status regarding moods	I feel sad, guilty, and have no value	#03 "No value, this is really (accurate), at that time I just felt that I have no value at all." #05 "I cry everyday…feel as if I've been used and my task has completed"	I always cry, feel that I have no value
Affect	I would feel reassured if the screening result shows that I do not have PPD or there's nothing wrong with me		No change
Beliefs	Treating PPD is important for me	#02 asked whether this item was asking whether PPD is real, or, whether my PPD is real, objectively speaking.	Objectively speaking, I think treating depression is important
Norms	Father of the new baby thinks that PPD is real and serious	#02 asked whether this item was asking whether the father of the new baby thinks of PPD as an actual and serious illness or he thinks her PPD is real	Father of the new baby thinks that PPD is an actual illness; I am not being melodramatic

		#06 said some fathers of the new baby think women claimed to have PPD were "just asking for trouble and being unreasonable/melodramatic."	
Habits	I look for information to find reasons whenever I don't feel well	#08 "I'm not sure what you mean by information. knowledge from the books or reasons from your life"	Whenever I don't feel well emotionally, I would look for reasons (that I'm not feeling well)
External conditions	I can afford the cost for PPD screening; yes/no	#12 "I don't know how much the screening would cost. If the insurance overs it, I can afford; if not, I can't."	Format change to yes, no and unsure
		Reasons for *not seeking* PPD screening	
Clinical status regarding moods	I'm too tired to go to hospital/clinic	Refined to Chinese colloquialism	I'm too tired and I have no energy to go to hospital/clinic
Affect	Telling doctors or nurses how I feel makes me embarrassed	Refined to Chinese colloquialism	Telling doctors or nurses how I feel in my heart (emotionally) makes me embarrassed

Beliefs	It's unlikely that I have PPD	Refined to Chinese colloquialism #07 "I think it is unlikely"	I think it's unlikely that I have PPD
Norms	I think it is normal to feel tired after giving birth	Revised to capture the symptoms participants reported in their own words (mood changes). For ex., #11 "my mood fluctuates a lot and feel extra tired after giving birth."	I think it is normal to have mood changes and feel tired after giving birth
Habits	When I'm not feeling well, I usually use home remedies	Because participants said "this depends, if I don't feel well emotionally I would talk with my friends and family first; if I don't feel well physically I would take medication and go to the hospital"	When I'm not feeling well (emotionally), I usually first talk with friends or family
External conditions	I don't know how to communicate my feelings to U.S. doctors	Because participants shared that cultural or language differences prevent them from communicating their emotional feelings For example, #03 "this applies to me, because the cultural and language gap is pretty big"	Because of the cultural or language differences, I don't know how to communicate my emotional feeling

Table 3. Proposed new items, based on concepts from theory, and participants' responses to cognitive interview

TCSB/New Concepts	Proposed new items	Participants' responses
	Reasons for *seeking* PPD screening	
Clinical status regarding moods	I feel that I'm different now—my mood changes a lot, sometimes I have or at the edge of melt-down	#03 "my mood changes a lot; sometimes I have a melt-down."
Beliefs	I hope doctors and nurses can *help me understand why my mood changes so much*	#03 "I hope to understand why my mood changes so much; I wished to get helped and really wanted to see doctors."
Beliefs	I am not getting better despite adjusting on my own	#05 "I wanted to adjust on my own, but the situation got worse after a while" #09 "My mood was not well, and I can't solve this on my own."
Beliefs	I hope to get *more information through screening, so I can be more relaxed*	#11 "I hope to know more about PPD through PPD screening to make myself more relax."
Norms (Social norm)	I'm seeking professional assistance because *I don't want to give negative energy to friends and family*	#5 "I don't want to keep giving negative energy to friends and families, so I went to seek professional help."
Norms (social norm)	I want to have a better mental attitude or outlook when I am with family	#06 "my own mental health, can interact with my family with better conditions

Norms (social norm)	I want my body and mood to improve to help my baby's development	#09 "I want to make my body and mood recover sooner, benefiting for my baby's healthy development"
Norm (interpersonal agreement)	Doctors or nurses suggested the screening or asked me to get it	#05 "it was required by the hospital policy (postpartum check-up)" #12 "they (depression screenings) were all done in the hospital, they (doctors and nurses) think it was necessary (to screen)
	Reasons for *not seeking* PPD screening	
Clinical status regarding moods	I have not noticed anything wrong or different with my mood	#04 "I did not notice anything wrong or different with my mood."
Affect	I'm afraid of being told that I have PPD	#03 "I'm afraid that I actually have PPD"
Affect	I worry that doctors or nurses won't understand me or my situation	#06 "I worry that my circumstances cannot be understood by doctors or nurses"
Affect	I'm scared to feel like a patient	#05 "I don't want to make myself feel like a patient"
Lack of Knowledge	I have never heard of PPD screening	#11 "I've not heard of PPD screening and don't know you can or where to get screened."
Lack of Knowledge	I don't know that PPD can be treated or how its treated	#02 "Treatment, to be honest I don't know much about it." #11 "Honestly, I really don't know the details (about PPD)."
Lack of Trust	I don't trust doctors or nurses	#06 "I don't trust doctors or nurses"

Norm (interpersonal agreement)	Doctors or nurses have not recommended me for PPD screening	#01 & 04: “no one has recommended or asked me to get screened after giving birth”

Chapter 3-b: Qualitative evaluation of the Edinburgh Postnatal Depression Scale with Immigrant Mothers

Qualitative Evaluation of the Edinburgh Postnatal Depression Scale with Immigrant Mothers

ABSTRACT

Background: Qualitative methods are widely used in the instrument development phase, while quantitative methods such as psychometric testing prevail the testing phase. The Edinburgh Postnatal Depression Scale (EPDS) is a validated, standardized instrument for postpartum depression screening that has had extensive psychometric testing. The observed differences in scores on the EPDS should truly reflect risks for PPD, rather than artefacts caused by response errors. This requires respondents to understand and respond to the scale consistently and as intended by clinicians. It also requires that the scale reflect experiences of respondents. Psychometric testing alone is insufficient in addressing these areas and little is known about EPDS's performance amongst immigrant populations.

Objective: To examine immigrant mothers' response processes when completing the scale. Specifically, we explored (a) whether they understood and responded to EPDS both consistently and as intended; and (b) that their experiences were reflected by the scale.

Methods: Our sample comprised one immigrant group, Chinese immigrant mothers living in a midwestern university town. We conducted interviews with 12 mothers and used a coding scheme developed by Conrad and Blair (1996) to analyze their responses.

Results: Overall, our participants found the EPDS acceptable and straightforward. However, they neither consistently interpreted nor responded to certain items on the EPDS as intended by researchers. The mothers' postpartum emotional experiences were not reflected well by the EPDS.

Discussion: Nurses should use nursing clinical judgment to interpret the screening results within immigrant mothers' sociocultural context and use screening as a window of opportunity to

educate them on effective noticing and responding to mental health needs. Our study can be used as a case example of using qualitative methods for instrument evaluation when used in a new population with new culture. We focused on one immigrant group and acknowledge that our findings might not represent other immigrant populations. However, their experiences of being a new mother, living in a new and unfamiliar place, are likely shared with other immigrant mothers.

Keywords: Depression, Postpartum; Emigrants and Immigrants; Mothers; Psychiatric Status Rating Scales; Surveys and Questionnaires

INTRODUCTION

Postpartum depression (PPD) affects one in seven women worldwide (Stewart & Vigod, 2016), however, it is twice as prevalent among immigrant mothers as native mothers, regardless of country (Falah-Hassani, Shiri, Vigod, & Dennis, 2015; Tatano Beck, Gable, Sakala, & Declercq, 2011). Untreated PPD can be devastating to mothers, children, and families (American College of Obstetricians and Gynecologists, 2015; ACOG). Immigrant mothers are more vulnerable to PPD due to sociocultural challenges such as acculturation stress, insecurity, isolation and affective deprivation from key relationships (Almeida, Costa-Santos, Caldas, Dias, & Ayres-de-Campos, 2016; Dennis et al., 2018). In addition, immigrant mothers frequently experience a lack of social support, irregular residency status, low income employment, language barriers, lack of local healthcare knowledge, discrimination and racism, and cultural differences (Collins, Zimmerman, & Howard, 2011; Dennis, Merry, Gagnon, & Gagnon, 2017; Khanlou, Haque, Skinner, Mantini, & Kurtz Landy, 2017). These issues can negatively impact women's mental health. Immigrant mothers and their families are thus at a high risk for experiencing the negative impacts of PPD.

PPD screening is important for early identification and timely intervention. A systematic review concluded that screening was effective for reducing the risk of depression (O'Connor, Rossom, Henninger, Groom, & Burda, 2016). Informed by that review, the US Preventive Services Task Force updated its recommendations on screening for depression in adults to include pregnant and postpartum women (Siu et al., 2016). In addition, the ACOG (2015) recommends screening for depression and anxiety symptoms during the perinatal period at least once, using a standardized, validated tool. Among validated depression screening tools, the 10-item Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) is the most

widely used in both research and clinical practice. It has been translated into 50 languages (O'Connor et al., 2016).

To ensure accurate and reliable screening result, clinical instrument such as the EPDS needs ongoing evaluation, particularly when applied to a new population with new culture. Traditionally, qualitative methods (such as phenomenology and thematic analysis) are used in the instrument development phase to generate items (Barroso & Sandelowski, 2001). Then quantitative methods prevail the instrument testing phase to achieve psychometric credibility, that is, validity and reliability (Ginty, 2013). The EPDS has shown moderate to good reliability across samples from a wide variety of countries and languages (O'Connor et al., 2016). At a cut-off score of 13 indicating potential depressive disorder, the sensitivity of the English-language EPDS ranges from 0.67 to 1.00 and the specificity of 0.87 or greater relative to a diagnostic interview (O'Connor et al., 2016).

Despite providing important benchmarks, psychometric testing alone may be insufficient for ongoing instrument evaluation in clinical setting or detecting problems unique to population different from that it was developed for. First, the observed differences in scores on the EPDS should truly reflect risks for PPD, rather than artefacts caused by response errors (Fowler, 1990). Sources of response errors may include respondents do not have information we seek (i.e. their PPD experiences are different from what the scale described), or they misinterpret the question, or they are reluctant to talk about it (Willis, 2004). Psychometric testing cannot address these errors generated in the process of responding to the EPDS (Willis, 2004). Differences in scores that truly and consistently reflect real differences in depression risk requires the respondents to understand and respond to the scale consistently and in the way intended by clinicians.

Otherwise, response errors generated in the response process impede the quality of data collected and accuracy of screening result.

Second, the EPDS was developed by Cox and colleagues (1987) with mothers living in the Edinburgh, U.K. Items on the EPDS reflect PPD experience and sociocultural context of mothers from the U.K., which are different from the sociocultural challenges that immigrant mothers encounter. Psychometric testing does not explore respondent' sociocultural context brought to bear on the response (Behr, 2017; Chan, Pan, Willis, & Miller, 2011; Willis, 2015). Further, psychometric testing results are interpreted by professionals with statistical knowledge and content expertise. It does not explore the experience that the instrument intends to measure from the perspectives of respondents. Even when evaluated with English-speaking, non-immigrant mothers, qualitative studies have discovered problems in the EPDS that are otherwise remained unnoticed with psychometric testing.

For example, Godderis, Adair, and Brager (2009) used a qualitative approach to examine the response processes of non-immigrant English-speaking mothers in the U.S when they completed the English-language EPDS. The researchers learned that mothers might not comprehend the items as intended by researchers and as assumed by clinicians. Six out of ten items were interpreted inconsistently. Similarly, Shakespeare, Blake, and Garcia (2003) interviewed English-speaking mothers in the U.K. and found they comprehended and responded to the EPDS in inconsistent ways. These findings question the validity and internal consistency of the EPDS.

We have found no study exploring immigrant mothers' response processing when they complete the EPDS. Several qualitative studies have revealed challenges with using the screening tool from immigrant mothers' perspective. These included intrusion of privacy, due to

the presence of an interpreter, and cultural inappropriateness (Stapleton, Murphy, & Kildea, 2013); translation without equivalent meaning (Tobin, Di Napoli, & Wood-Gauthier, 2015); and inability to identify depressive symptoms in certain ethnic groups (Matthey, Barnett, & Elliott, 1997; Tobin et al., 2015). These challenges raise concerns regarding whether immigrant mothers can understand EPDS the way intended by clinicians, are able to form a response that is meaningful and consistent with the intent of the scale and respond in a consistent way. Without understanding the performance of EPDS among immigrant populations, we run the risk of missing or misdiagnosing highly vulnerable immigrant mothers.

Example Population

Chinese immigrants comprise the fourth largest immigrant population worldwide (International Organization for Migration, 2018). In China the incidence of PPD has been documented at between 6.7% and 13.5%, depending on the region and the measuring scales and cut-offs used (Lee, Yip, Chiu, Leung, & Chung, 2001; Liu et al., 2017). In Canada, Chinese immigrant mothers experience much higher PPD rates; 24.4%, 20.3%, and 17.9% at 4 weeks, 12 weeks, and 52 weeks postpartum (Dennis, Brown, et al., 2017) in contrast to a rate of 7.9% for Canadian mothers (Public Health Agency of Canada, 2018). The purpose of this study was to explore Chinese immigrant mothers' response processes while completing the Chinese-language EPDS (sensitivity = 0.82 and specificity = 0.86; Lee et al., 1998).

Cognitive Interviewing

Cognitive interviewing (CI) evaluates whether respondents understand, mental process (i.e., forming a response), and respond to materials presented the way intended by researcher and do so consistently across respondents (Willis, 2004). It aims to identify and analyze sources of response errors in materials presented, by revealing respondents' cognitive processes (Collins,

2003; Willis & Artino, 2013). Surveys, interview questions, and clinical screening tools, such as the EPDS, can be evaluated using this method. And it gives researchers a "window into the mind" of respondents (Boeije & Willis, 2013). These make CI a complementary approach to psychometric testing for survey evaluation, particularly for evaluating cross-cultural or translated survey or measurement (Padilla & Benítez, 2014; Reeve et al., 2011). For it can not only identify response errors related to cognitive processing and survey design, but also can yield an in-depth understanding of the sociocultural context brought to bear on the response (Behr, 2017; Chan et al., 2011; Willis, 2015).

MATERIALS & METHODS

Design

Our qualitative CI exploration was monolingual (Chinese) and had a single testing round (one interview per participant). All interviews were conducted by the first author, who had skills in cognitive interviewing and survey methods. Ethical approval for the study was obtained from the university institutional review board.

The study was conducted at a midwestern university town in the US. Our participants were a convenience sample of Chinese immigrant women who had given birth in the US within the past two years. Participants were recruited over three months by word of mouth. Twelve participants were included; their characteristics are shown in **Table 1**. For CI, a few interviews (8–15) are generally sufficient to identify problems in materials presented (Boeije & Willis, 2013; Willis, 2005). Our number of interviews was determined by data saturation (Strauss & Corbin, 1998); that is, additional interviews did not reveal further problems in the EPDS and is in line with accepted sample size.

Respondents were eligible for the interviews if they (a) were foreign-born Chinese (i.e., Chinese people born in mainland China, Taiwan, Hong Kong, or Macau); (b) had full-term pregnancies within the last two years; and (c) had lived in the US for less than 10 years. Potential participants were excluded if they reported a history of mental disorder other than PPD, including major depression and schizophrenia.

Data Collection

Participants were interviewed either in their homes or at the School of Nursing in a private interview room. All interviews were audio-recorded. We chose to use the three-step-test-interview (TSTI) (Hak, Veer, & Jansen, 2008) because it is a systematic hybrid CI procedure including think-aloud, probing, and debriefing. During think-aloud, respondents are asked to verbalize their thoughts while responding to the question. During probing, the interviewer elicits respondents' reports about their thinking, based on observed behaviors – such as changing a response choice or pausing before responding. The think-aloud and probing enabled us to assess whether our participants understand and respond to EPDS in the way intended by researchers and consistent across participants. During debriefing, we asked participants questions such as "What does PPD mean to you?" "What was your experience like?" and "What do you think about PPD screening?" The debriefing allowed us to assess whether their postpartum emotional experiences were reflected by the EPDS; and to identify sociocultural context relevant to responses.

Data Analysis

All interview recordings were transcribed verbatim in Chinese. The data-analysis team consisted of the first author, ZY, and the second author, YJ, who is a doctoral student in nursing and a master-level prepared nurse. Both are native in Chinese and bilingual in English and Chinese.

Coding scheme. Conrad and Blair (1996) proposed a three-stage scheme of cognitive processing: understanding, task performance, and response formatting. Task performance combined retrieving information needed, and judging gathered information. In addition, Conrad and Blair (1996) provided a list of problem types that can emerge in all three stages: lexical, temporal, logical, computational, and inclusion/exclusion. A detailed description of each problem type appears in **Table 2**. We used a matrix of response problems developed by Conrad and Blair (1996) (see **Table 3, supplement information**), consisting of 15 problem categories by response stage and problem type.

Using the coding scheme. Initially, the first and second author individually read the transcripts of the interviews and assigned one of the 15 problem categories to each detected problem. Next, during data analysis meetings, we compared all individually detected problems and their assigned problem categories. For discrepancies in assigned categories, we re-read the transcripts together and discussed the problem until we reached consensus. To understand how EPDS functions in relation to types of problem as well as response stages, we placed problematic items in the problem matrix (see **Figure 1**). To get a sense of the distribution and concentration of EPDS processing problems, we counted the occurrence of each assigned problem category, and devised a heat map (see **Figure 2**).

RESULTS

Overall, participants found the EPDS questions easy to read and answer. Participants reported no issues with Item 1, “I have been able to laugh and see the funny side of things,” and Item 2, “I have looked forward with enjoyment to things.” In terms of problem types, computational problems were the most common one we identified, followed by temporal, inclusion/exclusion, logical, and lexical problems. In terms of response stages, we found most

problems occurred during the performing stage, followed by the understanding, and response formatting stages. Among the 15 problem categories, we discovered that the combination of computational and performance problems occurred most frequently (see **Figure 2**). Below, we present items of EPDS that participants had difficulty answering or which offered diverse interpretations.

Item 3, I have blamed myself unnecessarily when things went wrong

Lexical / understanding. Participants had difficulty with this item because they were unsure how to interpret "unnecessarily." As one participant said "*unnecessarily means? [pause] so, under some circumstances it is ok to blame myself, that is necessary…"* (02). Another participant with a different interpretation said, "*This is saying I will NOT blame myself*?" (03)

Computational / performing. Item 3 asked participants to recall the *frequency* of blaming themselves unnecessarily in the past seven days. However, during the performing stage, some participants recalled the *likelihood* of blaming themselves when things went wrong in general. One participant said: *if the problem is really related to myself…maybe I would relatively blame myself more; but I think sometimes things going wrong is inevitable, so it's not necessary to blame myself*" (01). Another participant attributed her personality for her *likelihood* of blaming herself in general: "*Most of the time. Because I'm a perfectionist. So, if things went wrong, I would blame myself continuously*" (03).

Item 4, I have been anxious or worried for no good reason

Computational / performing. Item 4 asked participants to recall the frequency of feeling anxious or worried *for no good reason* in the past seven days. However, during the performing stage, some participants recalled their experience of feeling anxious *with reason*. One participant said, "*Sometimes I would – because now my coursework is getting heavier, and I also need to*

take care of my baby, so sometimes I would be anxious" (05). Another participant attributed her personality for her likelihood of being anxious or worried: "*Always like this, because I'm the kind of person thinks too much. When I encounter something, I would constantly think about it… then I would always be anxious...*" (07).

Item 5, I have felt scared or panicky for no very good reason

Computational / performing. Item 5 asked participants to recall how often they felt scared or panicky for *no very good reason* in the past seven days. However, some participants recalled their experience of feeling scared or panicky *with reason*. One participant said, "*Sometimes I would, because sometimes when I hear some negative news, this more or less influences my mood*" (01).

Item 6, Things have been getting on top of me

Logical / Performing. When back translating the Chinese version of item 6 into English, it became "when many things are coming towards me, I feel overwhelmed." The implicit "if…then…" logic created false a presupposition for some participants. One participant said, "*... it depends on what kind of things… for example, if these are things that I care a lot about, when they happen and I cannot find a way to solve them, I would feel suffocated. I would not be able to cope as well as usual*" (03). For this participant, not all things would make her feel overwhelmed; two additional conditions were required – that things mattered to her, and a lack of resolution.

Item 7, I have been so unhappy that I have had difficulty sleeping

Computational / performing. Some participants only focused on the second part of item 7, "I have had difficulty sleeping," without considering "I have been so unhappy", during the

performing stage. One participant said, "*Sometimes I have a lot of homework so [I cannot sleep] … and another reason is that last night I might have slept too much*" (01).

Inclusion / exclusion and formatting. Some participants had difficulty categorizing their recalled experience according to the available response options. One participant said, "*Sometimes I would have difficulty sleeping, but the reasons might be… not because I'm unhappy… so I choose the third, not very often like this?*" (12)

Item 8, I have felt sad or miserable

Inclusion/exclusion and performing. Some participants associated item 8 with item 4 or item 5, where a feeling occurred *with no reason*. During the performing stage, they were unsure whether their recalled experience should be included in the response. One participant said, "*I think you need a reason to feel sad or miserable. If you are asking me whether I felt sad or miserable with some reasons, then I have felt this way in the past seven days. So, I would say this is not very often*" (02).

Item 9, I have been so unhappy that I have been crying

Computational / understanding. Similar to the above issue, some participants associated item 9 with items 4 or 5 and became uncertain about its intended meaning. One asked, "W*hat does this question mean? So, I would cry with no particular reason or I cry because I'm not happy for something? Or I cry more often than before*?" (01).

Computational / performing. Item 9 asked participants to recall the *frequency* of crying due to being unhappy in the past seven days. Participants instead recalled the *likelihood* of crying because they were unhappy in general. For example, one participant said, "*most of the time it's like this, when I'm not happy I would cry because it feels miserable to suppress it, I would cry out loud."* (03)

Temporal / performing. Some participants recalled their experience within a wider time frame than the past seven days. An example was the following conversation between a participant and the interviewer: "*I was like this [so unhappy that I have been crying] right after giving birth,"* (11); *"In the past 7 days*?" (interviewer); "*In the past seven days I was not like this*" (11).

Item 10, The thought of harming myself has occurred to me

Temporal / understanding. Similarly, some participants recalled their experience regarding item 10 within a wider time frame than the past seven days. For example, "*Is this asking in the past 3 weeks?"* (05); "*Past 7 days"* (interviewer); "*Then not really*" (05).

Temporal / Performing. Participants also had temporal problems during the performing stage. For example, "*I have [thought] about this [harming myself]… but I thought about how painful it was to give birth, [compared with that] I can deal with whatever I'm dealing with now*" (07); "*Did you still have any thoughts of harming yourself in the past 7 days*?" (Interviewer); "*Not in the past 7 days, it was around the tenth day after giving birth*" (07).

Debriefing Comments

When asked "What does postpartum depression look like for you?", many participants described a fluctuation in their mood that was not mentioned in the EPDS. As one participant said, "*First, your mood is not stable, it goes up and down, you are easily irritated and sad" (09).* A sense of helplessness was mentioned by many participants but not reflected in the EPDS. An example comment here was "*as if my whole person has become 'hollowed,' I want to climb out, but I could not… it was so depressing, I had just always felt that no one can help me*" (03).

Participants suggested that the EPDS could be more relatable and specific by including behaviors that reflected their postpartum experiences. One participant commented,

"*Maybe the EPDS is more of a standardized questionnaire [for depression] …but maybe it is not [specific] enough for mothers, because mothers have specific predictable behaviors for PPD, such as 'when the baby is crying, have you ignored your baby? Or have you left your baby alone?'*" (08).

Another participant said,

"M*aybe you should consider adding this – you are always crying over tiny little things. This is the most direct sign for me. Blaming myself is more of a psychological activity, some people may not even notice it. But crying is something everyone would notice*." (06)

When asked "What do you think about postpartum depression screening?", participants' attitudes and perceptions varied. Some endorsed the value of PPD screening. One respondent stated:

"*I think it is very necessary, because most of the time you may not even notice you have PPD or even if you notice it you wouldn't schedule an appointment to check it out, not mentioning booking an appointment with a psychiatrist straightaway… maybe only through this [regular screening] it would be easier [to get help]*." (12)

However, some resisted screening because it evoked negative emotions. Such resistance threatened the reliability of the screening result. For example, one participant said,

"*I was already miserable – I would not want to make myself more miserable… when you see the word 'depression' or other 'grey' words, you would shed tears… as if when you click on the link [for PPD screening], you are already diagnosed with PPD. When you feel resistant, you would not fill it out truthfully*" (07).

In addition, some participants commented on how a language barrier could contribute to resistance against screening. The presence of a translator was perceived as an intrusion into

privacy that would hinder the disclosure of an already painful experience. One participant commented,

"[*Doing the screening] might concern my privacy, because there are not only your family members, but also the translator in addition to doctors and nurses… it's not easy to talk about this private matter in front of strangers… there are things that I don't want to talk about in public because these are painful experiences for me*" (12).

DISCUSSION

We used CI to evaluate the performance of the EPDS with an example immigrant group, Chinese immigrant mothers. Specifically, we assessed whether they understand and respond to the EPDS in the way intended by researchers. We also explored whether their experiences were reflected by the scale. Similar to studies done with English-speaking, non-immigrant populations (Godderis et al., 2009; Shakespeare et al., 2003), we found overall the EPDS to be acceptable and straightforward PPD screening tool for women in our sample. However, they may not interpret or respond to the scale as intended nor in a consistent way. Both groups had difficulty understanding or had inconsistent interpretations of "necessarily" in item 3 and "with no good reasons" in item 4. They also attributed reasons other than "unhappy" for difficulty sleeping in item 7. In addition, both groups discussed the stigma of PPD and its influence on responding to the scale honestly.

Different from prior studies, we found that Chinese immigrant mothers' PPD experiences may not be well reflected by the EPDS. Specifically, the scale does not have items that measure emotional fluctuation and helplessness, which were repeatedly mentioned by our participants. This finding is consistent with literature about immigrant (Playfair, Salami, & Hegadoren, 2017) and non-immigrant populations (Beck, 2013). Small, Lumley, Yelland, and Brown (2007) found

that although the EPDS was understood and completed similarly by both English and non-English-speaking populations in Australia, the scale lacks items on specific symptom expression among ethnic groups. Beck (2013) reported that the EPDS did not capture the cognitive impairment, loss of self, feelings of guilt and blame, and eating disturbances identified in her qualitative studies (Beck, 1992, 1993) with English-speaking mothers in the US.

Using a transparent, systematic coding scheme and process, we had a more in-depth understanding of problems identified in the EPDS than prior studies (Godderis et al., 2009; Shakespeare et al., 2003). Issues in the EPDS occurred most often during the performing stage in our study. This might be explained by items format, where statements are made about psychological states and their behavioral manifestation, rather than direct questions. The CI revealed that this format required participants to first make sense of what the implicit question was for each item, then form their answer to that question. Hence, even if participants understood the meaning of the statement, the implicit question they construed could mismatch what the scale intends to measure. An example is rating the *likelihood* of occurrence in general (items 3, 4, 5) rather than the *frequency* of occurrence in the past seven days.

Issues identified in the EPDS were mostly computational. Computational is a residual category that mostly related to language processing, memory issues, and mental arithmetic (Conrad & Blair, 1996). This might be explained by a shortcoming in the EPDS design. The EPDS provides an instruction at the beginning of the scale, “Please check the answer that comes closest to how you felt in the past seven days.”. Our findings indicate that although respondents understood the item and instruction, they could not always retain and follow the instruction throughout the scale, including recalling their experiences within the past seven days. This may

also explain our observation that participants had more temporal problems (e.g., recalling experience within a wider time frame) towards the end of the scale than initially.

Finally, our participants' comments during the debriefing raise a concern about health literacy. The women indicated that the requirements for completing the EPDS included (a) *noticing* their psychological or emotional state; and (b) *ascribing* their behavioral changes to the mentioned psychological state (e.g., "always crying over tiny little things"). This suggests that some mental health literacy is required to fill out the scale accurately. Tobin et al. (2015) had similar concerns that immigrant women with little knowledge of PPD may have difficulty using this tool. As suggested by our participants, health providers could ask symptom-specific behavioral questions that are more noticeable by Chinese immigrant mothers.

Limitations. Our study had several limitations. First, participants had relatively high levels of education and had lived in the US for more than a year. Thus, they may be more acculturated and might have higher health literacy or be more familiar with screening tools than people who have less education or immigrated more recently. Second, some participants (n=3) did not follow the think-aloud procedure throughout the CI. Pan, Landreth, Park, Hinsdale-Shouse, and Schoua-Glusberg (2010) found the think-aloud process might be unnatural for Asian population. However, by using vignettes to practice before the interviews and by the interviewer giving many prompts during interviews – such as "please say out loud what you're thinking", we found that most participants understood and successfully performed the think-aloud. Finally, although we only focused on Chinese immigrant mothers and recognized that our findings cannot generalize to all immigrant mothers, their experience being mothers in a new place and the influence of isolation on depression are alike (Tobin, Di Napoli, & Beck, 2017; Wittkowski, Patel, & Fox, 2017).

Implications

Our study shows the importance of using a qualitative approach such as the CI to conduct ongoing clinical instrument evaluation. It is particularly useful for revealing problems with existing screening tool such as the EPDS that are unique to respondents with new sociocultural background (Barroso & Sandelowski, 2001). The CI can be used complementary to quantitative psychometric testing, especially for recommended clinical tools used for diverse populations (Reeve et al., 2011). To ensure quality and accuracy. a mixed-method approach can be valuable for future studies on clinical instrument testing to identify different sources of measurement errors. This study can be used as a case example for future studies to use CI to evaluate performance of psychiatric and mental health screening tools or other health-related instruments from the perspective of potential respondents, reflecting patient-centered care.

Nurses and other health providers should not simply rely on the EPDS score to evaluate PPD or other mental health concerns among immigrant mothers. Instead, screening scores must be interpreted within the clinical and sociocultural context or be used as a guide for discussing mothers' mental health concerns (Godderis et al., 2009). To ensure screening accuracy, nurses should provide adequate explanation on how to use the scale, and clarification on the meaning of each item, at the beginning of screening. They must also be available during and after the screening for potential concerns or questions. Nurses must use their clinical judgment (Tanner, 2006) to notice potential signs of distress in immigrant mothers and respond in a timely and culturally appropriate manner. Given that immigrant populations may have limited mental-health literacy, nurses can also use screening as a window of opportunity to educate mothers about effective noticing and responding.

CONFLICT OF INTEREST

There is no conflict of interest or, alternatively, disclosing any conflict of interest that may exist.

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Table 1. Characteristics of cognitive interview participants who were Chinese immigrant women

ID	Number & sex of child(ren)	Highest level of education	Current employment status	Length of stay	Residency status	Self-rated English proficiency
#01	1 boy	Master	Student	Over 3 years	Student visa	Average
#02	1 girl	PhD	Full time	Over 3 years	Student visa	Average
#03	2 girls	Junior College	Homemaker/part time	1-3 years	Spouse visa	Not well
#04	1 girl	College	Homemaker	Over 3 years	Permanent Resident	Not well
#05	1 girl	High school	Homemaker	Over 3 years	Spouse visa	Not well
#06	1 boy	PhD	Homemaker	1-3 years	Spouse visa	Average
#07	1 boy	Master	Homemaker	Over 3 years	Spouse visa	Not well
#08	1 boy	Master	Homemaker	Over 3 years	Permanent Resident	Average
#09	1 boy	Master	Homemaker	Over 3 years	Spouse visa	Average
#10	1 girl	Master	Homemaker	Over 3 years	Permanent Resident	Average
#11	1 girl	PhD	Homemaker/part time	1-3 years	Spouse visa	Not well
#12	1 boy	College	Homemaker	1-3 years	Spouse visa	Average

Table 2. Description of response stages and problem types in coding scheme (Conrad & Blair, 1996) used in data analysis

Response stages	Description
Understanding	Understanding what information is being requested (a literal interpretation of the question) Recognizing an unstated directive about how that information is to be provided (what procedure the respondent is to use in order to understand the question) Note: response options are considered as part of the question
Performing	Mental operation used to produce the "raw data" on which the response is ultimately based. Kinds of process required to answer most questions are: retrieval, comparison, deduction, mental arithmetic and evaluation among others (or combination of various process)
Response formatting	Producing an acceptable response
Problem types	**Description**
Lexical	Not knowing the meanings of words or how to use them
Inclusion/exclusion	Also involves word meanings but the problem lies in determining whether certain concepts are to be considered within the scope of a word in the question
Temporal	Involves the time period to which the question applies, or the amount of time spent on an activity described in the question.
Logical	Involves the "devices" (and/or/negation/complementarity) used to connect concepts False presuppositions Contradictions and tautologies
Computational	Residual category (e.g., memory issues, language processing and mental arithmetic)

Table 3. Matrix of response problem by response stage and problem type developed by Conrad and Blair (1996), with examples

	Response Stages		
Problem Types	**Understanding**	**Performing**	**Formatting**
Lexical	Lexical/Understanding Not knowing what is meant by a word like "nitrogen" or "spatial" in "spatial abilities;" Being unfamiliar with idioms like "the lion's share;" and Despite being familiar with the meanings of a pair of words not understanding their combination in the question, such as "medical purchases."	Lexical/Performing Understands what task is being asked to perform (e.g., counting rooms in a house) but has trouble using the words (e.g., unsure whether living/dining area count as one or two rooms) in the question to perform the task.	Lexical/Formatting Respondent cannot easily or correctly assign the information produced in the primary task (e.g., numerical quantity like 10 kg) to an explicit response category (e.g., qualitative response option like "light") because it is not clear how the meanings of the "raw" response and the category label interrelate.
Inclusion/ exclusion	Inclusion/exclusion/Understanding E.g., When the respondent is asked a question about "doctors" and interprets this as including chiropractors when the author intended "doctors" to include only physicians.	Inclusion/exclusion/Performing When there is no explicit decision rule for including or excluding instances (e.g., less typical religious group like Branch Davidians) from a category (e.g., religious group) and the respondent is required to make this decision as part of the task.	Inclusion/exclusion/Formatting When problem involves using a response option that was not explicitly provided such as "7.5" when the points provided on the response scale are whole numbers.
Temporal	Temporal/Understanding E.g., respondent interprets the phrase "in the last year" to mean "in the previous calendar year" instead of "in the last 12 months" as was intended.	Temporal/Performing E.g., respondent understand the phrase "current month" but assigns "the current month" to a different reference (included counting previous month) because the survey was done at the beginning of a month and the participant forget that a new month has started.	Temporal/Formatting Problems involve a response produced in the primary task (e.g. a precise count in response to a question about frequency for some activity during a specific time period) that is somehow incompatible with the available response options (e.g., "not very often," "occasionally," etc.).

Logical	Logical/Understanding Problems involve interpreting devices used to connect concepts (e.g., "or" interpreted as "and or both").	Logical/Performing Problems involve troubles performing the task related to false presupposition. E.g., question asks "How many times a month do you visit a doctor?" The respondent has trouble performing the task because the respondent is healthy. For this person the presupposition that respondent visit doctor more than once a month is false	Logical/Formatting Problems involve contradiction and tautologies in the response produced in the primary task (e.g., recalled and counted all freak accidents experience) and the response options (e.g., "often," "rarely"). Problems also involve contradiction or tautology in information exchanged in different questions or sections of the interview.
Computational	Computational/Understanding A question whose syntax is particularly complicated (e.g., sentence with many embedded clauses) that the respondent cannot understand.	Computational/Performing When the task involves recalling relatively detailed episodes from autobiographical memory, particularly over a long period of time, the respondent may be unable to comply with the instructions.	Computational/Formatting Problems involve difficult mental arithmetic (e.g., questions required converting a count of some kind -- yielded by the primary task -- into a percentage because the response categories are percentages)

Figure 1. Identified problematic items of EPDS, in coding scheme

	Response stage		
Problem type	Understanding	Performing	Response formatting
Lexical	Q3		
Inclusion/exclusion		Q8	Q7
Temporal	Q10	Q9, 10	
Logical		Q6	
Computational	Q9	Q3, 4, 5, 7, 9	

Figure 2. Quantification of identified categories of problems in EPDS, visualized by a heat map

	Response stage		
Problem type	Understanding	Performing	Response formatting
Lexical	1	0	0
Inclusion/exclusion	0	1	1
Temporal	1	2	0
Logical	0	1	0
Computational	1	5	0

Chapter 4: “Everything is Greyscaled”: Immigrant Mothers’ Experiences of Postpartum Distress

"Everything is Greyscaled": Immigrant Mothers' Experiences of Postpartum Distress

INTRODUCTION

Postpartum depression (PPD) is a mood disorder that affects mothers across socio-cultural and economic backgrounds (NIMH, 2017). PPD can have serious detrimental effects on mothers, their infants, and families ("Screening for Perinatal Depression - ACOG," 2017). Although PPD is a transcultural phenomenon, it is twice as prevalent among immigrant mothers as native mothers in any receiving country (Falah-Hassani, Shiri, Vigod, & Dennis, 2015; Tatano Beck, Gable, Sakala, & Declercq, 2011). Immigrant mothers are more vulnerable to PPD due to many sociocultural conditions such as language barriers, lack of knowledge about the local healthcare system, discrimination, and a lack of support networks lost due to immigration (Zhang, Smith, Swisher, Fu, & Fogarty, 2011). Consequently, immigrant mothers and their families are at a particularly high risk for experiencing the negative impacts of PPD.

As one immigrant group, Chinese immigrants comprise the third largest immigrant group in the U.S. (Migration Policy Institute, 2017). Prior to immigration, 6.7%-13.5% of mothers in China experience PPD, depending on the region, scales, and cut-off scores used in the studies (Lee, Yip, Chiu, Leung, & Chung, 2001; Liu et al., 2017). After immigration, Chinese immigrant mothers have a PPD rate as high as 24.4% (Dennis, Brown, et al., 2017), as compared to 10% among native born mothers in the U.S. (Ko, Farr, Dietz, & Robbins, 2012) and 7.9% in Canada (Public Health Agency of Canada, 2018). Chinese immigrant mothers, representing one immigrant group, are disproportionately affected by PPD compared to native born mothers. To address this health disparity and develop effective interventions, it is imperative to first gain an in-depth understanding of how immigrant mothers experience and respond to PPD, starting with one exemplar, Chinese immigrant mothers.

Further, there is little research on immigrant mothers' PPD experiences and none have reported on their response processes. Most reported research used an epidemiological approach, focusing on prevalence, risk factors, correlates, and predictors of PPD (for examples, Dennis, Merry, Gagnon, & Gagnon, 2017; Doe et al., 2017); and comparisons of symptoms between immigrant and native mothers

(for examples, Choi, Lee, Choi, & Choi, 2011; Dennis, Merry, Stewart, & Gagnon, 2016). Despite providing valuable information, these studies have not provided insight into how immigrant mothers encounter and respond to PPD within their sociocultural context. By understanding the perspectives of Chinese immigrant mothers with PPD, researchers can gain insight into the sociocultural conditions that influence their PPD experience and response processes that have not previously been studied.

A substantive PPD theory, "teetering on the edge (Beck, 1993)," was developed to describe how women cope with PPD. Beck (1993) found the loss of control as the central social psychological problem. She also outlined how women with PPD cope with this problem through a four-stage process of 'teetering on the edge', that is, encountering terror, dying of self, struggling to survive, and regaining control. Although the theory has been modified twice to include PPD experiences in different cultures (Beck, 2007; Beck, 2012), it has failed to account for PPD experiences determined by Chinese culture, such as a dissonance between tradition and modernity (L. L. Gao, S. W. Chan, L. You, & X. Li, 2010). In addition, the theory was developed with White, middle class, U.S. citizen mothers attending a PPD support group in the 1990s, whose sociocultural and historical context is significantly different from that of Chinese immigrant mothers in 2010s. Thus, whether Beck's theory can capture Chinese immigrant mothers' PPD experience and response processes requires further investigation.

To this end, the purposes of this study were to (a) describe Chinese immigrant mothers' PPD experience and their social psychological processes in response to PPD; and (b) to examine whether and how the existing "teetering on the edge" theory of PPD fits the experience of Chinese immigrant mothers.

METHODS

This dissertation study used mixed method, including survey methodologies, such as cognitive interviewing (Hak, Van der Veer, & Jansen, 2008; Willis, 2004) for phase II, and grounded theory (Bowers, 1990; Strauss & Corbin, 1998) for phase IV. Upon obtaining approval from the institutional review boards, participants were recruited from a Midwestern town. Participants from both phase II and IV were included in the grounded theory analysis. Thirteen participants were recruited from phase IV.

Nine participants were recruited during phase II and were recruited during axial coding in phase IV. Phase I-III are outlined in the previous paper. This chapter outlines phase IV which used grounded theory.

Grounded theory is a qualitative methodology that investigates social phenomena from the perspective of symbolic interactionism, to generate theory derived from empirical data (Glaser & Strauss, 1967). It focuses on social processes (Blumer, 1969) and the relationships among conditions, perceptions, and strategies or social actions (Bowers, 1990; Corbin & Strauss, 2008). Process is described by grounded theorists as "a series of evolving sequences of action/interaction that occur over time and space, changing or sometimes remaining the same in response to the situation or context (Strauss & Corbin, 1998, p. 165)." Process in this case explicates immigrant mothers experiencing and resolving distress.

Phase IV used both purposive and theoretical sampling (Strauss & Corbin, 1998). Purposive sampling was used for initial recruitment to select individuals who have experienced the phenomenon of interest. Participants were included in phase IV if: (1) They were foreign born Chinese; born in Mainland China, Taiwan, Hong Kong, or Macau. (2) They had a history of pregnancy resulting in a live birth(s) in the preceding three years[2]. (3) They had lived in the U.S. for less than 10 years[3]. (4) They answered "yes" to the statement "I have felt down or up & down or hopeless since giving birth (e.g. cried a lot or cried with no reasons or very irritable)." This statement was informed by the results of phase III.

Analysis from one of the open ended survey questions used during phase III "what does postpartum depression look like for you" informed the shift in eligibility criteria for phase IV from women diagnosed with PPD to women who had experienced distress following childbirth (see **Appendix 5**). Of the 134 survey respondents participating during phase III, 50 responded to this inquiry. This shift

[2] Three years was chosen as a cut-off point because longitudinal studies have shown that mothers can accurately recall their experience of postpartum depression for up to three years (Cox, Rooney, Thomas, & Wrate, 1984).

[3] Immigrants' length of stay in a hosting society has been commonly used as a direct or proxy measure for acculturation (Park, Neckerman, Quinn, Weiss, & Rundle, 2008). Yet no specific cut-off point, that is, number of years residing in a hosting society, has been documented in the literature as reliably indicative of acculturation level. 10 years was chosen for practical reasons, in that having a wider time span could potentially provide more eligible Chinese immigrant mothers to participate in this study and it is consistent with previously reported research (for example, O'Mahony, Donnelly, Raffin Bouchal, & Este, 2013).

allowed the potential participants in phase IV to define their experiences of distress (objects) in their own words (Bowers, 1990) regardless of diagnosis. The Edinburgh Postnatal Depression Scale was *not* used for the purpose of screening for eligibility. Because those who experience psychological distress but may not meet the criteria determined by the scale, or who were no longer clinically depressed, would be screened out.

Study Participants

Twenty two Chinese immigrant mothers who reported having experienced some emotional changes during their postpartum period were included for the grounded theory analysis in phase IV. Glaser and Strauss (1967) called two different sources of data (such as survey and field data) as "two slices of data" that analysts should be used to engage in comparative analysis integrate theoretically (pp. 68-69). Strauss (1987) said, "While some materials (data) may be generated by the researcher – as through interviews, field observations, or videotapes –a great deal of it already exists… and can be used by an informed researcher…(p3)" Of the total 22 participants, 13 were interviewed during phase IV and nine during phase II (as shown in **Figure 1** in Introduction**)**. Some characteristics of the participants were shown in **Table 1**. Participants were aged 25-44, had 1-3 children, with a relatively high level of education. All participants had been living in the U.S. for at least one year and had at least some English proficiency. Most participants had no specific religious affiliation, with a few were Christian or Buddhist.

Data Collection

For the nine cognitive interviews included from phase II, I conducted one interview per person with 12 Chinese immigrant mothers to gather their feedback on the survey design and content. In addition, I have asked these participants questions such as, "Can you describe your emotional experiences after giving birth? What made you feel this way? What have been helpful for you when you were feeling…?" These questions were also consistent with phase IV, grounded theory. Of the 12 interviewed in phase II, nine were included for analysis in phase IV. These interviews were selected (during axial and selective coding) for their richness in data that increased variability and contributed to the development of

emerging category and conceptual model generated in phase IV. A more detailed data collection process for phase II is described in Chapter 2 (Yu, Lauver, Wang, & Li, 2019).

For the thirteen interviews conducted in phase IV, I conducted one to two interviews per participant, from November 2018 to July 2019, six of whom were interviewed twice. The purpose of second interviews was to increase depth in the conceptual model by asking follow-up questions. Ten were face-to-face interviews at places that were private and quiet of participants' choosing, such as their homes, classroom or feeding room in a community center, or interview room at the School of Nursing. Two interviews were conducted via phone and the last one via online messaging application. All interviews were audio recorded and transcribed verbatim except for the last one which was already in text format. The average length of the interviews was 67 minutes. All transcripts were in Chinese and were translated by professional translators and reviewed by me. Characteristics of the participants were collected in the end of each interview.

In phase IV, the first interview question was "What was your experience after giving birth," purposely kept general and non-directive, allowing participants to identify what was important to them. Topics generated from the first interview included recovering physical self, recovering from postpartum depression, living as an immigrant mother, managing relationships with husband and mother in law (see **Appendix 4**. Assessment of the first three interviews). These unstructured and non-directive interviews were conducted with the first few participants. Later interviews became more focused in response to the evolving conceptual model and were driven by theoretical sampling (see **Appendix. 1** Question progression; Strauss & Corbin, 1998).

Theoretical sampling, a distinct feature of grounded theory, involves "data gathering driven by concepts derived from the evolving theory, rather than persons per se (Strauss & Corbin, 1998)." The purpose of theoretical sampling is to determine how categories vary by dimensions and conditions (Strauss & Corbin, 1998, pp. 201-202). Additional participants were recruited for their ability to contribute to the development of emerging categories and the conceptual model that describes the social process of how Chinese immigrant mothers experienced and resolved postpartum distress. Topics

discussed during the subsequent interviews included: making sense of losses, responding to losses, strategies used to recover the losses, guarded vs interrupted parenting, and cultural marginality. These topics then guided the changes in interview questions with subsequent interviews (examples see **Appendix 1**. Question progression).

With one to two unstructured, non-directive interviews per person, this grounded theory study reached saturation on its conceptual model with 22 participants, which was consistent with the literature (Morse, 2000). By saturation, I did not discover new dimensions of the major categories and relationships among the core categories and other categories (Bowers, 1990, p. 48). In other words, the core categories have well developed dimensions, and the relationships among the categories are well established and validated.

Data Analysis

In line with grounded theory (Strauss & Corbin, 1998), data analysis started immediately after the first interview from phase IV and went back to earlier interviews to do comparative analysis. To clarify, data analysis started with interviews conducted in phase IV because these interviews started with questions that were more open and less directive than those in phase II. To avoid premature closure on the categories and the conceptual model, interviews from phase II were not analyzed and integrated until axial coding. The research team (Dr. Bowers and I) had regular weekly meeting to analyze data. In addition, the research group, including four doctoral nursing students (three PhD and one DNP student) who were familiar with the grounded theory method, also met weekly to discuss data analysis. I used ATLAS.ti, a qualitative data analysis software to manage data.

Initially the study only focused on participants' experiences of postpartum depression. However, as the study progressed, I shifted to experiences of psychological distress for three reasons. First, my participants were a non-clinical group, and most were not clinically diagnosed with PPD by the time of interview. It was impossible to diagnose them retrospectively. Second, psychological distress (Ridner, 2004) was readily identifiable through participants' words in the transcripts and was more meaningful to participants than a clinical diagnosis. It is also clinically meaningful to understand how psychological

distress looks like in this group and the strategies they used; which are effective, and which are not; and what are sources or presumed sources of distress, how does attributing source influence strategy. Knowing these, nurses may recognize the signs of distress amongst this group and take it as a window of opportunity to intervene in a culturally tailored way. Third, focusing on distress aligned with participant' experience and enabled exploration of wider spectrum of social-psychological experiences during the postpartum period. And this allowed comparative analysis amongst participants who experienced different level of distress, from minimal to severe. So that dimensions and conditions for experiencing and resolving distress could be discovered (see **Appendix 2**. Memo on psychological distress-shift in study focus).

The initial interview questions were intentionally open and focused on the broad experiences of becoming a mother in a foreign country. However, ongoing analysis generated new interview questions that became increasingly focused to build depth and complexity, thereby developing the conceptual model (Bowers, 1990; Corbin & Strauss, 2008). For this, I used newly developed interview questions with subsequent participants or in follow-up interviews with previous participants. The following example illustrates how I followed up with the first participant on changing self. The participant said, "And another thing is that [I] want to change myself. Of course, now if I'm not happy about anything I would say it, I would not hold it back. I have already suffered enough losses." Following participant's direction, I asked subsequent questions to gain in-depth understanding on the dimensions of changing self, the conditions for wanting to change, and strategies used for change:

> When you say you want to change yourself, what would you like to change? And When did this thought occur? How do you plan to make the change?

After analysis of the first three interviews, with a focus on psychological distress, I discovered losing and reviving psychological self as dimensions of changing self. The subsequent interviews focused on the processes within losing and regaining psychological self. In addition, the following interviews explored dimensions of self and loss as well as their relationship with experiencing and resolving distress.

Following Strauss and Corbin (1998)'s data analysis procedures, open coding was conducted using line-by-line analysis from the first interview conducted in phase IV. And the analysis was immediately put into memos. In open coding, data were broken down into discrete parts, closely examined, and compared for similarities and differences; and then given a name that represented events, happenings, actions or interactions (Strauss & Corbin, 1998). The names or codes come from either the analyst or the participants—in vivo codes (Glaser & Strauss, 1967; Strauss & Corbin, 1998). Then, when concepts started to accumulate, I began to categorize them under more abstract explanatory terms, or categories (Strauss & Corbin, 1998). To stay close to the data and preserve the fluidity of participants' experiences, I tried to code with mostly gerunds and initially in vivo codes in line-by-line analysis (Charmaz, 2014, p. 121). For example, a participant shared:

> "But because my behavior [controlling diet] might affect the amount of break milk I produced, so I started eating a lot again, and my physique worsened. I wanted to be a breastfeeding mother as well as a hot momma. But I couldn't do it, so I felt like a failure."

I coded this segment as (a) competing selves, (b) prioritizing self as a mother, (c) paused recovery, (d) spiraling loss of acceptable appearance, and (e) losing self-esteem. In addition, to "remain open to what informants had to say and prevent labeling concepts early in analysis" (Bowers & Schatzman, 2016), I started dimensionalizing the data immediately. For instance, a participant shared,

> "I feel that I was not like this before. Why I have become so sloppy after giving birth. I felt that everything could not be like what it was before. This kind of feeling lasted for a long time,"

Dimensions identified including time/temporal dimension (past, present, and future), reversibility (recoverable vs irreversible), and longevity (short lived vs long lasting).

Constant comparison is one of the most important analytic tools and a hallmark in grounded theory. It is essential for identifying categories, preventing preconceived ideas to substitute for empirical data, and overcoming analytic blocks (Strauss & Corbin, 1998). I compared categories found in data along their dimensions using several techniques. These include the flip-flop technique (i.e., looking at the opposite or extreme), systematic comparison (i.e., comparing to recalled experience or literature), and

waving the red flag (i.e., paying attention to terms such as “always,” “never,” “everyone”) (Strauss & Corbin, 1998).

Examples (see **Appendix 2** Memos) of comparative analysis in this study include (a) comparing a person in distress to a ship in distress (a far-out comparison), (b) comparing reaching a “critical point” for PPD to reaching a critical point in thermodynamics (a far-out comparison) or to “teetering on the edge,” an existing theory on PPD (literature), (c) comparing participants experiences of loss with my own experiences of loss (recalled experience), and (d) comparing participants’ experiences of “feeling trapped” with a novel on lived experiences of suffering from “locked-in” syndrome (literature). Note that the actual concepts and dimensions emerged from data of this study. These comparative analyses were helpful for sensitizing the analyst to identify dimensions and conditions, which could generate useful concepts (Strauss & Corbin, 1998).

Following open coding, I conducted axial coding, which is “a process of reassembling data that were fractured during open coding (Strauss & Corbin, 1998).” In axial coding, categories (e.g., comparing) are related to subcategories (e.g., when did the participants compare, for what purpose, how do they compare, and what are the consequences). Axial coding uncovered the relationships among categories and related structures or conditions (i.e. the why) to process (i.e. the how) (Strauss & Corbin, 1998). For example, participants used “comparing” as one of their strategies for making sense of losses, by enlisting multiple points of references, with consequences of a match or mismatch on feelings or perceptions. Then, I returned to phase II interviews to add depth to the coding in phase IV.

Finally, selective coding was used to integrate and refine the conceptual model. I identified the core category that explains “what this research is all about (Strauss & Corbin, 1998).” The core category was selected because it was central, related to all other major categories, and appeared frequently in the data (Strauss & Corbin, 1998, p. 147). Memo-writing is a critical intermediate step between data collection and writing papers (Charmaz, 2006). I used memos as an ongoing record to document category and its analytical properties, as conjectures to check in following interviews, gaps in analysis, etc.

(Charmaz, 2006). I continued with the data collection-analysis-memoing triad until reaching saturation on the major categories (Bowers, 1990).

Rigor

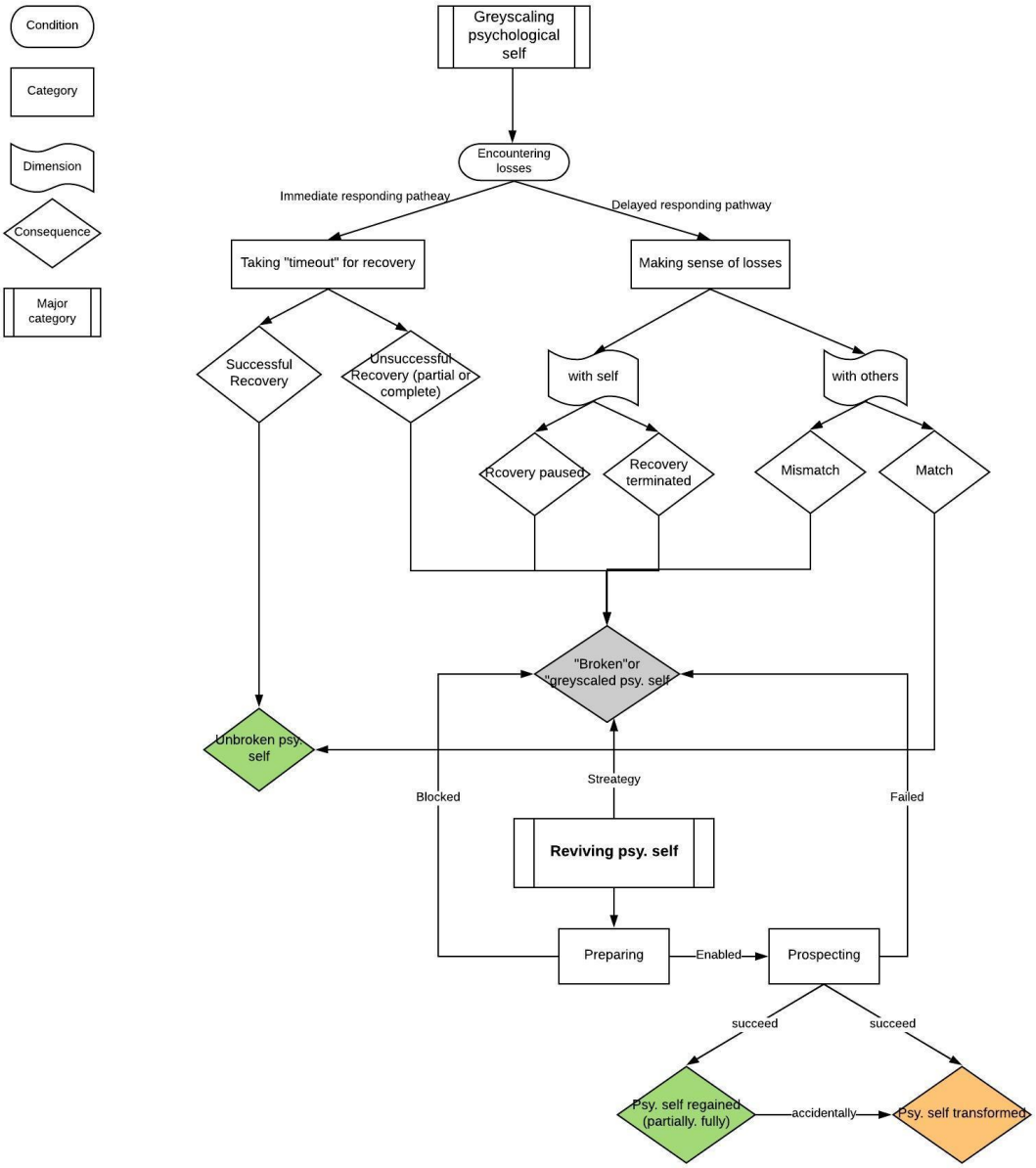
To ensure rigor and trustworthiness of the findings, strategies including bracketing, using a research team, memo writing, and member checking have been used. Given that I shared a similar cultural background with the participants, one risk could be that I would draw premature conclusions based on their own beliefs instead of analyzing data more objectively. Thus, to maintain researcher's marginal status (Bowers, 1990, p. 45), I used *bracketing*. This means to identify and document preconceived assumptions, beliefs or opinions about PPD among Chinese immigrant mothers (Polit & Beck, 2017). In addition, *a research team*, as aforementioned was used to analyze all data. Throughout data analysis, I also use *memo-writing* to increase replicability of the findings (Sandelowski, 1986, 1993). In results and future publications, I will use participants' direct quotes to represent their experiences (Sandelowski, 1993). Later in the process, *member-checking* was used to seek confirmation from study participants about the study finding; and to gather materials to elaborate existing categories (Charmaz, 2006). To conduct member-checking, I explained major categories to certain study participants and inquire whether and how categories align with their experience. When the categories aligned poorly with participants' experience, I discussed with participants to find new categories or dimensions of a category (Charmaz, 2006).

RESULTS

During the simultaneous transitioning from women to mothers and from native to foreign, participants encountered many losses that were important to them. In this context, participants experienced a spectrum of psychological distress and used a variety of strategies in response to such distress. The core category described here as "crafting a new self," encompasses two main subcategories "greyscaling psychological-self" and "reviving psychological-self" (see **Figure 1**). "Crafting" reflected participants' active engagement in these processes. Greyscaling psychological self describes the processes

of experiencing distress in response to the losses. Reviving psychological self refers to the processes of resolving distress and regaining and/or transforming psychological self.

Figure 1. Conceptual model of crafting new self.



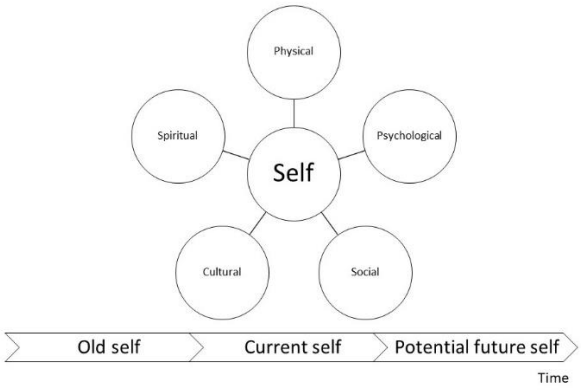
To set the scene for reporting the conceptual model developed in this study, I will first describe the concepts generated from the study as well as their dimensions that were significant to experiencing and responding to distress. Then I will describe the categories (processes) and subcategories (subprocesses) of greyscaling and reviving psychological self.

Concepts

Selves

Consistent with symbolic interactionism, participants described multiple selves that evolved across time (see **Figure 2**) following their child's birth. Selves that were significant to participants' experiences of distress included psychological-self, physical-self, social-self, cultural-self, and spiritual-self. These selves often influenced one another and existed on the temporal dimensions of the current self, i.e., who "I" am now; the old self, i.e., who "I" was prior to childbirth or immigration; and the potential future self, i.e., who "I" envision myself to be in the future. The old self often became a reference point for making sense of their current and potential future self. This example demonstrates the interaction of the different selves, a participant compared her current physical self (e.g., appearance) with that prior to childbirth and linked it with psychological self and potential future self, "I felt that I was not at all presentable, felt that my body was not in a good shape, not attractive at all. I don't feel well mentally. I feel that I was not like this before. Why I have become so sloppy after giving birth. I felt that everything could not be like what it was before." (01).

Figure 2. Dimensions of self, evolved across time



Psychological-self refers to participants' present, past, and future feelings and perceptions of themselves. Subdimensions of psychological-self included *confidence* (e.g., "After giving birth, I didn't regain my physical shape…When I saw how I was, I felt very unhappy and lost self-confidence." (06));

emotional variability (e.g., "…I was crying every day. Sometimes I couldn't control it, and I didn't know why I'd suddenly feel very sad." (04)); *hope*, for example, "I feel that this kind of life…seems like my past happy life will never return, (this kind of life) will never end… you would think that nothing will pass (02); "My body and mind were so exhausted, I felt very hopeless." (19)); *self-esteem* (e.g., "I did not believe that I could do it… I couldn't do it, so I felt like a failure." (06)); *self-worth* (e.g., "I was so miserable, I blame myself so useless, I wanted to slap myself you know…I hated myself." (01)); *trust* (e.g., "I wondered if they were bullying the kid at home and making him cry or something. I became paranoid, and I didn't even trust the father or grandmother of the child." (08)).

Physical-self refers to participants' physiological well-being, health, and functioning. Subdimensions of physical-self included physical health (present or absent of illnesses, e.g., having mastitis), sleep (e.g., losing sleep), energy (e.g., feeling exhausted), comfort (e.g., having pain at the C-section site), appearance (e.g., gaining weight), structure (e.g., having vaginal prolapse), and functioning (e.g., losing mobility due to unhealed wound). These subdimensions earned significance when they became important conditions for experiencing or resolving distress. For example, sleep earned significance when it became an important condition for losing both physical (e.g., energy) and psychological-self (e.g., emotion stability), "Lack of sleep had a huge impact on my body and mind. One my body become very tired and two my mind become more vulnerable. Then I become more irritable and feel more guilty." (22)

In addition, these subdimensions tended to occur in clusters. That is, losing one subdimension of physical self (e.g., comfort) tended to become a condition for losing other subdimensions (e.g., functioning) of physical self as well as other dimensions of self (e.g., psychological self). For example,

> "For the first month, the wound couldn't heal…Whenever I move, the stiches would tear a little…sometimes when I sneeze…the wound would just "Bang!" [teared apart]… I need to use both hands to grab it and stabilize it. Whoa, it's so painful that I really want to die. That period of time was when I wanted to die the most." (01)

Social-self refers to selves as mother, wife, daughter, daughter-in-law, career woman, and a sense of self as an individual. In this example, a participant described how she prioritized and juggled her selves as a mother and daughter-in law and how this clashed with recovering physical self and attending her psychological self:

> "You first need to take care of the baby, thinking about her daily life. Then you yourself need recovery. In addition, you need to consider your mother in law's feeling. After giving birth, not only your own things, you need to spend time with mother in law every day. You need to be very careful – if you are not happy, you have to pretend you are, (this) also feels stressful." (01)

Social self and time. A tension between social-self and time was also discovered. Enacting one subdimension of social-self means occupying specific dimension of time. In *"child" time,* participants enacted social self as a mother to spend time and take care of the child. In *"we" time*, participant enacted social self as a wife to repair, maintain, or improve the relationship with husband. In "*in law or parent" time*, participants enacted social self as a daughter or daughter-in-law to take care of in law/parents, i.e., fulfill filial piety, and manage relationships with in-law/parents. In *"me" time*, participants engaged in activities related to self-care, investment, or pursue, such as exercising to regain an acceptable physical appearance or learning English to prepare for acquiring potential future job in the U.S.

Prioritizing one subdimension of social-self or time meant competing with/losing/pausing other subdimensions of social-self or times, could lead to distress. For example, a participant described losing a sense of self as an individual and self as wife when prioritizing self as a mother, "Freedom, financial freedom, my own pursue, the life I wanted, all gone…completely lost a sense of self after giving birth, lost my marriage, everything was centered around the child…and I found myself very unhappy" (13)

Cultural self refers to who they are culturally, and is reflected in their cultural beliefs, cultural practices, and cultural marginality. Cultural marginality occurs when participants position themselves between Chinese and western cultures. In terms of cultural beliefs, beliefs about family structure and functioning, parenting, and mental illness earned significance in experiencing distress. For instance, when this participant changed from accepting the traditional beliefs about family functioning (e.g., respecting

the elders by hiding emotions) to rejecting traditional cultural beliefs, her psychological self was transformed:

> "I won't suppress myself anymore. I won't l be like that kind of Chinese traditional style. My mom once said elders have seniority. You cannot argue back with elders. This kind of ideology is instilled into us from childhood, you know. But there are times when elders are wrong; they are people too, not saints. So, you have to change, right? You have to speak up, right?... So, I now feel better than before. Whatever I do I follow my heart." (01)

In terms of cultural practice, those related to mothers' first-month postpartum care (i.e., "doing the month[4]") and newborn care were significant contributors to experiences of distress. For example, this participant experienced distress when there was a mismatch with her mother-in-law on postpartum care:

> "[my mother in law] would force me to eat the special meal for "doing the month," I did not want to eat this at all and felt very irritated… after my first baby, she asked me to wear two pairs of socks because [otherwise] my feet would be cold….till I had nail fungus. I was quite angry because she said I can't wash my feet or hair or take a shower. Then I learned that I need to shower frequently and can't wear two pairs of socks. After my second baby, I changed my behaviors. But she kept telling me that I can't shower, can't do this, can't do that, then I became very anxious." (12)

For cultural marginality, some participants experienced distress when they felt there were mismatches between their own cultural beliefs and practices and those of their children, parents, in-laws, or husband. For example, one participant said,

> "my mom calls me 'the most familiar stranger'… we argued every week…my thinking has become more westernized, but I still have some core Chinese [culture] elements. My children are completely westernized, parents are completely Chinese. I am 'half and half.' It's very difficult to satisfy both sides in communication…My husband is more westernized than me, I can't catch up

[4] In a common postpartum ritual "doing the month" (Pillsbury, 1978), mothers follow a set of behavioral and diet rules while regain their health under the care of their extended families after giving birth.

with him…So it has been stressful for me. I am caught in between Chinese and western cultures." (13)

Spiritual-self refers to participants' nonmaterial qualities or experiences, including but not limited to religious experience. Subdimensions of spiritual-self included *wholeness*, for example, "It feels like an emptiness in my heart has been filled, as if you have something to rely on, no matter what happens… (07); *meaning*, for example, "… I felt so meaningless. What's the point? Like there was no meaning." (11); *connection with the divine*, for example, "After I became a Christian, praying allowed me to reflect on myself…handle things with a calmer mind…I can reset my emotions to 'zero'... like I have found a place for my soul." (07); *patience/perspective taking*, for example, "Also I think I can become more patient, and learn how to understand other people from a deeper perspective." (05); *gentleness,* for example, "I felt like I had to be nice to my mother-in-law. I started to think it was wrong for me to have yelled at her, and my mother-in-law's life wasn't easy, either." (08); *compassion*, for example, "… my husband always comes back very tired every day, and sometimes he also gets angry. In the past I couldn't tolerate it, but now I can quite well. Because I know that when I'm tired I will also be in a bad mood." (05); and *gratitude*, for example, "…before I always couldn't understand why she [my mother] always tried to control me, I'm an adult and I don't need to listen to you. But when I see how she traveled such a large distance across the oceans to help me twice a year, I really appreciate them a lot more." (05)

Losses

Participants experienced different *types* of losses on one or multiple dimensions and subdimensions of self (e.g., losing physical comfort, losing confidence, and sense of self). In addition to *types* of loss, other dimensions of loss that were significant to the experiences of distress included *sources* (i.e., what the loss is attributed to), *commonality* (i.e., how common is the loss); *magnitude* (i.e., how significance is the loss), *impact* (i.e., what are the consequences of the loss), *reversibility* (i.e., is the loss recoverable, partially or completely), *longevity* (i.e., is the loss time-bound or is there an end in sight), *quantity* (i.e., how many losses experienced), *compoundedness* (i.e., is one loss interacting with other

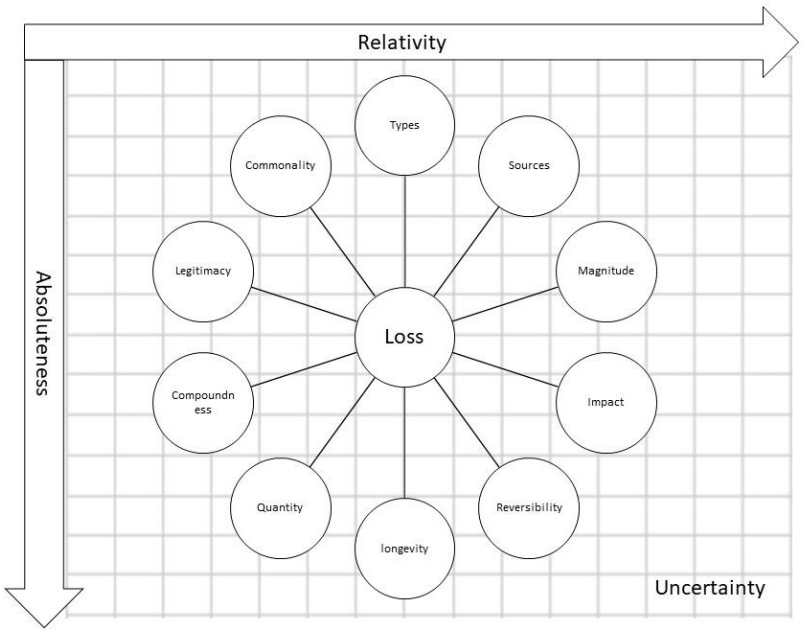
losses), and *legitimacy* of loss (i.e., is the loss witnessed, acknowledged, or validated), and finally *uncertainty* (i.e., how certain or ambiguous are the aforementioned dimensions of loss).

Uncertainty. While dimensions of self evolved across the dimension of time, dimensions of loss varied along the dimension of uncertainty (see **Figure 3**). Subdimensions of uncertainty included relativity and absoluteness. *Relativity* addresses the question "how *normal* are the dimensions of loss compare to others?" The points of references can be participants' old self, own past experiences or those of their mother friends or their own mother, or cultural norms. For example, this participant compared the *commonality* and *magnitude* dimensions of her loss of psychological self (*type*) with other mothers in a support group (a point of reference),

> "And you hear everybody else is just having the same experience, only that you didn't realize, oh, wow. It's actually –I am not the only one. Yeah. And it IS very, very painful. There were many people had a lot worse than me, and that made me think, wow, I'm actually – not that bad." (11)

Absoluteness addressed the question "how objectively [dimension, e.g., severity or reversible] of the loss is." The objective evaluations of the dimensions of losses were often from an authoritative source. For instance, when making sense of the *reversibility* dimension of vaginal prolapse as a loss of physical structure (type), a participant enlisted her physician's opinion (authoritative source), "He said, "no matter what physical therapy you do, it will be little restoration." (01)

Figure 3. Dimensions of loss varied along two dimensions of uncertainty.



Conceptual Model

Greyscaling psychological self

Greyscaling psychological self described experiencing distress, to varying degrees Participants used two analogies to describe 'greyscaling psychological self'. One was "greyscaling," which captures the *degree* of loss, as well as the extent of vibrancy in participants' lives being stripped away (see **Appendix 2** Memo on "Winter-ization"). This is similar to the degree of desaturation of a color photography (see **Supplemental Figure 1**). For examples, "Everything is greyscaled from your perspective. Good things, no matter how good they are, will be grey in your eyes." (11) "It was my dark history; I didn't know how I survived it." (14) "…it was the darkest moment in my life, the darkest." (02)

Supplemental Figure 1. Degree of greyscaling psychological self, in comparison to degree of desaturating a color photograph : 100%, 33%, and 0% saturation.

Another analogy is breaking a piece of pottery (see **Supplemental Figure 2**). Similar to the level of damage a pottery withstands, the degree of loss of psychological self ranged from *unbroken* ("I did not feel particularly depressed—I had peace of mind." (12)); *cracked (*see **Appendix 2** Memo on critical point), as in fissures appear on the surface without breaking into pieces, ("I felt that I have 'touched' depression…reached this 'critical point'… but with my husband's help, I have bounced back" (22)); *hollowed* ("I was so miserable that I felt that I was almost dead, as if my whole person is 'hollowed'… I tried to climb out, but I couldn't." (14)); *crumbled* ("I felt that I was crumbled…I was thinking about suicide every day." (15) "… it was almost like an atomic bomb went off in my life, blowing everything to pieces. It was like your whole life got torn to pieces, and you have to put it back together." (05)).

Supplemental Figure 2. Degree of distress experienced and loss of psychological self, in comparison to breaking a pottery: unbroken, cracked, hollowed, crumbled.

Responding to losses. Greysclaing psychological self begins with encountering or recognizing losses in various dimensions of selves. However, not all losses evoked the same responses from participants and not all resulted in loss of psychological self. Instead, participants engaged in two responding pathways to losses, the *immediate* responding pathway and the *delayed* responding pathway (see **Appendix 2** Memo on comparing with own experience of losses).

Immediate responding pathway. In the immediate responding pathway, participants responded to loss by **taking "time off" for recovery**, often with a goal of complete recovery. The consequences could be successful, partial or unsuccessful recovery. With successful recovery, losses were time-bound and resolved, and psychological self sometimes remained unbroken. For example, "I had third degree lacerations, and I had, er, hemorrhoids. So, it took me about two weeks to recover… afterwards there were no major impacts. After about six weeks I resumed work… I almost forgot that I had already given birth to a baby." (09)

With unsuccessful recovery, which can be completely failed recovery or partial recovery, losses continued. The consequence of such unsuccessful recovery included greyscaled psychological self, to various degree. For example, this participants shared:

> " I had mastitis…then I was on antibiotics for six to seven days… I thought no symptoms just meant I was recovered, but I had it again. Then I took antibiotics again. Then later I had it again, three times in total… I constantly went over to the hospital during 'doing the month' and I guess that's one of the reasons I was depressed." (02).

The conditions for engaging in the immediate responding pathway included levels of certainty and magnitude, and recognition of losses. That is, when participants were certain that the loss had occurred, knew how to respond, how severe the loss was, or immediately recognized the loss, they started taking "time off" for recovery. For example, a participant's response to loss of physical self (losing comfort) was immediate, given the magnitude of the loss and its immediate recognition of the loss on her functioning, "I feel that the first thing is physical pain, it's too painful that pain killers can't stop it…whenever I move, it [the wound] would hurt… and [I] went to check it out right away." (01)

Delayed responding pathway. In this pathway, before responding to the losses, participants began **making sense of losses**. The conditions for making sense of losses included unsuccessful recovery in the immediate response, uncertainties with various dimensions of losses, and failure to recognize loss. To interpret the loss, participants engaged in two dimensions of sense making, with self and with others.

With self, participants used *prioritizing* as one of their strategies. That is, they weighted the opportunity cost of recovering losses in one dimension of self against recovering losses in other selves or investing in other selves, for example, losing self as a career woman against investing self as a mother. In other words, they were prioritizing the competing selves, or competing times. If the losses were seen as high priority, participants began taking "time off" for recovery. If the losses were seen as low priority, the recovery for such losses might be terminated or put on hold, which may contribute to distress.

> "At first, definitely the biggest loss was that I had no way of setting aside time for my career…but I have already had mental preparation, I want to hurry up and finish the great matter of giving birth to my child… so I feel like I should figure it out first with the baby. Afterwards, I can have a peace of mind again and then get back to my career…but what bothers me a lot is that my parents always feel like I don't earn money, only depending on my husband and stuff. Don't delay your things." (10)

In this example, the participant assigned lower priority to recovering social self as a career woman than developing the social self as mother. So, a paused recovery for social self did not contribute to distress. However, when she discovered a mismatch in prioritization with her parents, distress was experienced. This brings out the second dimension of making sense of losses. With others, participants used *comparing* as their strategy to make sense of the losses, where they enlisted multiple points of references to interpret the losses (see **Appendix 2** Memo on comparing and validating). The purposes of comparing were (a) to validate their own interpretations of the losses with those of others, (b) to evaluate whether their losses were witnessed and acknowledged, and (c) to sense whether potential recovery effort was supported.

Further, comparing ranged from passive (e.g., recalling own prior experiences or indexing cultural norms) to more active (e.g., looking for mothers alike or seeking similar cases online). In terms of selecting points of reference for comparing, participants often sought out and had greater trust for those sharing relatively fresh, lived experiences. These points of reference may include their own past experiences (i.e., making their old selves the "friend who is a little ahead of me"), their mother friends, their own mother, their husband, in-laws, and preconceived cultural norms. Comparing with these references addressed the *relativity* dimension of uncertainty—"is this normal?" For example,

> "Another thing is that back then I have several friends, despite our group is small, several of them gave birth around the same time, they were 1-2 month earlier than me. After chatting with them, (I found out) they also cry…then I was relieved. It turns out I'm not alone, and I feel a little more at ease." (02)

Other points of reference included acquired knowledge from readings and professional opinions, i.e., more objective, formal, authoritative sources. Comparing with these references addressed the *absoluteness* dimension of uncertainty—such as "how severe the loss actually is, how long would it really last or whether it is recoverable." For example, "I asked my doctor [about vaginal prolapse]… The doctor said this is normal. He said, 'no matter what physical therapy you do, it will be only a little restoration'" (01)

The consequences of comparing were *matching* or *mismatch*ing interpretations of losses by participants themselves and their *perceived* interpretations of losses by others. When there was a match, regardless of whether the recovery was terminated or put on hold, the loss might be normalized. In addition, participants may accept the loss or seek alternative approaches to reconcile with the loss. Thus, a match was an *enabling* condition for unbroken psychological self. This example of becoming less sexual as a couple shows how matching works.

> "Because that [vaginal prolapse], to be honest, the two of us don't really have much of a sex life anymore. If we don't have to do it, we would not do it. I don't even have the physical strength for this, and I'm uncomfortable. He's also busy now. He's alright, too. He's not someone who is

particularly competitive in that aspect. So, this is alright, otherwise we would've not been on the same page for this matter. I say, "Well, we can cuddle. We can sit on a stool and cuddle, or we sit on the carpet and cuddle, right?" (01)

In addition to matching, I discovered that *having an end in sight*, i.e., loss was time-bound, was an important condition for unbroken psychological self. For example, "At the time my thinking was that this was all temporary…it will end by 17th of April… when the day care I like has the opening… Everything has an end. So, there is hope." (09)

When there was a *mismatch*, however, even a recovery that participant assigned as high priority can be put on hold or terminated. And the mismatch may intensify the sense of loss when the recovery has already been paused or terminated. Thus, a mismatch was a *blocking* condition for recovery. As a result, losses were continued, attributing to distress. For example,

"I want to take medical leave from work…She [participant's psychologist friend] was trying to explain and make them [participants' parents] understand [my postpartum depression]… my dad firmly asserted that: '[participant's name] is fine. She is just a bit of moody…There is no problem at all.' Complete denial, complete rejection… After that chat, they would tell me: 'don't listen to her. Don't take medical leave. It will affect your career. 'Isn't it just all the typical stuff?' I didn't dare to do many things against their will… I felt that I had nowhere to turn" (11)

Making distress calls was a strategy that participants used to achieve a match, particularly with their husbands, parents, and in laws (see **Appendix 2** Memo on Making a systemic, "far-out" comparison of a person in distress with a ship in distress). To make distress calls, participants may directly communicate their losses or their needs for recovery (e.g., requesting husband to take her to see psychiatrists) or amplify their signal of distress (e.g., attempting suicide). When the distress call was answered, i.e., losses were witnessed and acknowledged and potential recovery was supported, the potential recovery was enabled and distress may be resolved. For example,

"I felt I was already depressed… I didn't want to talk, felt very annoyed when I saw baby cry. But the best was, I was lucky that my husband would show up in time, he would help me to take

care of the baby. After he console the baby, he would come over to console me… then I would be ok." (22)

On the other hand, when the distress call was neglected, i.e., losses were ignored or minimized and potential recovery was rejected, the potential recovery was blocked and distress may continue or be exacerbated. For example,

"I felt that my emotions were beyond my control… I don't know why I was really in a low mood at that time. I was a little bit wanting to do something to hurt myself. But my mother-in-law said to me, 'You better not make up the postpartum depression' She meant I was making trouble out of nothing. So, this led me to be more depressed." (03)

One important condition for comparing losses was having *access* to various points of reference. Access might be hindered by isolation, lack of transportation, poor health literacy, and poor language proficiency. Without access, comparing and thus matching was impossible. That is, the enabling condition for resolving distress was absent. For example,

"Back then [after giving birth to the first child] there was no one to talk with, everyday just facing the child, no online chat, no group. We did not have a car, so it was very inconvenient to go out, no friends and my husband was busy. I was so miserable, so numbed that I would bang my head to the wall. The pain made me stay alert… I felt I was almost dead…And I don't know how to talk with the doctors about this, how to express my feelings with words, and there are many professional phrases in English that I don't know." (14)

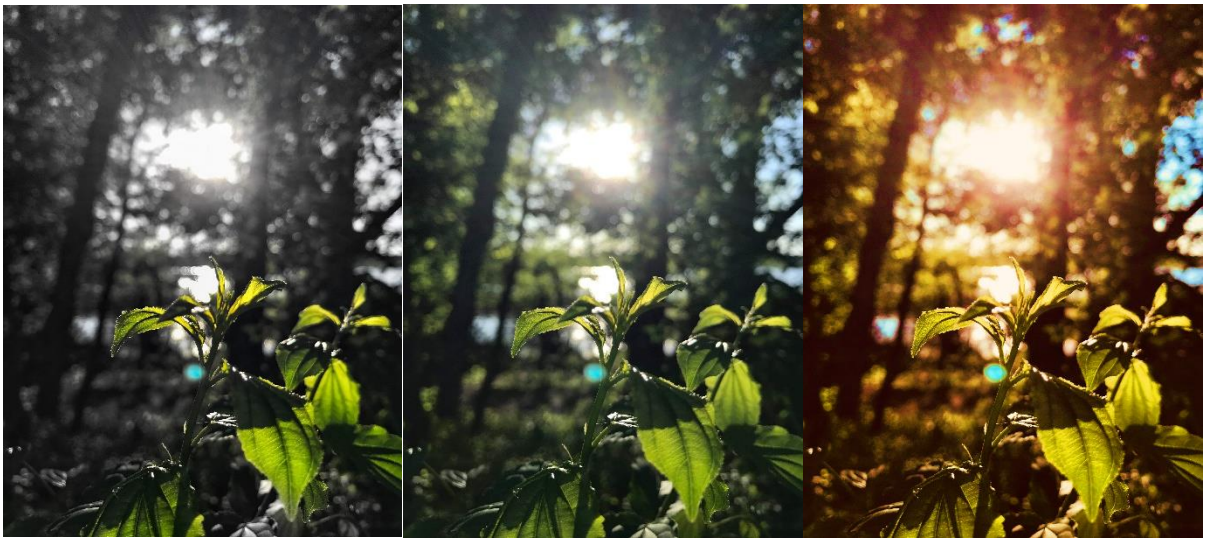
Reviving psychological-self

Reviving psychological self refers to a *gradual* process of resolving distress and regaining and/or transforming psychological self.

"From my first morning, the awakening moment in the hospital, like a shift, and then to my friends, kind of brought life back to me for a little bit. Like give me some love and care, and then when I was reading the book – everything is gradual, but all happening at the right time. Just slowly, slowly – it's kind of gone from there." (11)

Connecting back to the photography analogy, similar to partial, complete, or transformative colorization of a greyscale photograph (see **Supplemental Figure 3**), participants may be in the process of reviving psychological self—*partially regained*, "Although I am not completely recovered even now, I believe that everything will become better." (06); or have *completely regained* psychological self, "I had no anxiety after taking it [the medication]… I was 100% my old self..." (07); or have *transformed* into a new psychological self, "I think I have finally become a psychologically matured woman now… with a new understand of life, of myself, my marriage, I think everything is new including understanding of cultures." (13) Linking back to the pottery analogy, this transformative change was illustrated by Kintsugi ("kin" is gold, "tsugi" is joining), a traditional Japanese craft technique for repairing broken ceramics. It uses a plant-based lacquer resin to join the broken pieces, then layer the object with gold or silver as decoration (see Supplelemtal Figure 4; Keulemans, 2016; Kwan, 2012). Its philosophy of embracing the damage, preserving instead of removing the mark, is reflected in this quote, "…the path I've walked and the things I've experienced… have transformed me into a completely new person." (11).

Supplemental Figure 3. Reviving psychological self, in comparison to colorization of a greyscale photograph: partial (only the leaves in front are recolored in green), complete, and transformative.



Supplemental Figure 4. Transforming into a new self, in comparison to Kintsugi, transformative repairing

Preparing. In this process, participants reflected their "broken" self, rediscovered their "unbroken" self, and envisioned their new self before carrying out actions for reviving psychological self. With certain conditions that I will detail later, some progressed from preparing to prospecting for a new psychological self; whilst with other conditions, some were stranded in the preparing stage which may result in continued distress or only partially regained psychological self.

***Reflecting "broken" selves*.** Participants took time to re-evaluate their "broken" selves, the selves that were damaged in the process of becoming a mother. For example, this participant reflected on her physical self and her sense of self as a person who has her own pursuits and purpose in life,

> "At that time, I felt like I was always living for them… [after giving birth] my own health was in bad shape… I feel like for many years I haven't lived for myself. I've had enough. I've truly had enough. If I'm not good to myself, they would be worse to me…now I have figured it out… I can't make myself broken" (01)

One important condition for reflecting on "broken" selves was encountering a new a point of reference. In this example, the participant re-evaluated her experience as a mother after her mother friend provided a new reference point that contradicted the online posts she had previously used as reference points,

> "I used to couldn't control crying and what not. At that time, I had especially high stress because it was my first time being a mom. Afterward, my friends urged me. When I was chatting with my friends, she would say no one is a perfect mom. Don't keep looking at those online posts, those

> moms seem to know super well how to nurse children, to know super well how to raise children, doing everything well. She said it wasn't like that, that kind of moms might only be one in a million, like that… afterward I started reflecting about this, then I relaxed a lot." (04)

Rediscovering "unbroken" selves. Participants sometimes found the selves that may have been *paused or lost* in the process of becoming a mother. For example, this participant rediscovered her sense of self when returning to the social context for such self.

> "Back then the worst is that I would not buy any clothes for myself, all for the child, they needed to be cute and pretty-myself didn't matter, regardless how sloppy I was. But the lucky thing was because the nature of my job, I realized that I need to dress up a little bit. Then I slowly realized that I have lost my sense of self... My job has been a great help for me to rediscover my value." (13)

Envisioning potential future selves refers to hoping or contemplating a potential future self. For example, this participant, who has been a stay-at-home mother and an immigrant with restricted working capacity, projected a future self as a career woman, "Now I very much hope that my husband, he can find a job, and then we can get settled. I could then go and do some things that I want to do and have the career I want." (04)

Prospecting. "Prospecting" is the first stage of geological analysis of a territory which includes experimental drilling and excavation in search of mineral deposits. Thus, "prospecting" captured an experimental, iterative, and gradual nature of reviving psychological self. In this process, participants engaged in mending a "broken" psychological self, reconnecting "unbroken" selves, and trialing a new self. When prospecting succeeds, psychological self may be regained, partially or completely, or transformed. Otherwise, psychological self may remain greyscaled and distress continues. For instance, this participant became dispirited when she tried to improve her English and made plans to study everyday but was frequently interrupted by childcare,

> "... there is no quiet time, where I was just by myself…Now I want to start [studying] from 30 minutes and slowly add up. But I can't be still for even 30 min and it's even harder to stay still at

> home… it's been a long time and I haven't studied anything, so I feel like I've become dispirited. and it's hard for me to bear this feeling in my heart…I feel like I'm trapped inside. And then I want to rouse myself at once, but after a while, I fall down again." (01)

In some cases, participants aimed to regain but accidentally ended up transforming their psychological self. For example, a participant shared her transformative change after becoming a Christian as her as her last resort for releasing anxiety.

> "After I became Christian, I can reflect on myself in the moment…so all of a sudden, I can completely reset my emotion to zero… and then wow, my emotion soon returns to normal, in a relaxed and calm state that I prefer…Now when I drive, I don't have that fear [for panic attack] any more. My body has the same reaction, but there is no fear in my heart. Because there is no fear, it has been a tremendous change to the quality of my life." (07)

Mending broken psychological self. Participants used a range of strategies to repair their greyscaled psychological self. One strategy was soothing or distracting self, such as shopping or watching TV drama, which often resulted in a partially or temporarily regained psychological self. For example,

> "Our [relatives in similar age] common interest was shopping, sometimes I visit them and we went shopping… Actually, in the moment I would feel a little better, but it still wasn't completely good. Because at that moment, you have forgotten all that suffering, but once you go back home and settle down, they will still rush up from inside of your heart into your mind." (01)

Another strategy was "releasing steam," where participants found or created an outlet to release the tension or emotions built up within themselves. The outlet can be informal like a mother friend group or formal like a mother's support group. For example, "dancing, singing, I would find some dance song and dance around at home, or scream, or find some friends to chat or invite them over to my house." (21)

> "I went to the Mom's program"… Because I had an outlet, a different perspective, and at the same time you have an outlet to share. And you hear everybody else is just having the same experience, only that you didn't realize." (11)

Other participants have tried reclaiming control over their psychological self, for example, “I realized that maybe I was using postpartum depression as an excuse not to manage my emotions… I started to convince myself rationally. When I had a bad time, I didn't want to just vent it out… Gradually I felt that I could still control myself.” (08).

Some participants tried more proactive approaches, such as investing in self, to revive their greyscaled psychological self, for example,

> “… at that time I started to like doing make up. Maybe because I want to change myself. I thought if I look better, actually I do make up not for other people, maybe it’s more to give myself confidence. So this is my method to improve my depression… And ukulele… I learned and played ukulele because I was depressed. Yes. I think it was very helpful” (03).

When all strategies failed, some participants sought professional help as their last resort. For example, this participant requested professional help which resulted in partially regained psychological self. “I said [to my husband] ‘now I don’t want to see anybody except doctors-they are my only hope now’... They [doctors] said [I need to] stay [inpatient psychiatry] for a few days and gave me medication. I had sertraline which was effective. I felt much better after a while. But the feeling of being hurt cannot be erased” (01) However, for another participants, seeking professional help was an awakening experience or a turning point for a transformative change, for example,

> “Inpatient. Yeah. So, I was basically hospitalized for a week… I remember clearly that the first morning when I waked up – they had a program where you had to exercise outdoor in the morning. I remember that moment while I was outside exercising, I suddenly felt, ‘wow, this is good’; everything is suddenly open, and life is suddenly good. And then it was hard to understand how I came to this point… From that experience onwards, I have seen and learned a lot of different things. I think that moment in that morning is like a little awakening for me.” (11)

Reconnecting “unbroken” selves Upon rediscovering their “unbroken” selves, some participants tried to bring back what had been put on hold or lost. Merging social selves has been used as a strategy to reconnect “unbroken” selves. When the times/social selves are *mergeable* and *enabled* by circumstances,

distress may be resolved. For example, one participant regained emotional stability when she merged "me" and "child" times,

> "You can do what YOU want to do when the kids were asleep. I have played the piano when the baby was asleep, which made me much calmer. My husband also said that when I played the piano my mood was very peaceful." (12)

However, when social selves were *not mergeable* or *blocked* by circumstances, distress may remain or spiral. In this example, a participant tried to reclaim her "me" time to regain her acceptable physical appearance. However, it competed with her "child" time and was rejected by her mother-in-law, thus distress continued:

> "I've gained weight after giving birth to my first child…Fifty pounds. On that basis, I gained another five or sixty pounds after giving birth to the second child… After I gave birth to my eldest child, I actually wanted to go to the gym. But no one helped me take care of the children. My mother-in-law would not be happy if I left the child to her to watch. She meant that if she held the baby for too long, she would suffer a sore back. Then she would blame me. And then I quit exercising…So I was really in a bad mood. But the worse mood you had, the more you thought about eating. Yes. During that period, I'd like to vent my emotions by eating." (03)

Trialing new selves refers to prospecting new selves. These new selves included social selves as immigrants (e.g., joining local organizations), mothers (e.g., letting go with perfection), and daughter in law (e.g., establishing parenting boundaries); cultural self (e.g., rejecting traditional cultural norm); and spiritual self (e.g., subscribing to new religion). While some trials failed because of insufficient "me" time or restricted working capacity, others succeed in achieving new selves. For example, this participant who used to be a Buddhist became a Christian after exhausting strategies to relieve her headache and anxiety. Her psychological and spiritual self were transformed, which also improved her parenting.

> "I can clearly feel I'm at a completely different place from the previous one. They are two mindsets and thoughts… helps me better communicate with my son, and to educate and teach him…. So this may also be a major part of the my anxiety release." (07)

Enabling conditions for prospecting. In addition to *matching*, as aforementioned, another important condition for prospecting was *regaining "me" time*, for example, "Then they go to school now, and then I can find something I like to do. Then when they are at school, I can cook, then go to the gym, and tidy up the house, which I feel very happy." (03)

Strategies for regaining "me" time depended on the circumstances for losing "me" time. And the conditions for losing "me" time included two opposite circumstances. One condition was monopolized parenting, i.e., rejecting help from others or unable to enlist help, such as from busy husband or expensive/unavailable day care. The strategy in response to monopolized parenting was *partnering*, i.e., dividing time and labor amongst helpers or requesting help. In this example, the participant shifted from monopolizing to partnering with childcare, which resulted in regaining "me" time and psychological self.

> "Because his father was very busy, he didn't have time in the evening to put the child to sleep or brush his teeth, so basically it was all done by me. My mother-in-law didn't handle things like this, and I didn't want her to handle them anyway. This made my temper very volatile every time. Currently, I no longer have any major problems with handling my children, and I can regulate my emotions better. Because now I am willing to let go and let my mother-in-law do some things, so even when my child didn't sleep I still have time to do what I want to do… Also, my husband is willing to take more time to help take care of the children, pay more attention to me and give me positive affirmation, so that I feel valued." (06)

The opposite condition for engulfing childcare was interrupted parenting, i.e., accepting help that complicated parenting. The strategy in response to interrupted parenting was *guarding* parenting, i.e., building boundaries with others involved in parenting. In this example, the participant enlisted her husband to build boundaries as her strategy to guard parenting,

> "Extremely overwhelming… she (mother in law) kept doing things with the kids. So, then the kids ended up having so many problems. Afterward, my husband spoke to her… it's like, if we didn't call you. Don't come in. We'll take care of the kids. Otherwise everyone would each have their own idea, each would have their own approach, making the kids into a total mess."

Blocking conditions for prospecting. In addition to mismatching and lack of access to comparing, as aforementioned, lacking "me" time was another important condition for prospecting. Lacking "me" time may be attributed to the young age of the child, lacking human or financial resources for childcare support, and restricted working capacity imposed by visa status.

Comments on Interviews

Participants' comments on the interviews confirmed rare and selective disclosure of their distress experiences. Sometimes they prevent future losses by holding back disclosure. I had shared cultural background and experiential knowledge with the participants on being an immigrant as well as professional background on mental health. Given this and the trust built between participants and I, they perceived the interview as therapeutic and a rare space for reflection.

> "Actually, this is the first time I even told anybody, other than one of my [psychologist] friends. You are actually the first one to hear these things in such details… Like I said before, why many moms probably like tell you things – it's a reflection." (11)

> "Except my depressed friend, you are the second person that I talk [about my experience] in length. Because I think no one would understand you, and think you are so strange. If I talk with my classmates in China, they would not understand me. If I talk with my [non-Chinese] friends in the U.S., they would not understand me either-they would say 'how come you have this kind of thinking, you are being too Chinese.' So, I think if no one understand, it's better to keep everything to yourself, but it would only do harm to my body… (12)"

DISCUSSION

This grounded theory study discovered the processes of experiencing and resolving distress, that is, greyscaling and reviving psychological self. In the context of simultaneous transitioning from women to mothers and from native to foreign, Chinese immigrant mothers encountered many losses that were significant to their psychological self. The conceptual model developed in this study explicated different responding pathways for these losses and their impact on experiencing distress. In addition, the

conceptual model described strategies Chinese immigrant mothers used to resolve distress, with consequences being psychological self remained broken/greyscaled, or regained, or transformed. This study also highlighted the important process of making sense of losses as well as the enabling and blocking conditions for resolving distress.

Comparing with an existing theory on PPD: Teetering on the Edge

Similarities and differences were identified in the conceptual model developed in this study and the existing theory on PPD, teetering on the edge (Beck, 1993). This study focused on how Chinese immigrant mothers experiencing and resolving distress, which included PPD. Thus, conceptual model developed in this study captured a *wider span* of social psychological experience than Beck (1993)'s work. In addition, Beck (1993) only explored the process of how her participants *recovered* from PPD, not the processes that lead to experiencing PPD. This study filled this gap by describing the processes of how participants experienced distress, to various degrees. Further, this study added the pathway where Chinses immigrant mother continue to experience distress, or psychological self remained "broken/greyscaled," and the conditions that blocked resolving distress.

Different from Beck (1993)'s work, losing control did not emerge as the central psychological problem in this study. Instead, Chinese immigrant mothers in this study often described their experiences of distress as a result of (a) situational stresses (e.g., failed attempt to recover physical self); and/or (b) mismatches with others on the perceptions or experiences of losses or recoveries. This finding is consistent with Morrow, Smith, Lai, and Jaswal (2008)'s work exploring immigrant mothers' experience of PPD. They found that Chinese immigrant mothers were more likely to talk about social and contextual factors with an emphasis on interpersonal relations, rather than on specific symptoms of depression. Such difference may be explained by social interdependence in Chinese culture versus independence in mainstream American culture.

Specifically, the Chinese culture is more collectivistic while the American culture is more individualistic (Oyserman & Lee, 2008). Self is defined by similarity and connections with others in Chinese culture, in contrast with uniqueness and separateness in mainstream American culture (Marsella,

De Vos, & Hsu, 1985). This philosophical view of self is manifested in the *interpersonal* expressions of distress among the Chinese population. For example, Chinese use "no one understands or cares about me" and "friendless" to express "hopelessness;" and "feel less capable than others" to express "failure (Zheng, Xu, & Shen, 1986)." Also, even though Chinese immigrants tend to express distress in terms of physical complaints, they attribute its causes to stress or psychological problems related to interpersonal difficulties (Yeung, Chang, Gresham, Nierenberg, & Fava, 2004). This definition of self may also partially explained why matching worked for maintaining or regaining psychological self.

Consistent with Beck (1993)'s finding on teetering on the edge—"walking the fine line between sanity and insanity," some participants in this study described such experience as reaching a critical point. That is, the end point of withstanding losses on various dimensions of self. Similar to the second phase "dying of self" discovered in Beck (1993)'s work, losing/pausing different dimensions of self was found in this study. Given the scope of this study, however, I discovered losses on more dimensions of self, other than psychological self, and how these losses attributed to experiencing distress. Contemplating and attempting self-destruction were discovered in both studies. Notably, I discovered, for participants in this study, one purpose for engaging self-destructive behaviors was to make distress call to others. By doing so, they hope to achieve a match with others on the legitimacy of recovering psychological self.

This study also discovered a wider range of strategies that participants used to resolve distress than what have been discovered in Beck (1993)'s work, which included battling with the system, praying for relief, and seeking solace in a support group. In this study, participants used strategies that were not only in the direction of regaining old self (returning to the past) but also that of crafting new self (prospecting the future). Finally, consistent with Beck (1993)'s work, this study discovered the recovery process was gradual rather than sudden, erratic transitions.

Comparing with a different substantive area: experiences of living with chronical illnesses

Many findings from this study are not specific to experiencing losses during the postpartum period, nor it only apply to immigrant mothers. When comparing discoveries from this study to Charmaz (1991)'s grounded theory work on people's experiences of living with chronic illness, I found remarkable

resemblance. Particularly, the temporal dimensions of self discovered in this study were as significant as those found in Charmaz (1991) work. For example, I found participants used their own past as a point of reference to make sense of their present self and gauge future self. Charmaz (1991) described this as "Ideas about the past influence the present and the future. They create benchmarks and illness chronologies of the past (p. 167)." Another important finding from this study was that matching worked as an enabling condition for engaging in recovery. Similarly, Charmaz (1991) found that a consensus amongst people involved in the illness complete the shift for taking the time out for recovery, "If everyone involved agrees that the illness is serious, the shift is complete (p. 14)."

In my study, participants merited "time-off" for recovery when they assigned such recovery with a high priority (along with other conditions). And this initial attempt for recovery often had a goal of complete recovery. Some of Charmaz (1991)'s interviewees also believed that recovery required time. She discovered that people who define illness as interruption started looking for recovery. And many of them also started with an initial goal of complete recovery and later goal of regaining the last plateau. This later goal of returning to the last place in Charmaz (1991)'s work was similar to mending broken self and reconnecting unbroken self (both had a goal of regaining the old self) in my study.

Also, I discovered that when the loss was time-bound or there was an end in sight, participant's psychological self may be unbroken. This is similar to people taking refuge in defining their illness as temporary or interruption in Charmaz (1991)'s work. When people define their illness as temporary, the illness was external to the self, that is, self was not affected. Further, in my study, when the loss was perceived as temporary, participant thought that there was hope and that they could withstand the loss. Similarly, in Charmaz (1991)'s work, she discovered that, when the illness was defined as temporary, people felt more sense of control and could combat it.

Finally, participants in this study engaged in various processes either to *regain their old self* (reflecting "broken" psychological self, rediscovering "unbroken" selves, mending "broken" psychological self, and reconnecting "unbroken" selves) or to *craft new selves* (envisioning potential future selves and trialing new selves). Charmaz (1991) called these two processes as *recharting the past*

and *revising plan for future,* as two dimensions of the category of mapping the future. In addition, I discovered that while some participants remained stranded in the *preparing* phase, others progress to the *prospecting* phase. In Charmaz (1991) work, she referred to these two phases as *waiting* to map the future and *mapping* the future. As I discovered that the nature of prospecting is experimental or provisional, Charmaz (1991) suggested the maps for future may remain "sketchy (p. 190)."

Comparing with literature

There are a few qualitative studies on Chinese mothers' experience of postpartum distress conducted in Mainland China, Hong Kong, and Taiwan. These studies have revealed that Chinese mothers' distress experience is heavily influenced by the Chinese sociocultural context. For example, L.-L. Gao, S. Chan, L. You, and X. Li (2010) found a dissonance between tradition and modernity as a central theme of PPD experience for Mainland Chinese mothers; and the practice of "doing the month[5]," daughter-in-law/mother-in-law relationships, and gender of the baby contribute to distress. Chan, Levy, Chung, and Lee (2002) found the central theme of PPD for Hong Kong Chinese mothers to be a feeling of entrapment; while a noncaring husband and controlling and powerful in-laws can contribute to their unhappiness. Similarly, Chen, Wu, Tseng, Chou, and Wang (1999) found that husband-wife relationships, the unclear family standing of the daughter-in-law, and cultural bondage (i.e., beliefs on postpartum care and a preference on the gender of the baby) were important themes identified among Taiwanese Chinese mothers. Despite providing insights about cultural influences on PPD experiences, these studies did not describe the *processes* of how Chinese mothers respond to distress; and are unable to show how Chinese mothers' distress experience would manifest after they have immigrated. This study filled these knowledge gaps by presenting *how* these sociocultural themes identified in prior studies became the conditions for experiencing and responding to distress, *after* Chinese mothers immigrated to the U.S.

One study (Lam, Wittkowski, & Fox, 2012) used grounded theory (Charmaz, 2000, 2006) to explore Chinese immigrant mothers' postpartum experience in general (i.e., not specifically on experience

[5] A common postpartum ritual in Chinese culture, where mothers are expected to "be confined to home for one full month of convalescence after giving birth (Pillsbury, 1978)

of distress and response processes) in the UK. However, whether the study was a true grounded theory study remained questionable—as the data analysis process was not made transparent and the results were organized by participants' characteristics and were presented as "themes" rather than processes. This study found two main themes of distress during the postpartum period: isolation and conflict; and while Chinese-speaking mothers experienced more isolation, bilingual mothers experienced more conflicts attributed to cultural differences. Method issues aside, participants' experience of distress were not dissimilar. For example, Lam et al. (2012) found their participants felt trapped and restricted by the practice of "doing the month," especially when they do not believe in such practice but had to comply their mother-in-law. This is similar to having a mismatch with mother-in-law on postpartum care discovered in this study. In addition, the cultural marginality discovered in this study was similar to cultural conflicts and different value systems identified in Lam et al. (2012)'s work.

In a book The Paper Menagerie and Other Stories, author Ken Liu depicted a Chinese mail-order-bride's letter to her son. Similar sense of loss, loneliness, isolation, losing and remaking self are distilled in this quote:

> "In the suburbs of Connecticut, I was lonely. Your father was kind and gentle with me, and I was very grateful to him. But no one understood me, and I understand nothing. But then you were born! I was so happy when I looked into your face and saw shades of my mother, my father, and myself. I had lost my entire family, everything I ever knew and loved. But there you were, and your face was proof that they were real. I hadn't made them up. Now I had someone to talk to. I would teach you my language and we could together remake a small piece of everything that I loved and lost… I was really at home now." (Liu, 2016, pp. 191-192)

Limitations

This study was conducted at a Midwestern university town and participants had relatively high education level. Findings from this study are representative of a small group of community dwelling Chinese immigrant mothers experienced or still experiencing distress after giving birth to children. However, comparisons with literatures as well as theories on similar substantive area (experiencing PPD)

and that on different substantive area (experiencing chronic illness) suggest that at least some processes discovered in this study were not exclusive to Chinese immigrant mothers. Both theories were developed by grounded theory studies with non-immigrant populations.

Future Research

To stay focused on the analysis, I took notes and asked participants questions on several directions but did not analyze them in detail. These include managing relationships, particularly with husband and mother-in-law, negotiating parenting, preparing for second time father (for those had multiple children) and becoming first generation immigrants. These unexplored directions can become the beginning of my future studies.

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Table 1. Characteristics of interview participants

ID	Age	Number & sex of child(ren)	Highest level of education	Current employment status	Length of stay	Residency status	Self-rated English proficiency	Religious belief
#01	25-34	1girl	High school	Homemaker	Over 3 years	Spouse visa	Not well	Non-religious
#02	25-34	2boys	Master	Homemaker	Over 3 years	Spouse visa	Average	Non-religious
#03	25-34	2boys	High school	Homemaker	Over 3 years	Spouse visa	Average	Non-religious
#04	35-44	1boy 1girl	Master	Homemaker	Over 3 years	Spouse visa	Average	Non-religious
#05	35-44	1girl, 2boys	Master	Homemaker	1-3 years	Spouse visa	Not well	Christian
#06	25-34	2boys	Bachelor	Homemaker	1-3 years	Spouse visa	Average	Non-religious
#07	35-44	1boy 1girl	Bachelor	Full time	Over 3 years	Citizen	Average	Christian
#08	25-34	1boy	Master	Full time	Over 3 years	Permanent resident	Very good	Christian
#09	25-34	1girl	Master	Student	Over 3 years	Student visa	Very good	Christian
#10	25-34	1girl	Master	Homemaker	1-3 years	Spouse visa	Average	Non-religious
#11	35-44	1boy	Bachelor	Homemaker	Over 3 years	Citizen	Average	Buddhist
#12	25-34	2boys	Master	Part time	1-3 years	Spouse visa	Very good	Non-religious
#13	35-44	2girls	Bachelor	Full time	Over 3 years	Citizen	Very good	Non-religious
#14	25-34	2girls	Junior College	Homemaker	1-3 years	Spouse visa	Not well	Non-religious
#15	25-34	1girl	High school	Homemaker	Over3 years	Spouse visa	Not well	Non-religious
#16	25-34	1boy	PhD	Homemaker	1-3 years	Spouse visa	Average	Non-religious
#17	25-34	1boy	Master	Homemaker	Over 3 years	Spouse visa	Average	Non-religious
#18	25-34	1boy	Master	Homemaker	Over 3 years	Permanent resident	Average	Atheist
#19	25-34	1boy	Master	Homemaker	Over 3 years	Spouse visa	Average	Non-religious
#20	25-34	1girl	Master	Homemaker	Over 3 years	Permanent resident	Average	Non-religious
#21	25-34	1girl	PhD	Homemaker/part time	1-3 years	Spouse visa	Not well	Non-religious
#22	25-34	1boy	Bachelor	Homemaker	1-3 years	Spouse visa	Average	Non-religious

Chapter 5: Summary

This dissertation study fulfills its aim of developing a conceptual model that describes experiencing and resolving distress among a vulnerable population during a particularly vulnerable time, immigrant women during their postpartum period. It has made contributions to field of mental health of immigrant women. In this discussion, I will summarize findings across the four chapters and discuss implications for future research.

Summary of Findings

The scoping review (chapter 2) on the health of East and Southeast Asian female marriage migrant focused on a subset of immigrant women who migrate for the purpose of marriage. The review synthesized existing literature on the health of this population and found that overall marriage migrants experience worse health outcomes, multiple barriers to health care services, and multiple social challenges compared with the native population in the receiving countries. In terms of mental health, marriage migrants were found to have higher rates of depression, higher levels of anxiety, and higher level of stress compared with native married women and the general population in the receiving country. However, many questions remained unaddressed. For example, what strategies marriage migrants use in response to the distress in their new sociocultural context, which ones are effective or ineffective, particularly during vulnerable times such as the postpartum period. This review has informed my research focus on the postpartum depression (PPD), which later shifted to distress during the postpartum period among immigrant women.

To have a better understanding on immigrant women's experience with PPD and screening for PPD, I developed and pretested a survey with one subgroup of immigrant women—Chinese immigrant mothers (Chapter 3-a). Findings about validity, acceptability, and cultural and linguistic appropriateness informed the revisions of a new survey about immigrant women's experiences with PPD and screening for PPD. And participants' comments from this study confirmed the significance of research on PPD among immigrant women.

To get an accurate and clinically meaningful screening result on the risk for PPD, the screening tool must be able to truly reflect the risks for PPD, rather than response errors. This requires the potential

respondents to understand and respond to the screening tool consistently and as intended by clinicians. In addition, the screening tool must also reflect the experiences of the respondents. One of the most frequently used screening tools for PPD was the Edinburgh Postnatal Depression Scale (EPDS). Using cognitive interviewing, I found that Chinese immigrant mothers neither consistently interpreted nor responded to certain items on the EPDS as intended by researchers. And their postpartum emotional experiences were not reflected well by the EPDS (Chapter 3-b).

Finally, phase IV of this dissertation study revealed the processes of Chinese immigrant mothers experiencing and resolving distress. Findings from this grounded theory investigation are helpful for explaining results discovered in prior chapters. For example, selective disclosure of experiences of distress were found in Chapter 4. Participants selected those who shared cultural background and/or experiential knowledge for disclosure. This may explain the reason that immigrant mothers do not seek screening or care for PPD when the providers do not share the same cultural background or experiential knowledge. In addition, some of the participants in phase IV were in international marriages, their experience of intense loneliness and being caught in between cultures may explain the high level of distress identified in Chapter 2.

Implications for Research

Humans are a migratory species and migration is a norm in human history (Massey et al., 1998). However, within the context of current geopolitical conflicts and environmental changes, international migration has become increasingly more prominent and has brought unprecedented challenges all over the world and across all health care settings. Among all migrants, female migrants represent half of all international migrants and half of these female migrants (48.6%) are of childbearing age, that is, 15-44 years old as defined by CDC (IOM, 2018). This has resulted in significant cultural diversity among childbearing women (Dennis et al., 2007; Khanlou, Haque, Skinner, Mantini, & Kurtz Landy, 2017), and in the U.S., immigrant mothers account for 23% of all births ("Pew Research Center," 2012). However, research on female migrants is still relatively scant compared to that of male labor migrants (Parrado & Flippen, 2005).

Content. The field of research on the health of immigrant women has substantial knowledge gaps and most studies are exploratory in nature. In terms of mental health, there are still many questions that remain to be answered: What are their experiences living with mental illness or distress? What are their responding strategies? What are their screening and care seeking experiences? Whether the existing clinical screening tools capture their experiences or effective in identifying at risk immigrant women? What constitutes an effective, culturally appropriate, and financially viable intervention in addressing their mental health needs? This dissertation partially addressed some of these questions by focusing one group of immigrant women and one specific mental health area, Chinese immigrant mothers' postpartum distress.

Approach. Conducting research with immigrant women is not easy, especially on a sensitive topic. Immigrant women are considered as a vulnerable and hard-to-reach population. Successful recruitment and data collection require trust building early on and flexible recruitment and data collection approach. To build trust with this population, future studies can utilize a combination of strategies, such as immersing in the community, establishing trust with immigrant women or community partners early on, enlisting community partners as consultants, and seeking feedback on research materials from community advisory board or potential study participants.

Method. Using mixed methods has been fruitful for this dissertation study, particularly the use of qualitative methods. Qualitative method is suitable for studying mental health among immigrant women because it is an insufficiently explored topic. It permits researchers to explore the "intricate details" of immigrant women's experience. Qualitative methodology would also allow researcher to better understand mental health concerns and the sociocultural context of immigrant women from their perspective, thus giving them "voice." With an in-depth understanding of immigrant women's experience and their response processes within their sociocultural context, nurse researchers can develop tailored interventions to detect and help to promote mental health among this vulnerable population. In addition, when used complementary to quantitative psychometric testing, qualitative method such as cognitive

interviewing can be useful for ongoing clinical instrument evaluation and detect sources of measurement errors that are otherwise hidden.

Future Studies. From this dissertation study, I discovered the significance of husband and mother-in-law's involvement in immigrant mothers' processes of experiencing and resolving distress. However, I only explored immigrant mothers' experiences from their perspective, not that of their husbands or mothers-in-law. I plan to conduct future studies that address this gap by exploring the experiences of family members in the context of distress. This would guide the development of effective and sustainable interventions for distress that ensure involvement of important stakeholders. Through this dissertation study, I also learned the therapeutic and persuasive power of storytelling. One potential intervention tailored to immigrant mothers experiencing distress is a storytelling intervention.

Storytelling, a narrative health communication strategy, has been effective in improving health knowledge and attitudes, promoting care-seeking behaviors, and reducing symptoms among ethnic minority populations with strong storytelling traditions(Houston, Allison, Sussman, & et al., 2011; Kreuter et al., 2007; Larkey & Hecht, 2010; Lee, Fawcett, & DeMarco, 2016) such as the Chinese (Børdahl, 2003; Miller, Wiley, Fung, & Liang, 1997). Storytelling uses implicit persuasion or "nudge (Thaler & Sunstein, 2008)" which allows viewers/listeners to (a) accept values and beliefs of the characters with little counterargument and (b) modify their behaviors by learning from their own and the character's experiences (Bandura, 2002; Slater & Rouner, 2002). Thus, a storytelling intervention is a potential tool for increasing PPD knowledge, decreasing stigma, promoting care-seeking and reducing distress symptoms among immigrant mothers.

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Appendix

Appendix 1. Question progression

[Initial questions]

- What was your experience after giving birth?
- What is it like to experience postpartum depression or [symptoms mentioned]?
- When you felt [symptoms mentioned], how did you manage?
- Imagine you are talking to another Chinese mother who will give birth in the U.S. for the first time, what would you tell her?
- Is there anything you would like to tell me that I have not asked?

[01/01/19 Interview questions for 2nd interview]

- Can you describe to me what it was like after giving birth? What have you experienced?
- You mentioned that you have experienced emotional fluctuations, can you describe this experience to me? What made you feel this way and how did you deal with it? (trajectory) How do you feel now?
- In terms of yourself, what are some of the changes you see in yourself, either physical or psychological? Any other **selves**?
- In terms of your **relationships**, with your husband or mother in law, what are your expectations? Do they match with reality? If not, how do you deal with it?
- If you spend your postpartum period in China, would there be any differences? (**Context**)
- You mention__ (problems/changes/losses), what did that mean to you? How did you make sense of it (**making sense process**) What were the consequences? Specifically, to your emotional self? How did you deal with it? How did you get to where you are right now?
- Any **partial/ complete recovery**? What do they mean to you? What are the consequences of partial recovery?
- What are strategies you use to recover from___? What are **active** (planning, trialing) and what are more **passive** (thinking/hoping)? Any differences in consequences? To your psychological self?

[01/03/19 Questions for 3rd Interview]

- What are the **blocks**, are they removable? How are they removed (strategies)? If not **removable**, why it's not removable? then what? what are the consequences?
- **Making distress call:** when you experience__, what do you do? Who do you reach out to?
- What made the **transition** from hospital to home difficult? What are lost? What are new? Relationships? Interactions?
- What are the sources of **normalization**? Self (past experience), women group, professionals, mother, book. How do comments from other people affect "no end in sight" (e.g. mother in law blocks "not me")
- What are the conditions for "**no end in sight**"? And what are strategies you used in respond to "no end in sight."
- Do you do anything or respond to __ differently now? What made the changes?

[02/15/19 Questions for 4th Interview]

- **Losing old self**: which selves get lost? How many self? Which dimensions of self?
- **Making sense of self/loss**: how did you interpret this loss? How did you make sense of it? Does its meaning changes overtime, if so what made the change?
- **Putting self on hold**: which self did you put on hold? Under what circumstances? How did you put yourself on hold? For how long? How did it change?
- **Refocusing self**: what point do you decide to shift focus or re-focus on yourself. What are the strategies used to shift focus?

- **Emerging new self**: what are you hoping for now? Have you done anything to achieve___?

[3/13/19 Questions for 5th Interview]

You mentioned that you experienced some emotional changes/fluctuation. Can you tell me that experience? Specifically, can you tell me:

- Under what circumstances, did you experience such fluctuation?
- How did you respond to it? What worked? What didn't work? Did you try anything else?
- What makes it harder for you? What are some of the things make it harder?
- Where are you at now?
  For example, some of the mothers I talked with mentioned that they went through phases of "having no end in sight-having something to hope for-emerging new self". What was your experience? Is it anything similar or different?

Loss process

Since you gave birth,

- some people say they have lost things, did you experience this?
- How significance is this loss? Longevity? Reversibility? Duration? Magnitude?
- how did they affect you
- how did you response to these losses or changes?

For example, some of the mothers I talked with mentioned that they had some physical discomfort because of giving birth, or relationship changes. Can you tell me your experiences?

- Would you say some of your losses are recovered? How each of those are important to you? What differences did that make?
- If not, then what do you do? Do you ever give up? In what circumstances do you give up?
- When do you come to term with the losses (if ever)? How does this affect you?

Gain process (new selves)

After giving birth, you gained other roles such as a mother, what was your experience like?
For example, some mothers I talked with say that after giving birth there was a time they can only focus on the baby not themselves. Sometimes they stay up late just to have sometimes for themselves.

- In addition to mother, is there anything new/changed in roles/relationships (to others/self)
- How did you navigate this transitioning from a woman to a mother? How would you describe where you are now? How did you get to where you are now?
- In the meantime, you become a foreigner after leaving China, how did you navigate this transitioning at the same time while you becoming a mother?
- What are you hoping to do now? Is there anything making it difficult? And What do you do?

[3/16/19 Questions for 6th interview]

- **Uncertainties** of loss: known source? know solutions? What are other dimensions of uncertainties?
- **1st vs 2nd child.** When you comparing your experiences after the 1st and 2nd child, did you experience anything different? What makes it different?

[4/23/19 Questions for 7th interview]

- **Selves – time**s: what are the connections amongst selves and times?
- Comparing 1st and 2nd child: what made the different?
- **Derailed vs interrupted vs paused vs continued** selves: which self and which pathway? And what are the conditions? What are the strategies used in each pathway? Any switches in pathways? What led to distress?

- Loss process: encountering losses, what are the pathways? **Fast pathways vs delayed pathways** (making sense of loss)? What are the conditions to the pathways? What are strategies in these pathways and consequences of these pathways?
- **Making sense of loss**: is uncertainty of loss the condition for this process? What are the dimensions of loss that is uncertain? What strategies are used to make sense each dimension of losses? What are the purposes of these strategies?
    - **Comparing:** on what, with whom/what (point of references), how (strategies), why (purpose)
    - **Validating:** on what, with whom, how, why
    - **What is the process after comparing and validating?**??

[5/1/19 Questions for 10th interview]

- What have you done to make yourself feel better? What worked? What did not work and why?
- For the selves you lost or put on hold, have you tried to bring them back? How did you do that?
- What do you hope for now? have you tried anything to achieve this?
- Any cultural issues?

Appendix 2. Memos

[2/1/19. Memo on psychological distress-shift in study focus]

1. **Changing in study focus**. As the data analysis process, I have come to realization that focusing on the process **how Chinese immigrant mothers respond to psychological distress** would make more sense than focusing on postpartum depression for several reasons:

1) most of my participants were not clinically diagnosed with PPD, Nonclinical population, except the t participant, and there was no way to determine whether they had it in the past or not; Thus, my participants are a different group compare with Beck's group (i.e., clinically diagnosed and recruited in a PPD support group, Clinical population).

2) Psychological distress is *identifiable* through words of participants and non-verbal ques; based on defining attributes of psychological distress (Ridner, 2003), it is clear that all participants have experienced psychological distress caused by various stressors and used various strategies to reach a place where they are now.

2/24/19 Object-psychological distress

[**Yu**] What does it mean to subjects? What's the nature of this object in their world, how they define it and experience it in their world?

3) Psychological distress is *recognizable* in their stories and is a "window of opportunity" for nurses to intervene (see the table below for corresponding signs of each distress attributes (Ridner, 2003)). So it is clinically meaningful to understand how does psychological distress look like in this population and what are the strategies participants used; which were effective and which were not; **And what are sources or presumed sources of distress, how does attributing source influence strategy**

4) Interview data may provide more insight on the debate on mental illness, menta health and distress in sociology. This point is discussed later in this memo.

The psychological distress reflected by defining attributes include:

Defining attributes of psychological distress (evidenced in interview data)	**Signs**
perceived inability to cope effectively	Failure to verbalize ways to address problem, dependence on others to make decisions, hopelessness, avoidance of issue
change in emotional status	Anxiety, irritableness, depression, withdrawal from others, hyperactivity, tearfulness, inappropriate laughter
discomfort	Sadness, aches, pain, anger, hostility
communication of discomfort (signaling, making distress call)	Verbal: expressing lack of hope for future, fearful, complaining of pain, insomnia, silence Physical: scowling, frowning, restless, neglectful of appearance, avoiding eye contact
harm (permanent or temporary)	Pain, change in vital signs, suicide gesture, desire to leave against medical advice

Making a systemic, "far-out" comparison of person in distress with ship in distress

2. Ship in distress VS person in distress. "In maritime communication, distress represents **a state of danger**; for example, ships in distress or sinking, **make distress calls** (Simpson & Weiner 1989, Merriam- Webster's Collegiate Dictionary 2000)." (Ridner, 2003). Distress suggest a fluid state or a process. Comparing to its use in maritime, person in distress is similar to a ship in distress. Distress represents a state of danger (Making a comparison with existing model/literature: borderline of sink or flow←→ **teetering on the edge [edge of sanity and insanity]**?) for both people and ships. People signal or communicate distress (both verbally and non-verbally) and ship make distress calls; To whom do they signal?. This comparison also suggest that distress can be caused internally and externally (**internal or**

external stressors); and strategies in respond to the distress can be internal (deal with the ship/person) and external (deal with the water/environment/context).
"*Because after giving birth you are so in debt of love, you know, and you are relatively weak, you feel that you are close to the edge of a cliff, about to fall down, someone pulled you back."(01)*
3. In further comparison with a ship staying afloat, I thought about what determine whether an object floats or sinks. It's the density (mass per unit of volume) of the object compared with the density of the liquid it is in (so BOTH the ship/person and the liquid/context matters, and I need to pay attention to BOTH the PERSON and CONTEXT). If the object is denser than the fluid, the object will sink. If the object is less dense, then it will float.
4. With a steel-hulled ship, it is the shape of the hull that determines how well it floats and how much of a load it can handle. On an empty ship with a steel hull enclosing a volume of air, the ship's density is equal to the sum of the mass of the steel hull and the mass of the enclosed air, all divided by the hull's volume: The ship floats because its density is less than the density of water. But when cargo or other weight is added to the ship, its density now becomes the sum of the mass of the steel hull, enclosed air *and* cargo, all divided by the hull's volume. If too much weight is added, the ship's density becomes greater than that of the water, and it sinks. Excess cargo would need to be thrown overboard in a hurry or it's time to abandon ship!
5. Comparing this to a person, the **volume of enclosed air** in the steel hull is a person's **resources** (both internal, e.g., experiences, and external, e.g., family support) for a person to "stay afloat". When the person experience too much **stressors**, e.g., mastitis and children health issues, (too many cargos) that exceed this person's resources to respond (enclosed air volume in the steel hull), the person is in distress (ship in distress), a state of danger. Stressors need to be removed (excess cargo would need to be thrown overboard) so that a person (ship) won't "sink." The ***theoretical questions*** are what are the stressors, are they removable? How are they removed (strategies)? If not removable, why it's not removable? then what? what are the consequences?
6. The water body matters for the ship as the context matters for a person. A ship with perfect condition (with no excess cargo) would still sink when the wave is so big that flipped over the ship. A person with good resources to cope would still experience distress when the context changes dramatically. The ***theoretical questions*** are what is the context, how does change in context affect a person's strategies to "stay afloat." Do they develop new strategies in response to change in context and what are the consequences of these new strategies (achieving environmental mastery?)
7. Consequences of distress in a continuum. In Ridner (2004)'s concept analysis, the working definition for psychological distress is "the unique discomforting, emotion state experienced by an individual in response to specific stressor or demand that result in harm, either temporary or permanent to the person." And Ridner (2003) proposed the consequences of destress in a continuum from negative (e.g., permanent harm) to positive (e.g., personal growth).

[Update on 2/3/19]
"Meaning-making is a process of using prior knowledge and experience to interpret new information and revise understandings of old information; past experiences determine how to make sense of new ones (Mezirow. 1991)."
Perhaps rather than normalizing, these women were **meaning making** their new experience.
12. **Constant strains/stressors** providing child care/mother in law disapproval/attending new things (conditions))→distress→**Putting self on hold (strategy →re-focusing self/shifting/broadening focus**; at what point do they decide to shift focus or re-focus self. What are the strategies used to shift focus?

[2/7/19 Post meeting with Barb]
1. Putting self on hold. What are the characteristics? Aspects?
2. Focusing on self (doing "focusing on self" vs thinking "focusing on self", can they actualize the thinking to doing? If they can, what are the consequences and conditions? If they cannot, what are the

conditions, did they use any strategies to remove the block? If they can't, what are the consequences? (Note that **self was not forgotten**, they have been thinking about self but not able to carry out their plans) **Distracting/Soothing** (e.g., eating, watching TV, shopping), R**eflecting** (e.g., ruminating past experiences, expressing gratitude, framing life into chapters, undergoing positive revision of personal schema (reframing), perspective taking of husband and/or mother in law), and **Investing** (e.g., developing new hobbies, goal planning, paying myself first).
Under what conditions these strategies were used. What are the consequences of these strategies (Recovering self or developing new self)? Does the sequence of using these strategies matter?
13. Hobbies. Where did the hobbies take people to? What are the characteristics of the hobbies?
Compound strategies (e.g., allowing "feel better," home-bound, affordable and accessible, enabling social interaction, providing reward circuit, sustainable)

[2/21/2019 Me vs not me]
A process of "**It's not me←→ It's me**"; **shifting cause attributions**; When participant was in the "it's not me" mindset, she responds to problem in certain ways (**Victimizing**, validating, removing external attributes); when participant was in the "it's me" mindset, participant respond to problems in other ways (reflecting, reframing and renewing self). What are the strategies used for shifting cause attributions (reflecting, reframing, and taking perspective of others)

The questions are: what the conditions are lead to either path way and what are the consequences of the path way and the strategies used in either path way. And what are the **conditions for shifting** cause attribution. Barb made a good point that participant **perceiving self as a VICTIM** (It's not me, "why me," why this is happening to me).

[2/23/19 Updates]
Notes, thoughts and reflection after reading Barb's article on Grounded Theory
1. Self (I and ME). Fundamental assumption of SI: each individual is comprised of multiple selves and me.
→Q: which self is lost/altered/discovered/gained?
Who am I depends on which ME is experienced as most salient at the time…Me is called forth by social context.
→ Participants mentioned that one of the strategies they used was to change the setting/environment (e.g., asking the husband to take her outside or eat out). Are they using **changing social context** for the purpose of **calling forth a different self (me)** that might have been putting on hold due to the current social context that this self was embedded in?

Self is fundamentally a process. Process of a continually evolving self.
→ Which self was called forth under what context?
→which self takes precedence/is prioritized/which self was put on hold under what conditions? And the consequences to either process.
→how did participant **shifting focus of selves**? (Self as an individual, new mother, daughter in law, wife, immigrant, student….) Which self get prioritized? Reinterpreted? Reflected on? Redefined?

[4/4/2019 Comparing with my own experiences of losses]
Last week I had experienced two losses that sensitize me further to understand and analyze my participants' experience of loss. And identify **dimensions** of losses.
The analysis process I had during my own experience with losses is an example of natural analysis that we do in everyday basis.

<u>Losing my key</u>.

Recognizing loss: The process of recovering started with **noticing/recognizing the loss** (condition for noticing: interfering planned activities, e.g. entering the house and accessing research office). The loss matters because it prevents me not only for current functioning but also future functioning (**gauging impact of loss; assigning value to the loss)**. In addition to myself, the loss also can interrupt my roommate's life and causing my roommate to accommodate this loss. I feel bad for bothering someone else for this (**worrying about relationship with others**) It causes me **distress** not only because it interrupts my functioning but also my relationship with other.
Confirming loss: Then I started to check all my pockets that I normally put my keys in (**validating/confirming the loss**).
Making sense of loss: When l confirmed that my key is not with me (**loss confirmed/validated**) and I did not know where and how I could possibly lost it (**ambiguous/uncertain cause**), I started to **making sense of my loss** (condition: **ambiguity/uncertainty with loss attribution**) by tracing my path to home and conjuring all the possible ways that I may loss my keys (**recalling antecedents; conjuring attributions**).
Responding to loss:
1. Initial responses: Then, I tried to look for all the possible places that I may loss my keys-on the way home, on the bus , in the school building (**working on recovery of loss**). First I tried to do all these on my own (**turning inward**) and I was not be able to carry out any other activities that I planned to do (**engulfing by the loss**), and I put all other activities aside (**realigning priorities/taking the "timeout" for recovery**). On the bus, to address my anxiety, I used strategy such as listening to music and scrolling Instagram feed (**smoothing and distracting self**). When I have exhausted all my strategies and none have worked (**unsuccessful recovery**), I started to ask for help-asking bus driver whether he has noticed keys (**turning outward**).
2. later responses: When he said he did not notice any and there are other buses running (**discovering alternative route for recovery**), at first I decided to wait for the other bus. But when I know that I need to wait for another 20 minute and it was already 9 pm, I thought about my plan to sleep early and other things I need to do (**weighting "opportunity cost": taking the timeout for recovery vs resuming routine**). I decided to pause my search tonight and resume it tomorrow (**putting recovery on hold**). Because CONDITIONS (1) sleeping early and other things are more important (**lower priority**), (2) I know my roommate and I can come up with a plan for this (**availability of compromised plan**), (3) I know that I can still try to call bus company when it's open tomorrow (**availability of residual strategy**), (4) in the worst situation, if it is really lost, I can still make copies of the new key (**possibility of replacing the loss/having a last resort**).
Resolving the loss. The next day, I prospected my residual strategy, calling the bus company, and was informed that no keys were returned and I can call back in a few days to check again (**ambiguous consequences**). Then my roommate and I decided to come up with a temporary plan to accommodate this situation (**compromising the loss**). When we find out the answer from bus company, we will activate our last resort, placing the lost key with new keys. However, soon Heather emailed and said that she found me keys in the copy room and all the distress were lifted (**loss recovered**).

<u>Losing my data</u>
Noticing loss: When I upgrade my Windows 10 on my PC, my computer got stuck in a restarting loop. This prevent a normal startup and routine use of my pc (**interfering normal functioning**)
Confirming loss: At beginning I could not believe something went wrong (**disbelieving the loss**), as it is a brand new computer and supposedly has a good processing system. It supposedly would be much faster and stable than my old computer purchased 4 years ago (**holding high expectation; making comparison**

to point of references, older pc). I waited for the pc to recover on its own but it kept giving me error message (**watchful waiting, failed**). Then I know something is wrong - pc's normal functioning is lost (**confirming loss**). I worry that this malfunctioning may lead to further loss-losing my files, data, and apps (**projecting further losses**). This thought immediately interrupted my planned activity, going to sleep. I pauses my routine to respond to this loss and potential further loss (**taking "timeout" for recovery**).

Responding to loss:

1. Initial response. I started to recover my pc using methods I already know, turning it off and on, waiting 30 min in between retarts. But these methods did not work (**indexing past knowledge/experience; turning inward, failed**). Then I started to look for ways to deal with the blue screen online (**turning outward**) and I found many other people experience the same thing, which somehow made me feel less anxious (**I'm not alone**). And I discovered an official post by Microsoft on how to resolve this issue (**discovering authority**). And I decided to follow steps offered by Microsoft first before trying "folk" methods (**enlisting authorities prescription, crediting authoritative source**). This also did not work.
2. Then I decided to try online chat support from Microsoft agent (**advancing support, failed**). The agent guided me to try same steps offered by the website post (OMG) and took 3 times longer than I tried on my own (OMGG), **accumulating frustration**). The assistance offered by this agent did not resolve the problem. This made me much more frustrated than earlier.
3.The agent later suggested me to go for Microsoft store to make physical copies before resetting my computer. However, the closest store is way too far for me to reach (**receiving unacceptable advice, unable to carrying out advice**), plus I don't know whether it would be worth it to go. If they are like this agent (**forwarding prior negative experience**) and can't fix it at the store, then travel just going to waste my time that I could've used for more meaningful activities (**ambiguity with consequence; weighting on "opportunity cost"**).

With this cascade of recovery effort, I **felt betrayed** by Microsoft and decided to proceed with my own caution (**losing faith with authority; turning inward**).

All efforts to recover pc without resetting pc were futile (**eliminating alternative options**). I was left no choice but reset the pc. After which, my data analysis software was deleted, along with my data analysis. I immediately reached out to Atlas.ti because I had **no prior experience** dealing with similar issue. Also because I have been warned what was going to happen (**previewed consequences**) I was not extremely disappointed when the Atlas.ti agent could not help solve my problem. She really tried everything she can to help me so I did not feel betrayed by the software. **Loss cannot be recovered**. Reversibility.

Coming to terms with loss:

Accepting the loss: At this point, I have accepted the loss and started to think about ways to make things up and to damage control (**minimizing impact of loss**). I contacted my grant sponsor for extension of grant and set time aside to recover losses analysis (**returning to "last saved"**).

Reflecting/redefining the loss: I also find the **silver lining** of this loss experience: be able to receive support from my mentor, peers and friends (this also brings our relationships closer-**strengthening relationships**), seeing my data with an "fresh eye", relating my experiences with my participants'.

[4/16/2019 Comparing]

Comparing potential loss with point of references is one of the strategies used for interpreting potential loss.

The condition for validating loss is ambiguity/uncertainty with potential loss.

In comparison to "validating potential loss", comparing potential loss can be think of as HORIZONTALLY interpreting potential loss, which concerns the ambiguity with legitimacy, normalcy of potential loss--where does this potential loss lie in my own spectrum (comparing with old self/pervious

experience); and in others' spectrum (comparing with other mothers, with "norm" obtained from preconceived knowledge (book) or notion (own mothers' experience and culture).
The properties of this category include: comparing which potential loss, comparing to whom (old self, previous experience, other mothers, own mothers, preconceived knowledge or notions), on what dimensions of loss (occurrence, reversibility, attribution, and consequences?) and process (how) of comparing, what are the consequences of comparing (matched/not matched), how do participants respond to either of theses consequence, what are the purposes of comparing (for gaining legitimacy? for removing ambiguity?)

Matched consequences: loss dismissed or normalized or accommodated or negotiated. What are the consequences of this?
Not matched consequences: loss spiraled? Inducing further loss? seeking more legitimacy?

[4/16/2019 Validating]
Validating potential loss is one of the strategies participants used for interpreting potential loss.
The condition for validating loss is ambiguity/uncertainty with potential loss.
In comparison to "comparing potential loss", validating potential loss can be think of as VERTICALLY interpreting potential loss, which concerns the ambiguity with attribution, course, and consequences of the potential loss.
The properties of this category include: validating which potential loss, validating with whom (authoritative opinion: provider/book), on what dimensions of loss (occurrence, reversibility, attribution, and consequences?) and process (how) of validating, what are the consequences of validating (validated/not validated), how do participants respond to either of theses consequence, what are the purposes of validating (for gaining legitimacy? for removing ambiguity?)

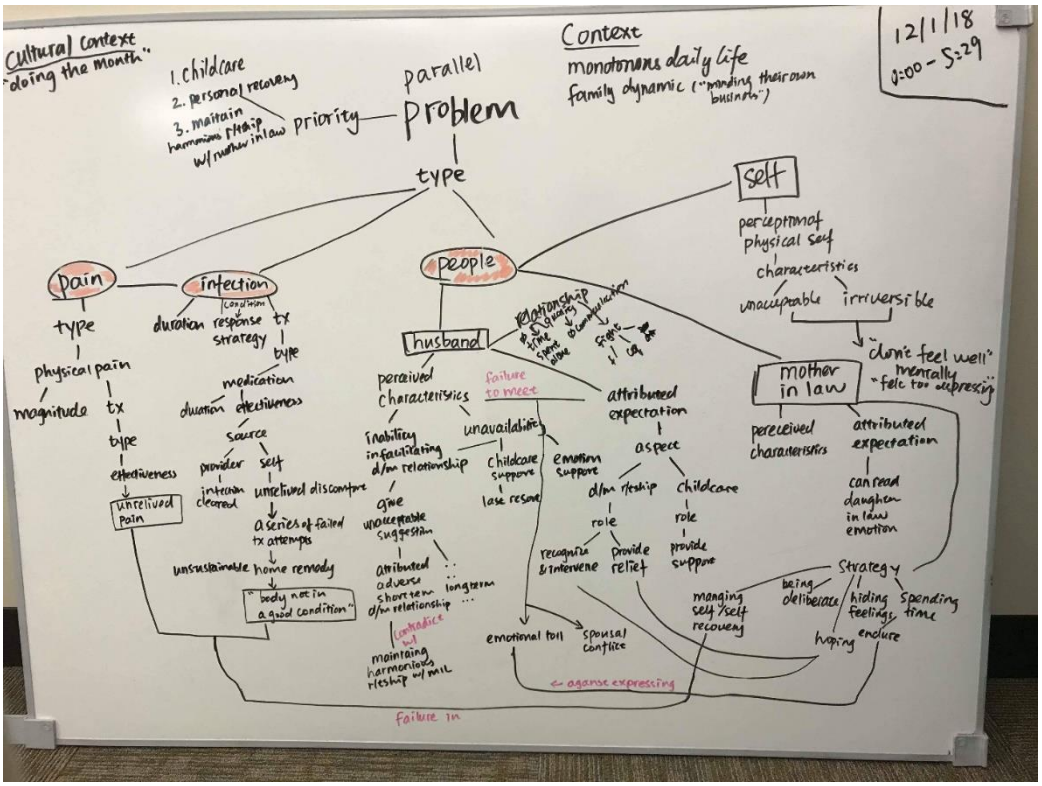
One implication for discovering this vertical vs horizontal interpreting potential loss is that providers are enlisted mostly for vertical interpretation. This helps participants to navigate their loss recovering process. However we would miss the horizontal interpretation of potential loss - comparing potential loss - that seems to play a bigger role in the recovering process and determines whether participants experience distress or not during this process. Linking this back to screening study. Implications for screening.

[6/25/19 Winterization]
In the novel *the Diving Bell and the Butterfly*, author Jean-Dominique Bauby suffered from stroke which resulted in the Locked-in-syndrome. In the book he described his experience before and after the locked-in-syndrome. One example he gave was a comparison between his actual visit to Paris in summer and a dream state visit in Paris in summer. The dream state Paris, despite in summer, for him felt like in winter- the vibrancy of life taken away. This is similar to the experiences described by my participants: no matter how good things are, everything is grey in their eyes.

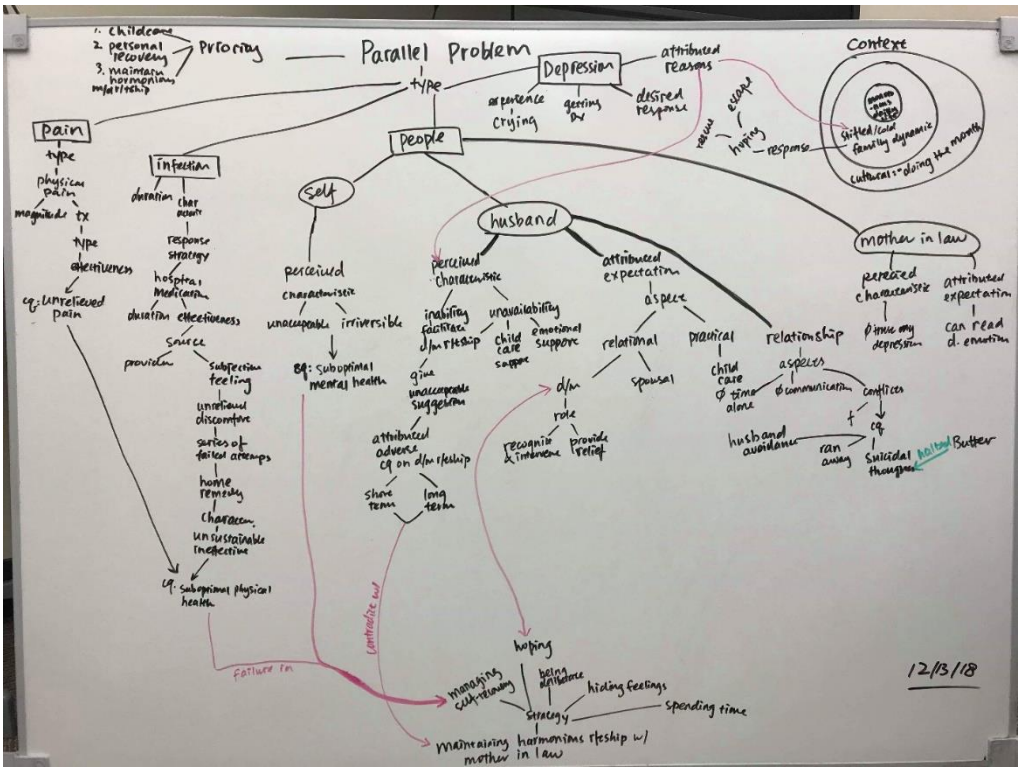
[6/29/19 Critical point]
In thermodynamics, a critical point is the end point of a phase equilibrium curve. The most prominent example is the liquid-vapor critical point, the end point of the pressure-temperature curve that designates conditions under which a liquid and its vapor can coexist. This equilibrium state in my participants was captured by “cracked,” as in fissures appears on the surface of a pottery or glass without breaking them. They may have experienced equal amount of **enabling conditions** that allow them to feel better as well as **blocking conditions** that prevent so. This is also similar to Beck’s “**teetering on the edge**.”

Appendix 3. Diagrams

12/01/18



12/13/18



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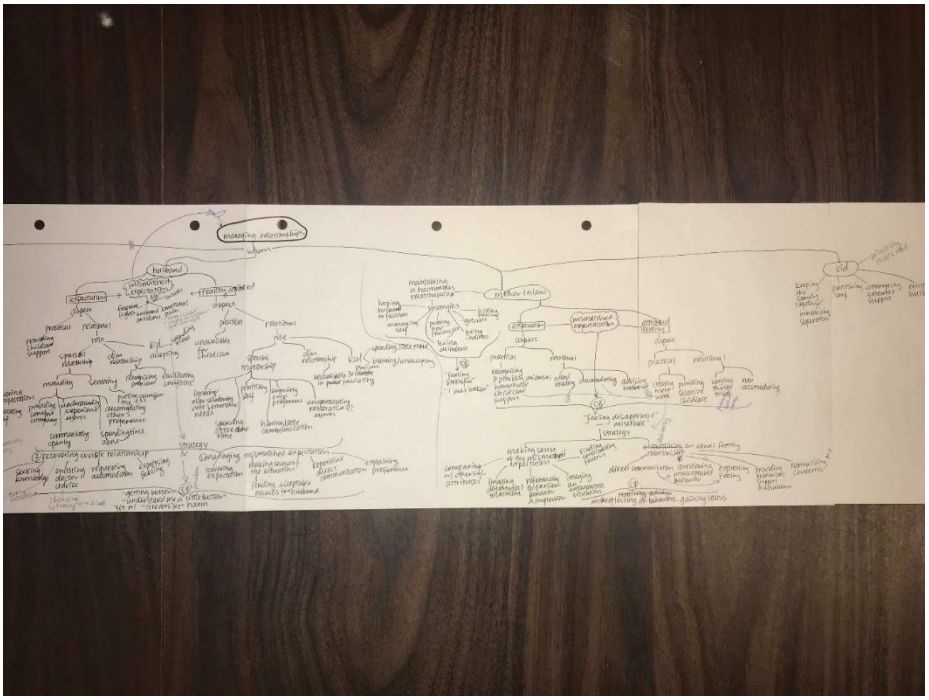
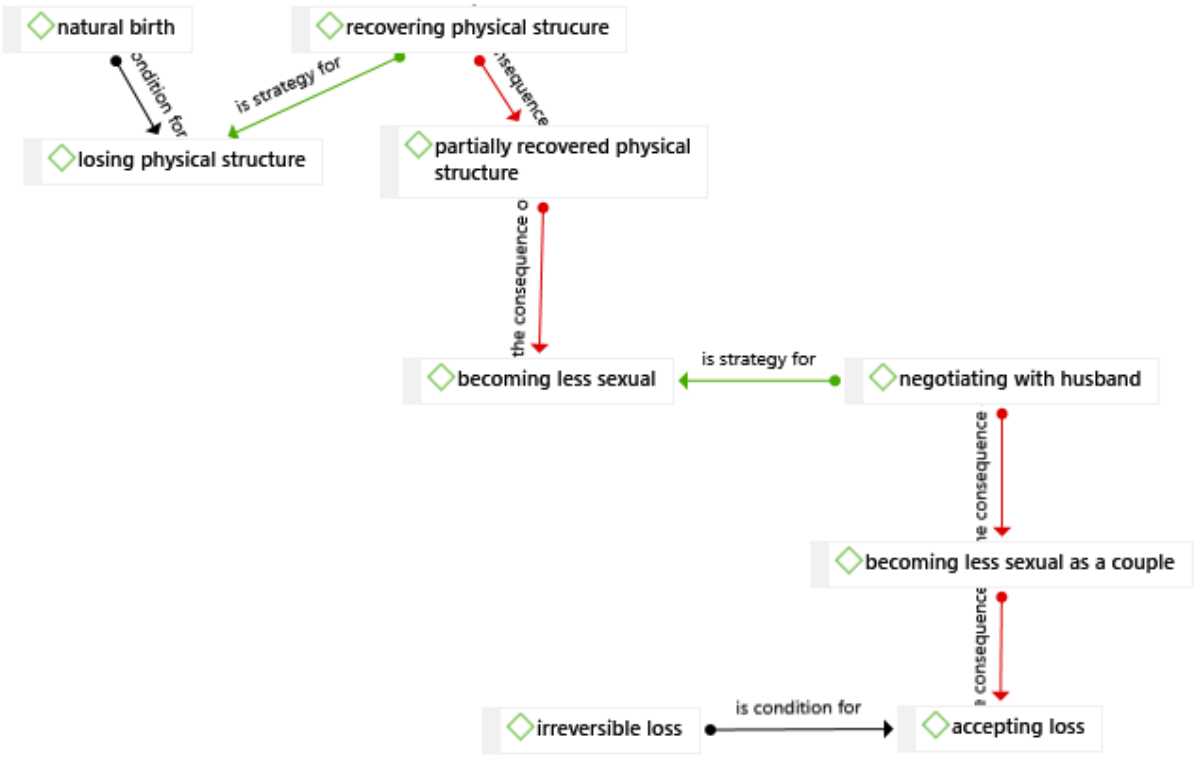
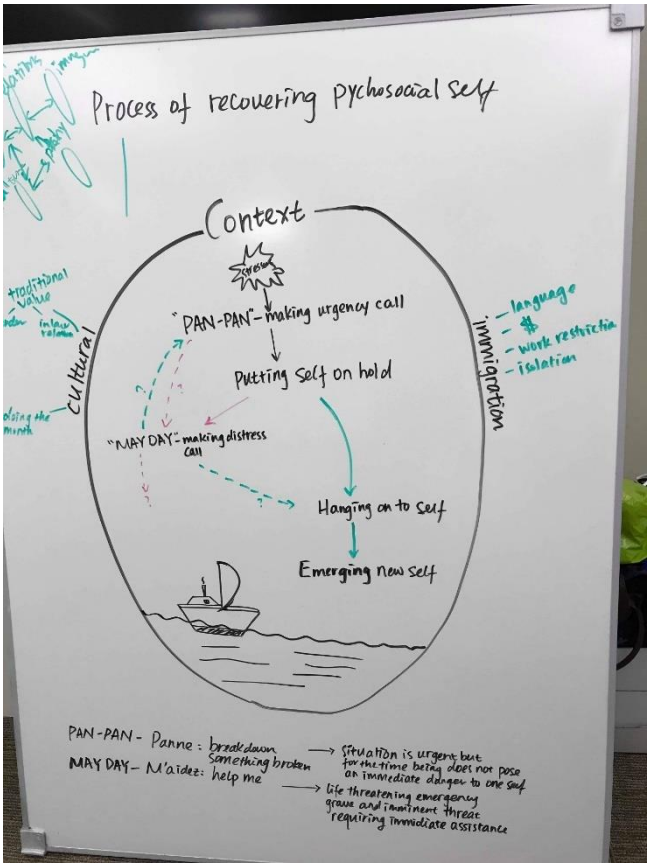


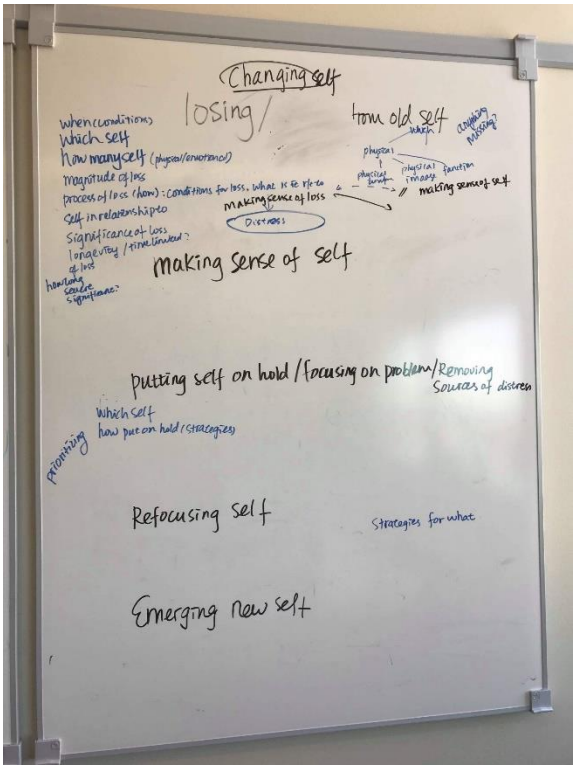
Becoming less sexual as a couple



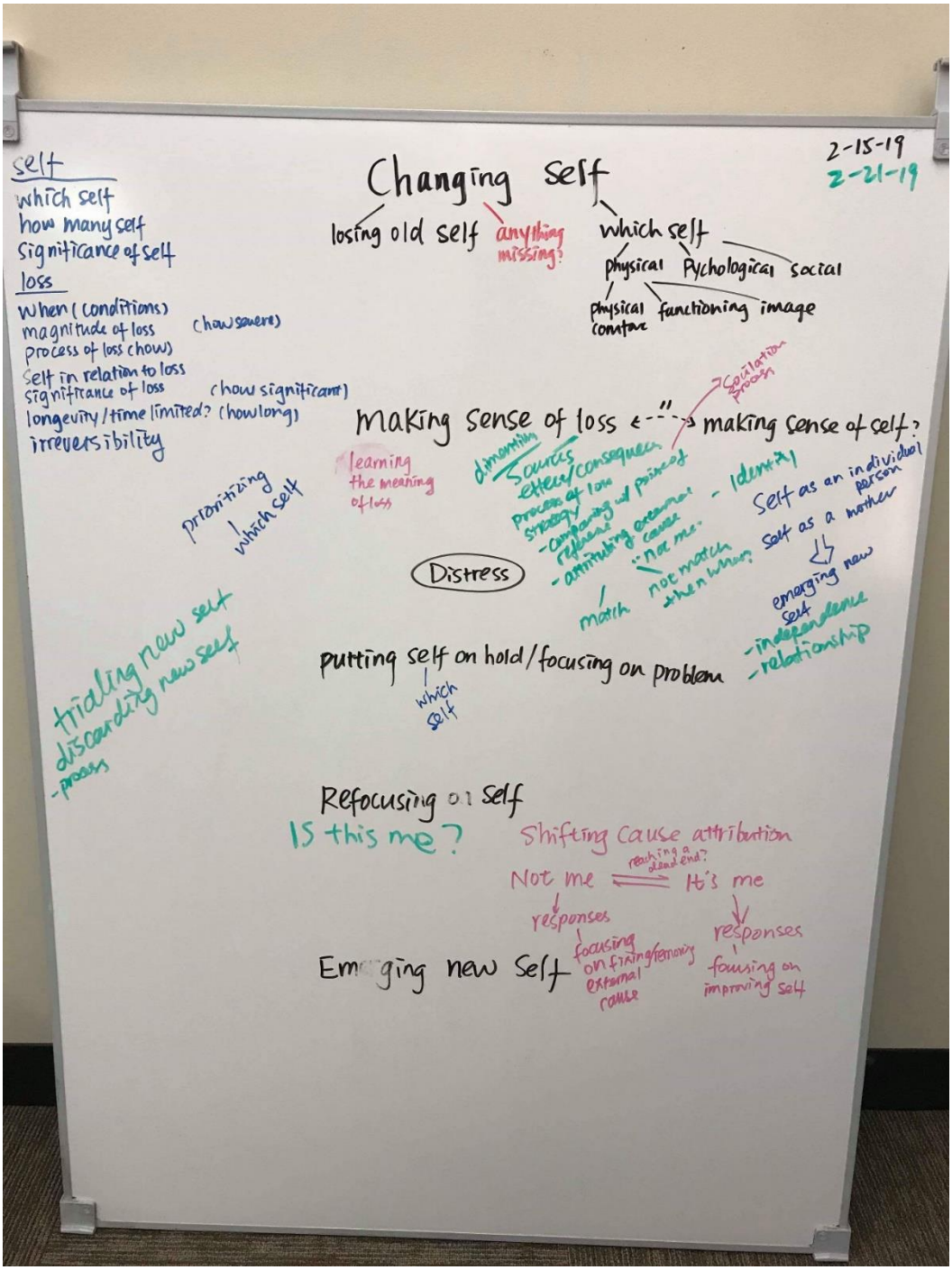
02/08/2019



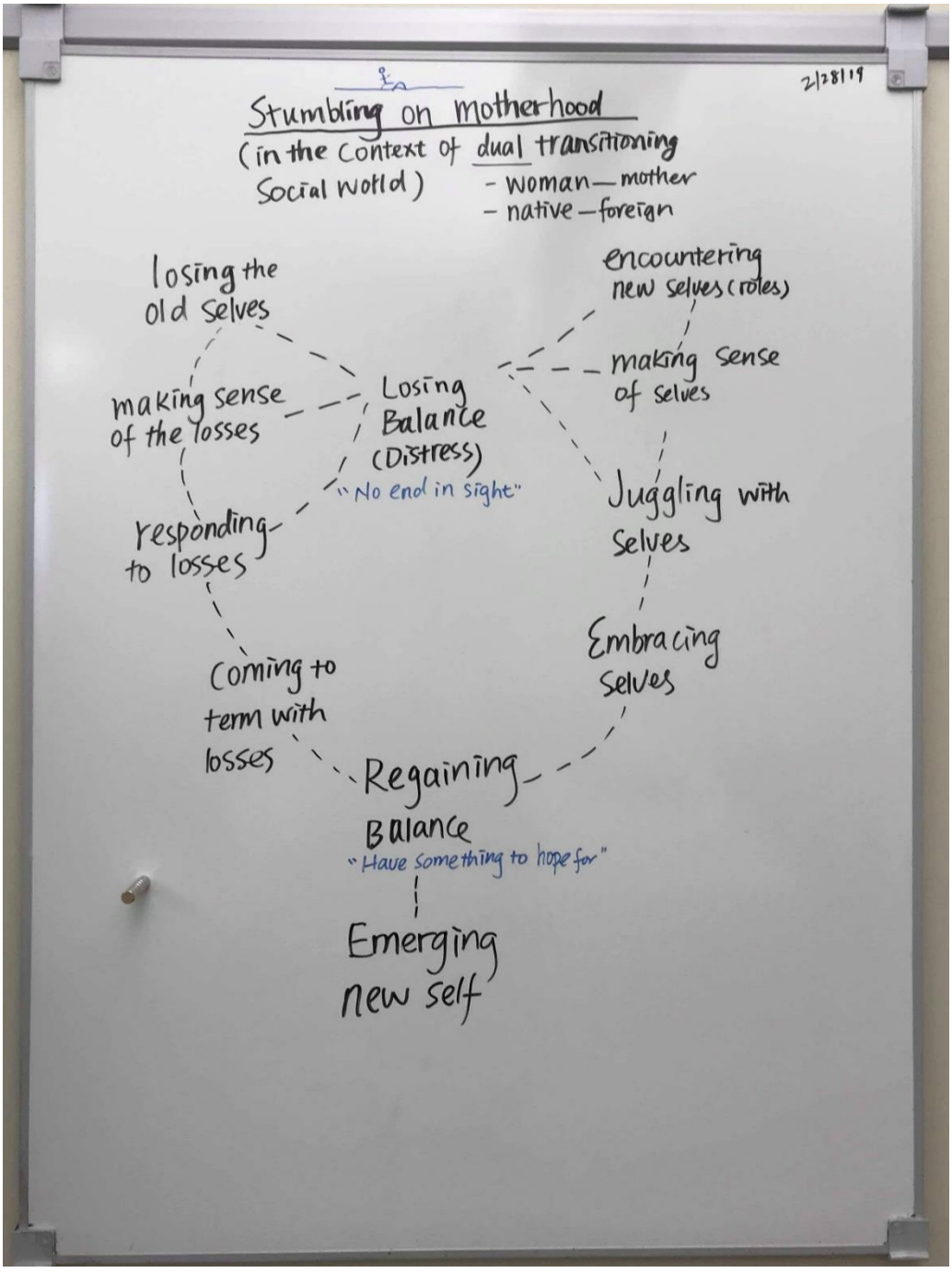
02/15/19



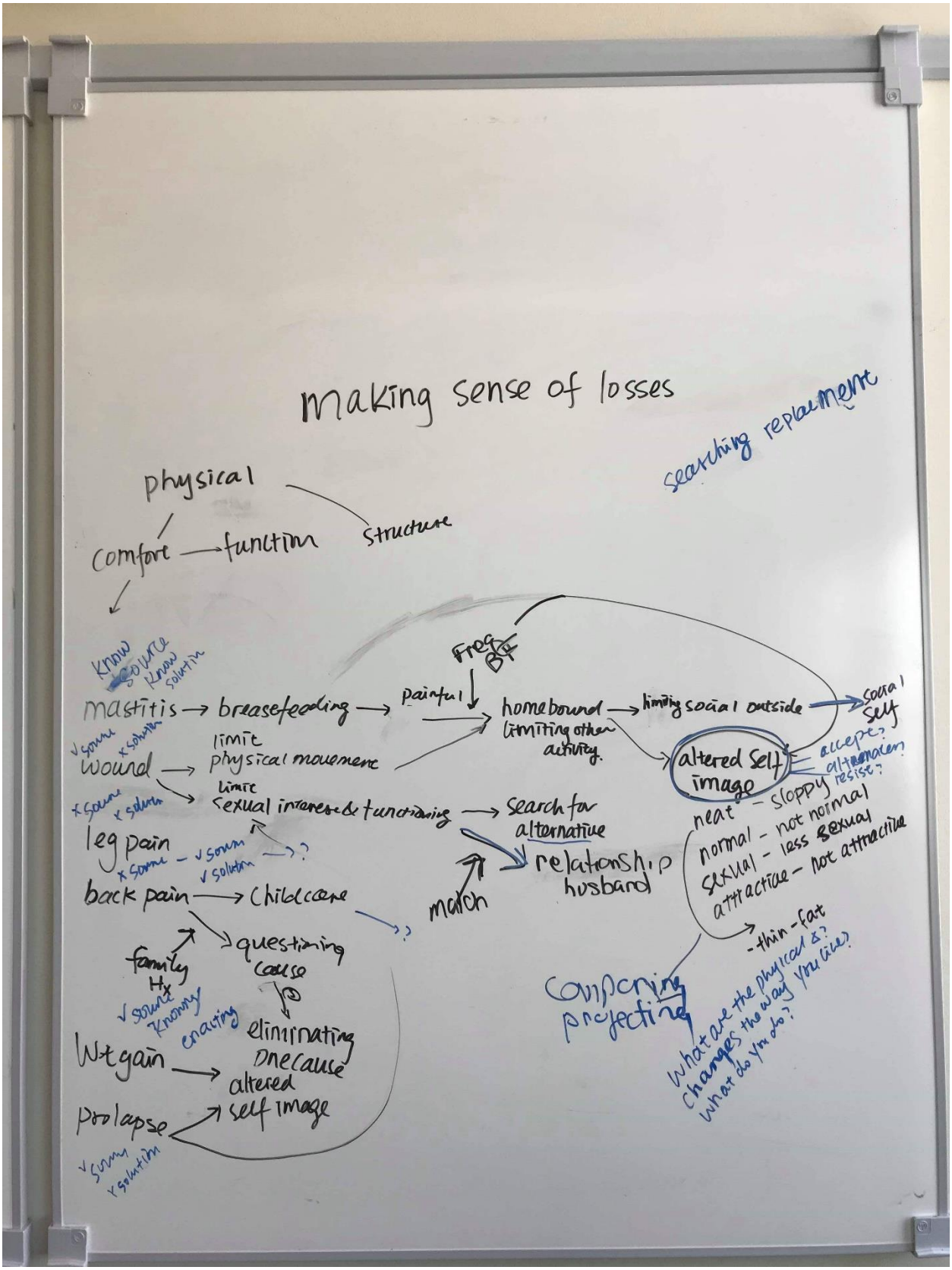
02/21/19


Changing Self
2-15-19
2-21-19
losing old self
anything missing?
which self
physical
Pychological
social
physical comfort
functioning
image
self
which self
how many self
significance of self
loss
When (conditions)
magnitude of loss (how severe)
process of loss (how)
Self in relation to loss
significance of loss (how significant)
longevity / time limited? (how long)
irreversibility
making sense of loss
making sense of self?
dimension
Sources
Effects/consequences
process of loss
strategy
-comparing w/ past self
-attributing reasons/cause
-identity
Self as an individual person
Self as a mother
not me
not match
then what?
match
learning the meaning of loss
prioritizing
which self
Distress
emerging new self
-independence
-relationship
trialing new self
discarding new self
-process
putting self on hold/focusing on problem
which self
Refocusing on self
IS this me?
Shifting cause attribution
Not me
reaching a dead end?
It's me
responses
focusing on finding/removing external cause
responses
focusing on improving self
Emerging new self

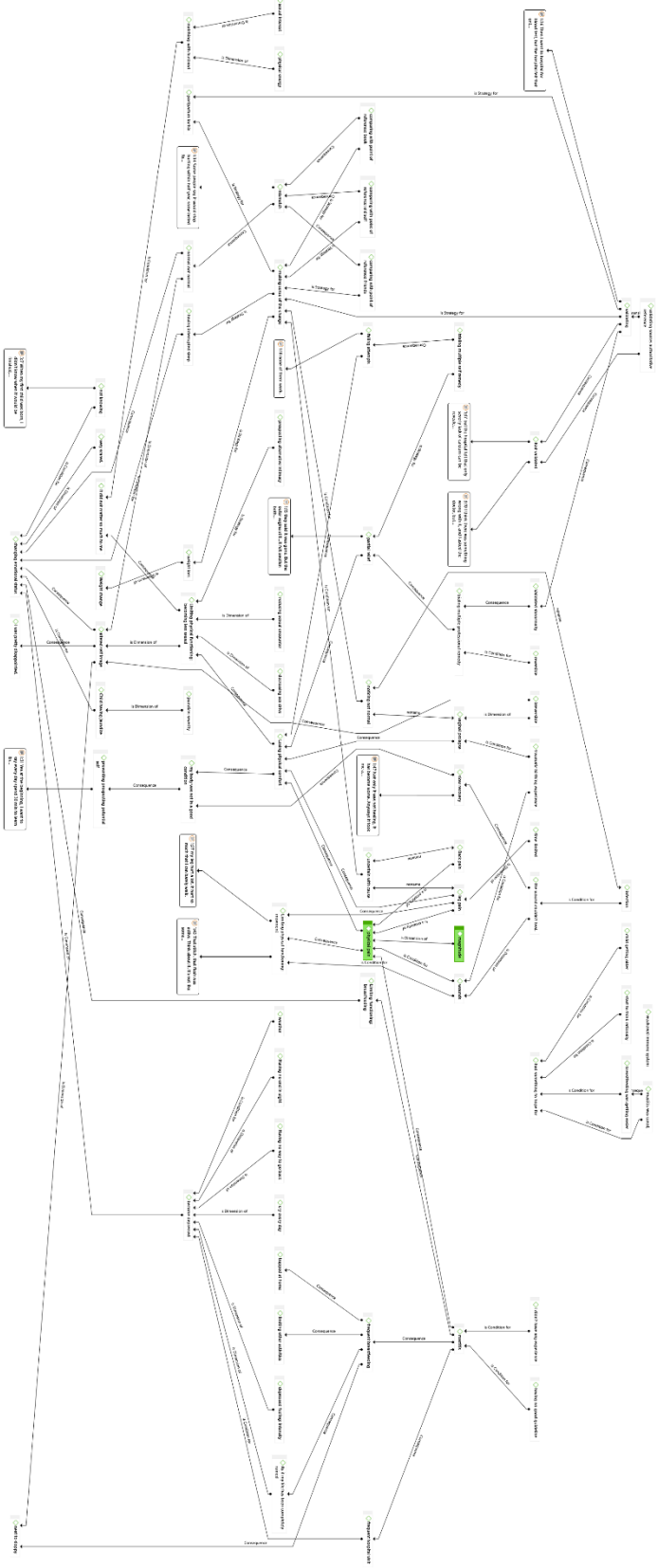
2/28/19


2/28/19
Stumbling on Motherhood
(in the context of dual transitioning Social world)
- woman—mother
- native—foreign
losing the old selves
encountering new selves (roles)
making sense of selves
making sense of the losses
Losing Balance (Distress)
"No end in sight"
Juggling with Selves
responding to losses
Embracing Selves
coming to term with losses
Regaining Balance
"Have something to hope for"
Emerging new self

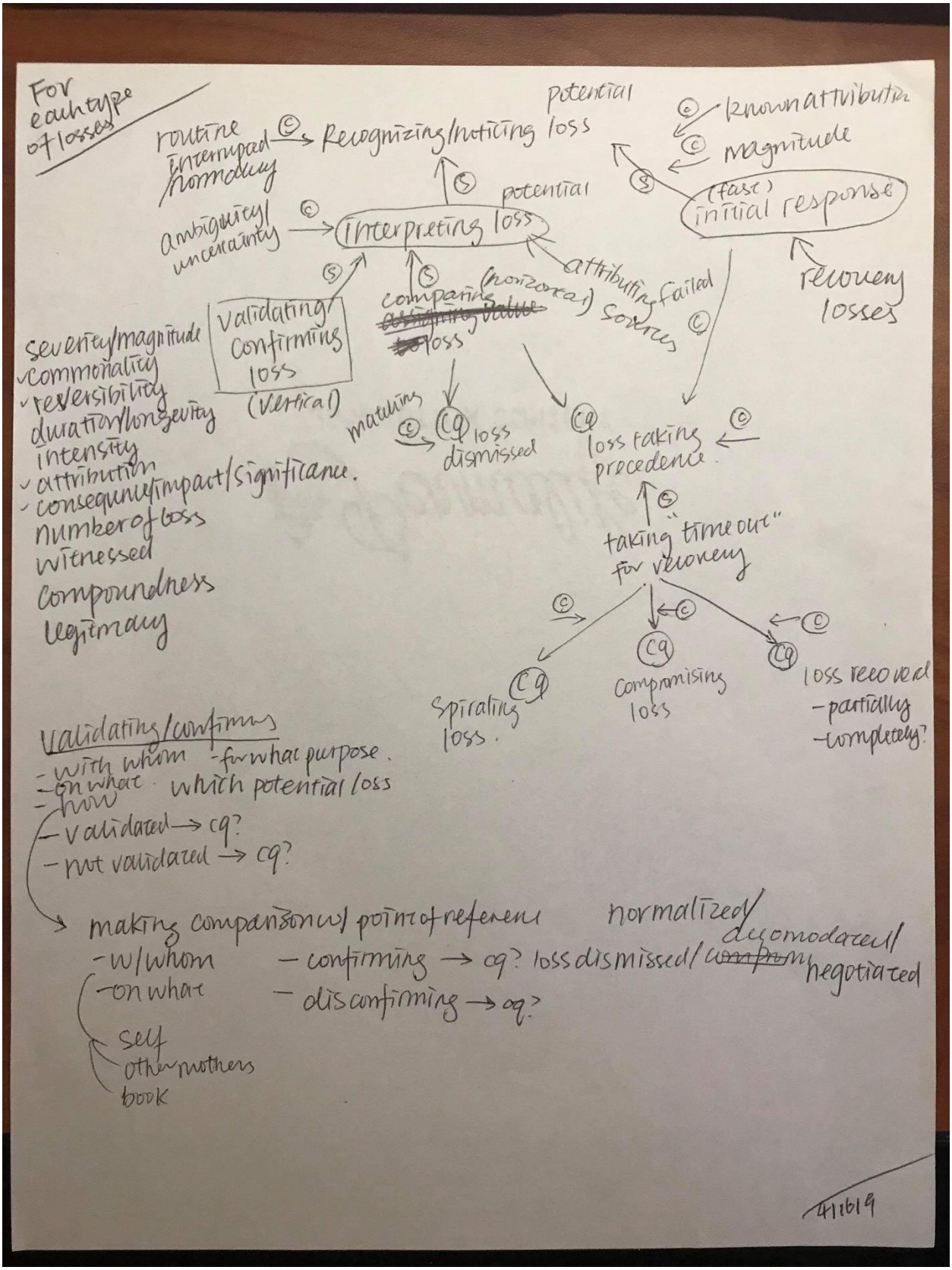
3/8/19

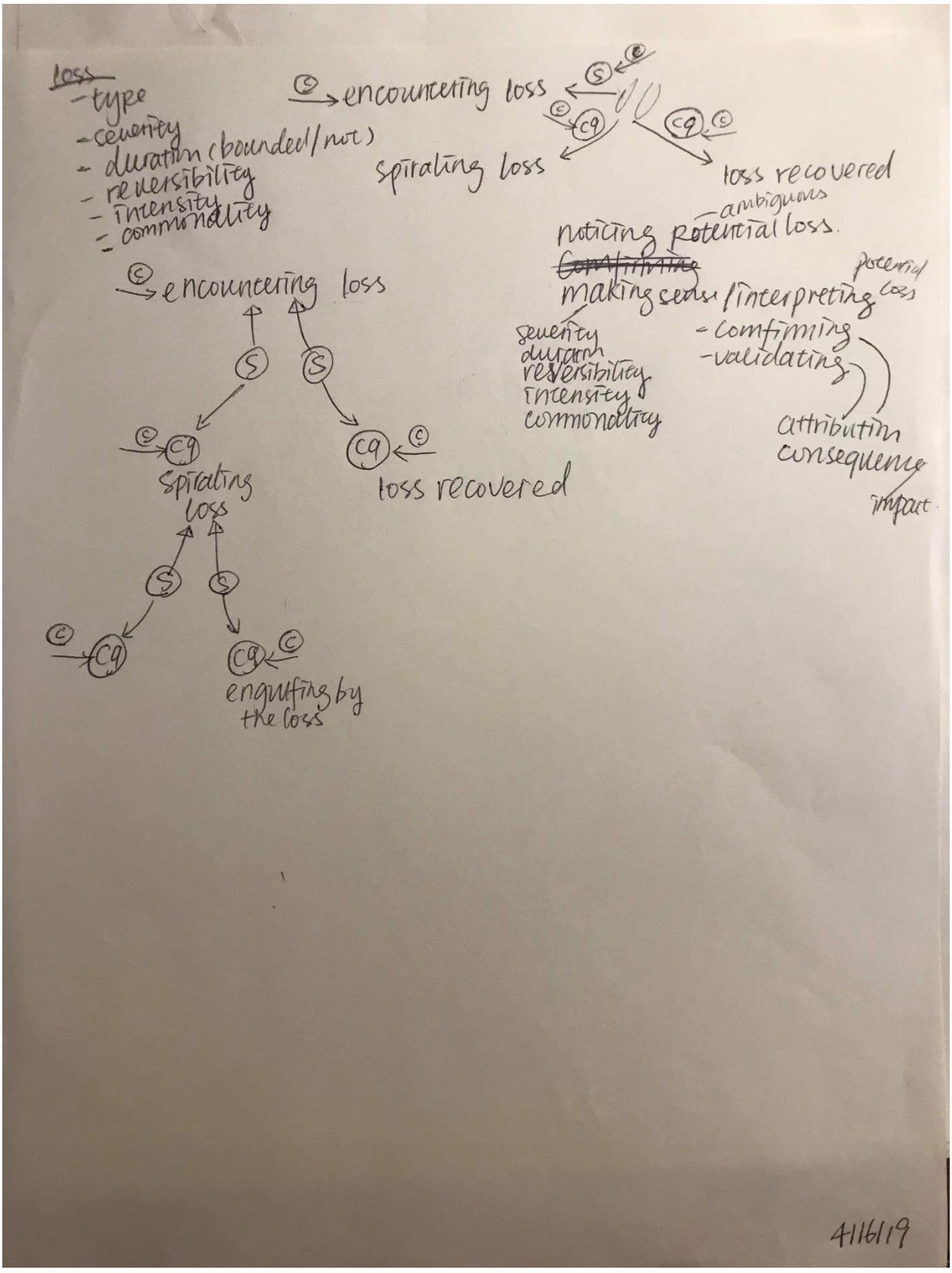

making sense of losses
physical
comfort
function
structure
searching replacement
mastitis
breastfeeding
painful
homebound
limiting social outside
social self
wound
limit physical movement
altered self image
accept?
alternatives
resist?
leg pain
limit sexual interest & functioning
search for alternative
relationship husband
match
back pain
childcare
questioning cause
family Hx
eliminating one cause
altered self image
Wt gain
prolapse
neat - sloppy
normal - not normal
sexual - less sexual
attractive - not attractive
- thin - fat
comparing
projecting
What are the physical Δ?
changes the way you live?
what do you do?

3/10/19 Changing Physical Self

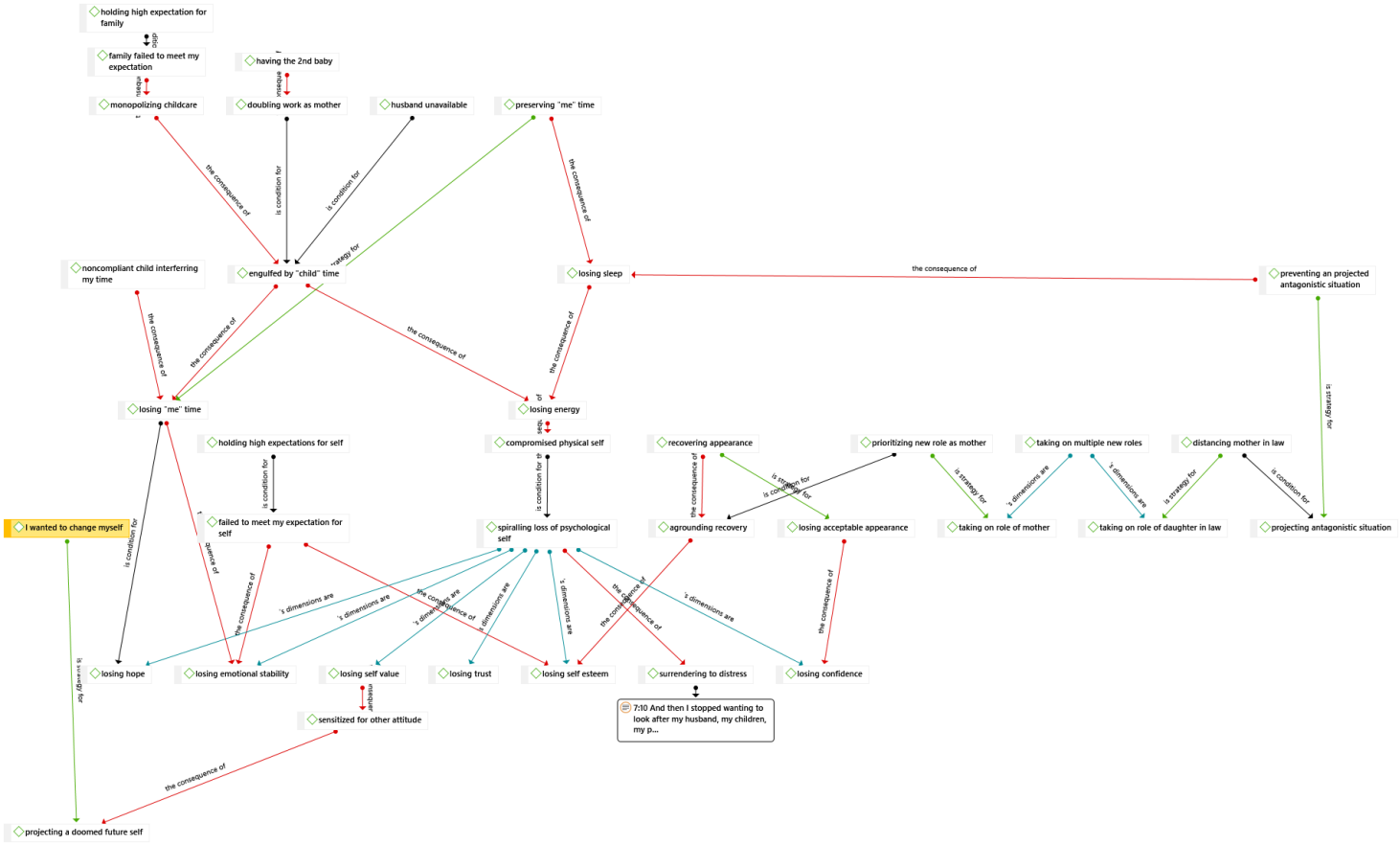


4/16/19

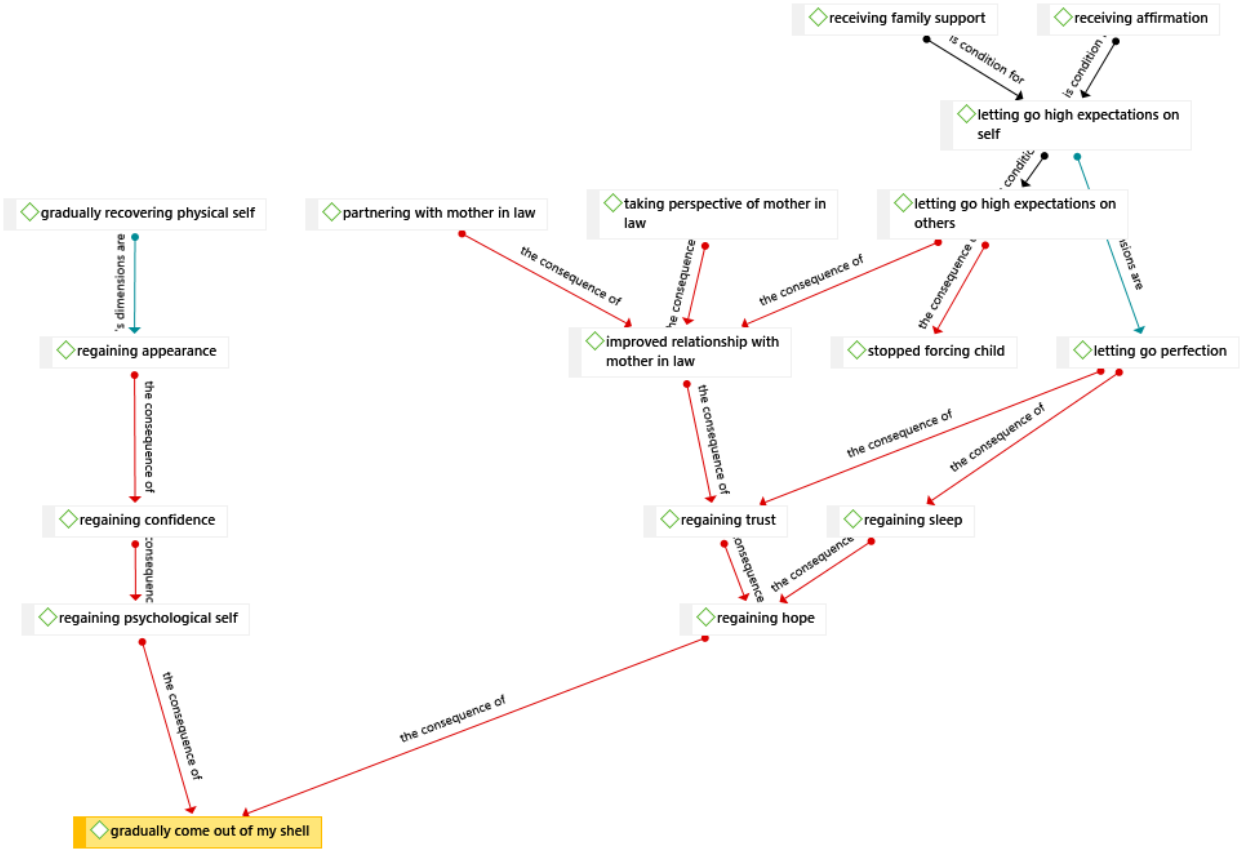

For each type of losses
routine interrupted normalcy
Recognizing/noticing loss
potential
known attribution
magnitude
ambiguity/ uncertainty
Interpreting loss
potential
(fast) initial response
Validating/ Confirming loss (Vertical)
comparing (horizontal)
attributing failed sources
recovery losses
loss
severity/magnitude
commonality
reversibility
duration/longevity
intensity
attribution
consequence/impact/significance.
number of loss witnessed
compoundness
legitimacy
matching
loss dismissed
loss taking precedence
"taking time out" for recovery
spiraling loss.
compromising loss
loss recovered
- partially
- completely?
Validating/confirming
- with whom - for what purpose.
- on what - which potential loss
- how
- validated → cq?
- not validated → cq?
making comparison w/ point of reference
- w/ whom
- on what
- confirming → cq? loss dismissed/ compromised/ negotiated
- disconfirming → cq?
normalized/ accommodated/
self
other mothers
book
4/16/19


loss
- type
- severity
- duration (bounded/not)
- reversibility
- intensity
- commonality
encountering loss
spiraling loss
loss recovered
noticing potential ambiguous loss.
making sense/interpreting
- confirming
- validating
severity
duration
reversibility
intensity
commonality
attribution
consequence
impact
encountering loss
spiraling loss
loss recovered
engulfing by the loss
4116119

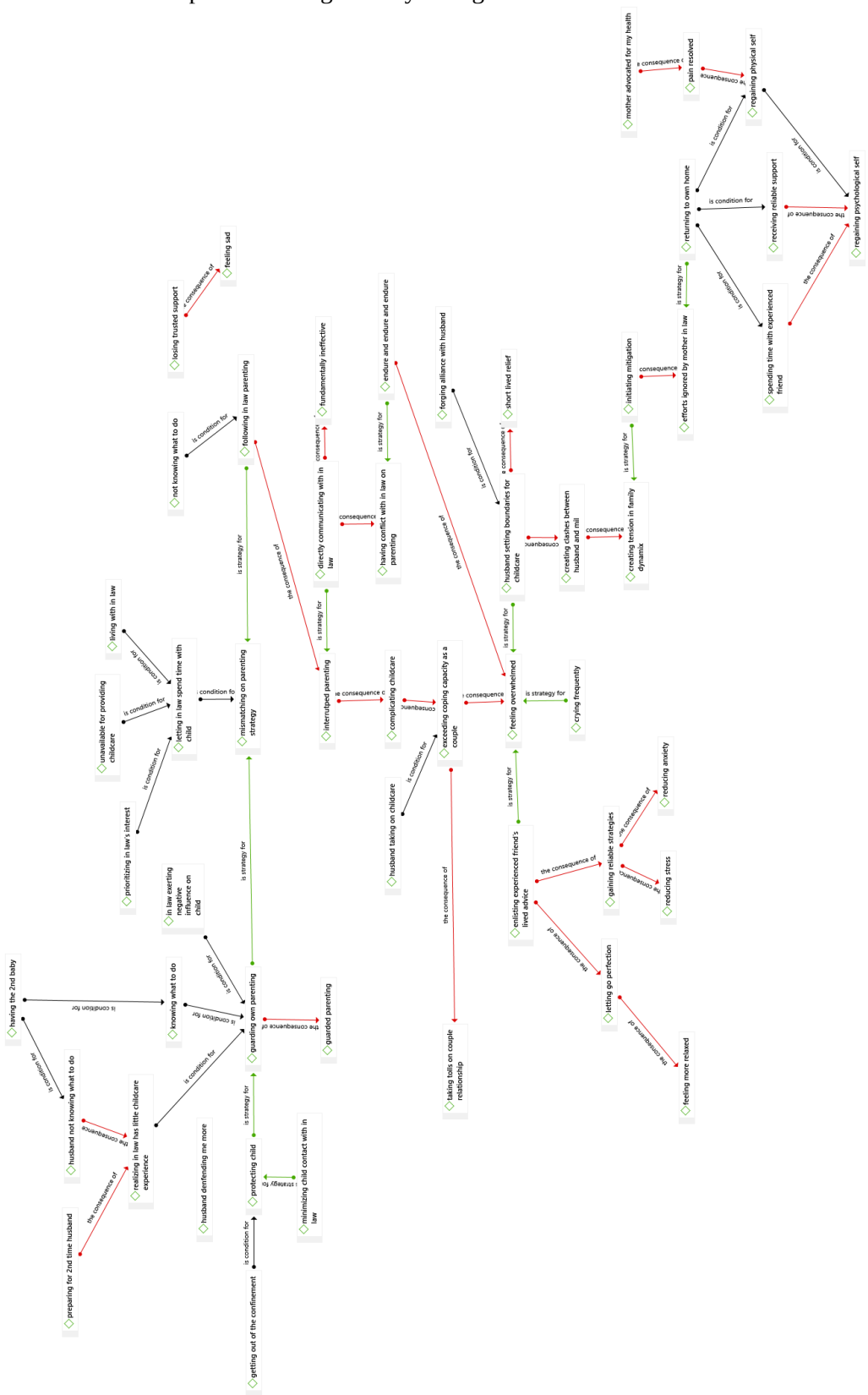
4/18/19 Spiraling loss of psychological self



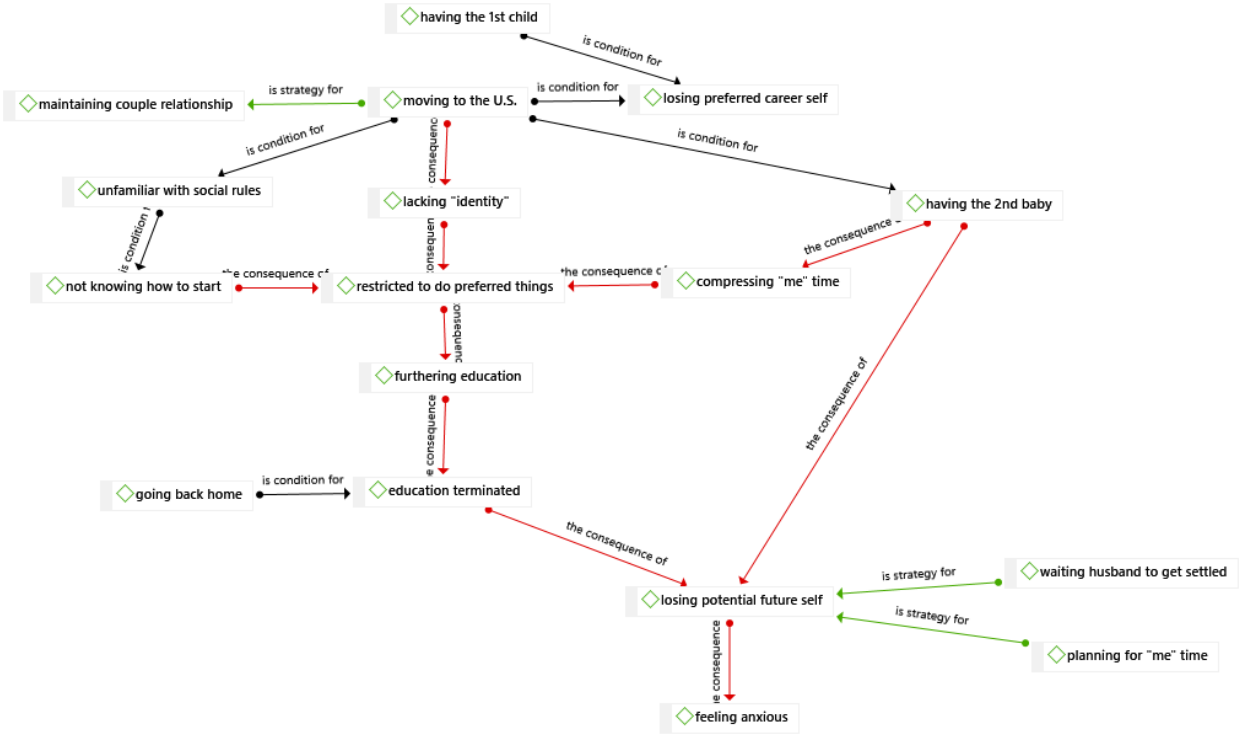
Regaining psychological self



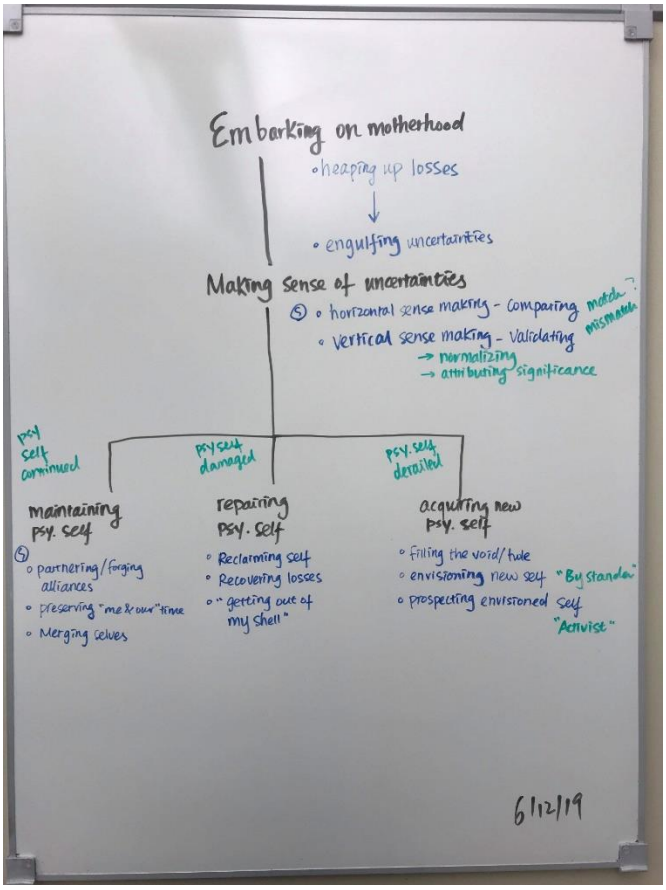
Guarded vs Interrupted Parenting and Psychological self



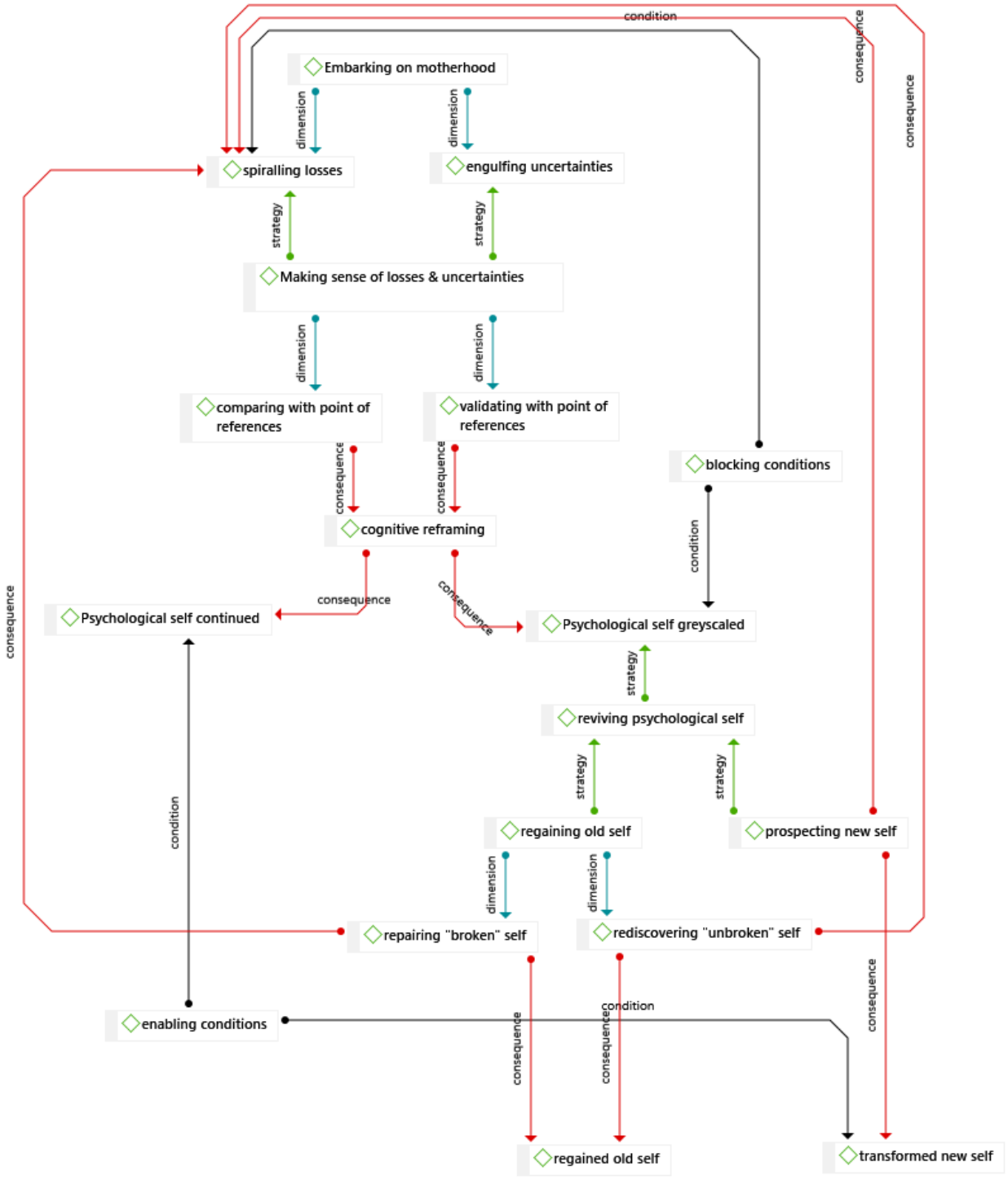
Losing career self and link to psychological self



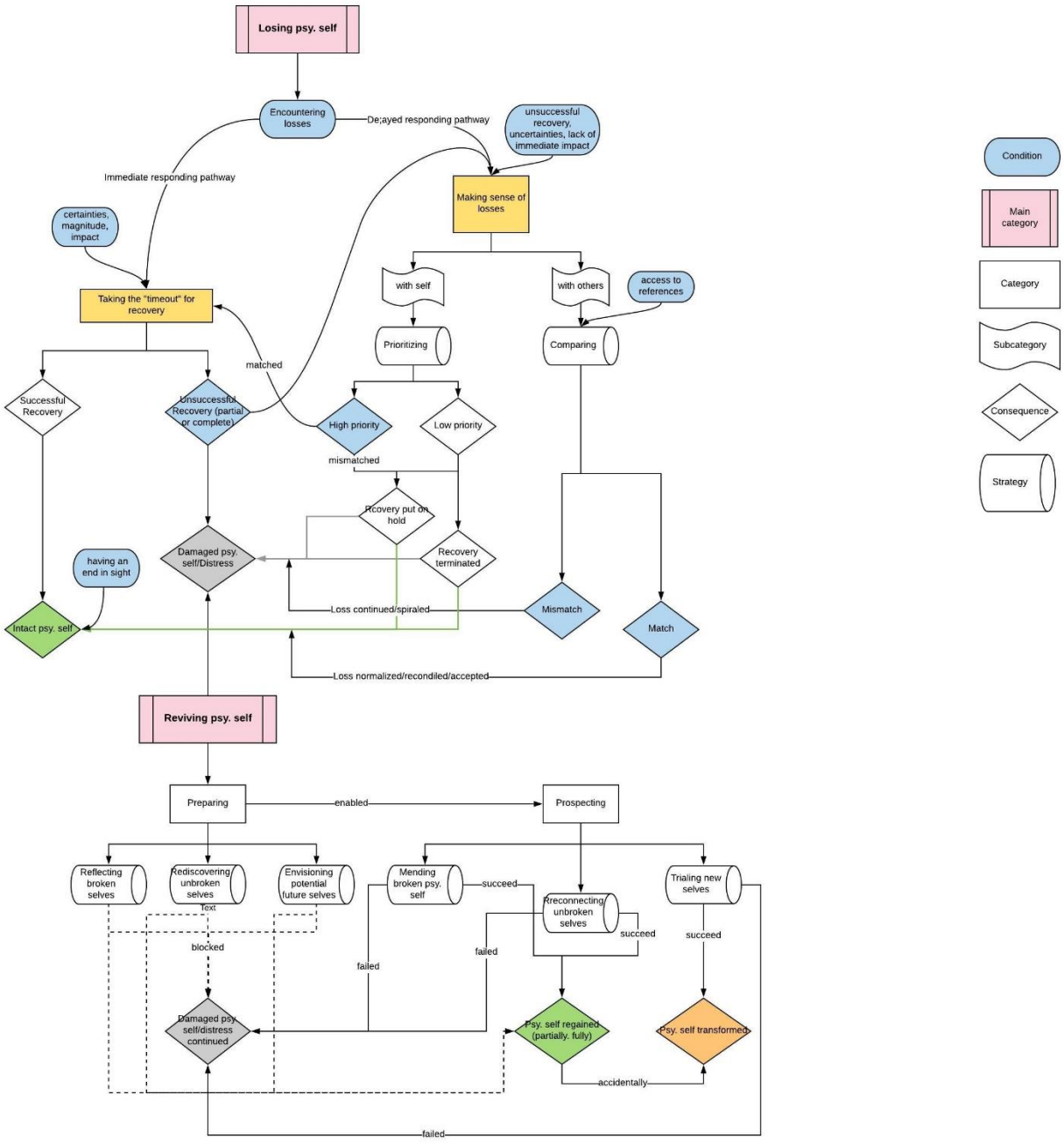
6/12/19



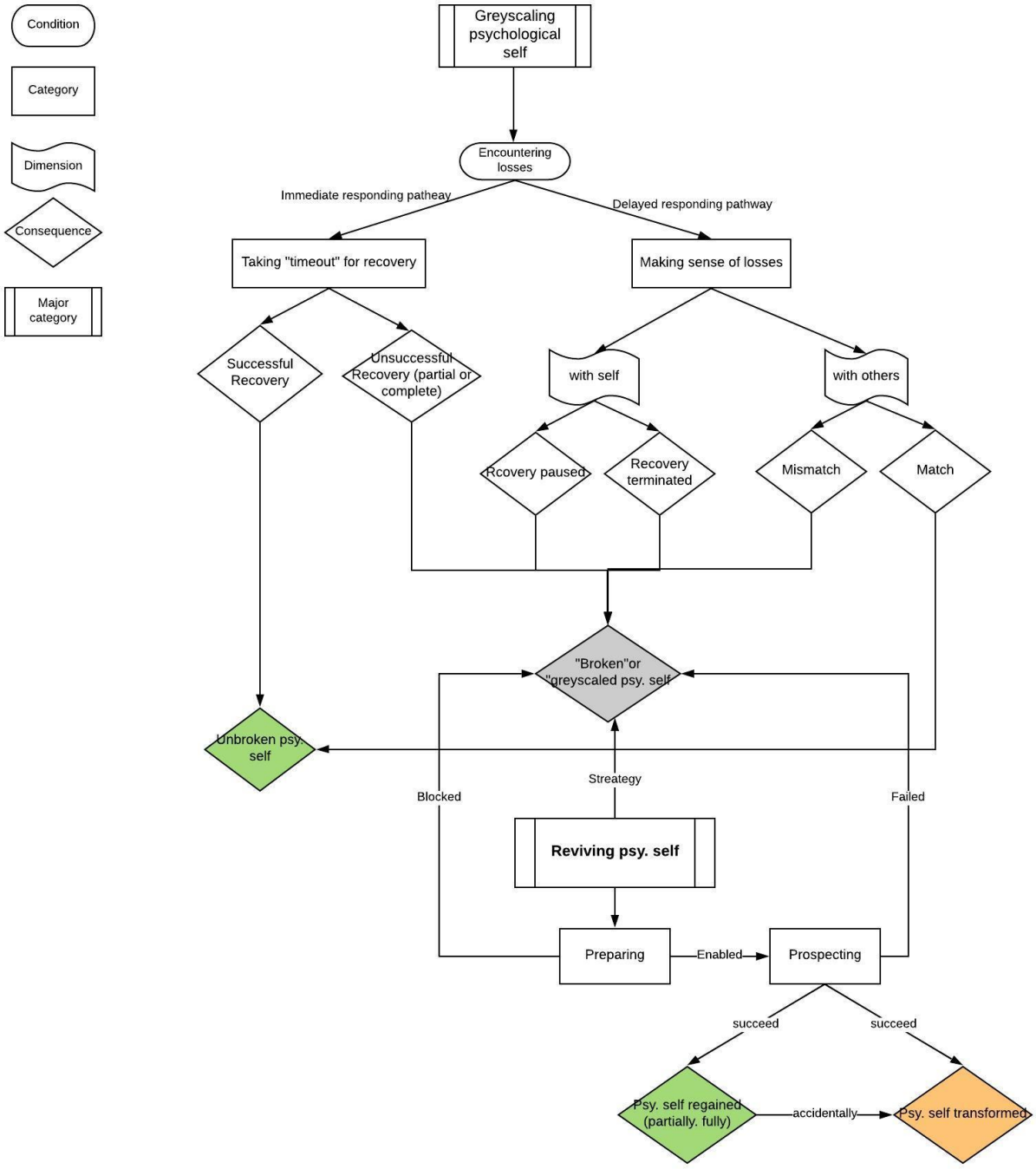
6/23/19


Embarking on motherhood
spiralling losses
engulfing uncertainties
Making sense of losses & uncertainties
comparing with point of references
validating with point of references
cognitive reframing
blocking conditions
Psychological self continued
Psychological self greyscaled
reviving psychological self
regaining old self
prospecting new self
repairing "broken" self
rediscovering "unbroken" self
enabling conditions
regained old self
transformed new self
dimension
strategy
consequence
condition

7/19/19


Losing psy. self
Encountering losses
De;ayed responding pathway
unsuccessful recovery, uncertainties, lack of immediate impact
Immediate responding pathway
Making sense of losses
certainties, magnitude, impact
with self
with others
access to references
Taking the "timeout" for recovery
Prioritizing
Comparing
matched
Successful Recovery
Unsuccessful Recovery (partial or complete)
High priority
Low priority
mismatched
Recovery put on hold
having an end in sight
Damaged psy. self/Distress
Recovery terminated
Intact psy. self
Loss continued/spiraled
Mismatch
Match
Loss normalized/recondiled/accepted
Reviving psy. self
Preparing
enabled
Prospecting
Reflecting broken selves
Rediscovering unbroken selves
Envisioning potential future selves
Mending broken psy. self
succeed
Reconnecting unbroken selves
Trialing new selves
succeed
succeed
failed
failed
blocked
Damaged psy. self/distress continued
Psy. self regained (partially. fully)
Psy. self transformed
accidentally
failed
Condition
Main category
Category
Subcategory
Consequence
Strategy

7.22.19 Simplified diagram



Appendix 4. Assessment of the first three interviews

[Interview 1 01/12/2019]
Three main categories (processes) have been identified from interview #1, that is, recovering self, managing relationships, and living as an immigrant mother. These three categories are inter-related. Below details (1) subcategories of each category; (2) [gaps] identified for subsequent data collection interviews with the same participant or different ones as well as for comparison with survey data (as another slice of data); and (3) comparison with existing theory "teetering on the edge."

1. Recovering/transforming self
[Bowers]: These are quite different. One is going back. And the other is going to a new place. Think about whether these are along a trajectory or are maybe different processes. That doesn't mean the same person can't do both. Or I should say, the same person COULD do both.
[Yu]: So there are dimension of old self and new self.

Within the category/process of recovering self, two subcategories have been identified – recovering physical self and recovering/transforming psychosocial self. While physical self seems to reach *partial* recovery, her psychosocial self seems to enter a new place/transform into a new psychosocial self.
[Bowers]: So was she trying to recover but found herself transforming?
[Yu]: There's a potential path from recovering/regaining to transforming. Recovery has dimension of partial recovery and complete recovery.

Relationships between two subcategories: Participant deemed recovering physical self as an antecedent to becoming independent (one property of recovering/transforming psychosocial self). And partially recovered physical self creates barrier for recovering/transforming psychosocial self.
"Because this is the first step to independence. Now I've got a car, I've gotten my license, it's just the language piece. I'm thinking about taking care of my body a bit in these two months, and to then see if I can sign up for a simple class next year." (01)
[Bowers]: Where did this (becoming independent) come from? Is this the initial goal? Or something discovered along the way as a strategy to recover? Important distinction
[Yu]: Becoming independent is something discovered along the way as a strategy to recover—regaining independence.

1.1 Recovering physical self
For participant #1, recovering physical self includes five interrelated process/subcategories—managing pain, managing infection, dealing with sexual health, living with insomnia, and dealing with memory decline.
[Yu]: Note that "managing" indicates proactive actions employed in response to these problems while "dealing" indicates passive responses.
The conditions for recovering physical self include traumatic birthing experience (69:55) that resulted in body damage as well as her history of chronic insomnia (from prior knowledge of this participant)
Managing pain and infection. Particpant#1 had made multiple attempts to eliminate pain and infection. Strategies include seeking professional support and trialing home remedy, however these strategies are partially effective.
[Bowers]: Maybe *deal* with these separately. If you put things together so early in the analysis, its easy to miss important distinctions. So is the trajectory from professional to home remedy? Or does it go back and forth? Or are they used together?
"I feel that the first thing is physical pain, it's too painful that pain killers can't stop it."(01)
"Anyways, I had fever and kept taking (medication) and went to see doctors many times. There was no really good way (to deal with this). Because they made us try many different medications, those to apply

on, (I) tried all of them and none of them work. Later I just rely on ice cubes. When it's really hot at home, I just put ice cubes down there. But I thought this is not a long way to go."(01)
The consequences of these partially effective strategies are unrelieved pain and discomfort, i.e., partial recovery in physical health.
"Anyways, my body was not in a good condition…" (01)
[Bowers] So we have a trajectory here. A goal, strategies to get there, a sequence of trials, varying sources of trials, and what about consequences of partial success. Why does this matter? Does she say? What are the consequences?

Becoming less sexual. Properties of sexual health include changes in body parts and sex life.
Participant #1 used several strategies to make sense of her situation (change in body parts and decreased sex drive)—seeking professional opinion on bodily change
"I asked my doctor there what this is going to feel like for me when I'm washing my butt… The doctor said this is normal. He said, "no matter what physical therapy you do, it will be only a little restoration" (01)
Upon obtaining professional opinion that participant's bodily change is irreversible, the consequence of which is disappointment.
and comparing own situation with friend's
"name mentioned said after giving birth, I don't have much sex drive, it would decrease a little." (01)
and comparing sexual desire and capacity with husband
"I don't even have the physical strength for this, and I'm uncomfortable. He's also busy now. He doesn't have the mental or physical energy, either. He's alright, too. He's not even someone who is particularly competitive in that aspect. So this is alright, otherwise we would've not been on the same page for this matter." (01)
[**Bowers**] So this is probably an important condition. It would be different if there was a mismatch here.
"plus I'm not comfortable, and he is alright in this aspect, so it doesn't matter much"; (01)
and requesting alternative means to show affection
"I say, well, we can cuddle. We can sit on a stool and cuddle, or if we sit on the carpet and cuddle, right?" (01)
[Bowers] Just say decreased sex drive. SO maybe this is all 'becoming less sexual.' Seeing self as less sexual/desirable, diminished sexual desire or interest. Anything about husband reaction to her?
[Yu] Becoming less sexual not necessary make participant distressed, there was no significant impact. The key is matching with the husband. If there's a match, a 'loss' is no longer a loss. The making sense process involve not only comparing with husband on interest but also validating with provider on reversibility.
Participant #1 also mentioned that **declining memory** in combination of her **sleeping problems** have been slowing her learning and impeding her speaking capability. [gap] It is not clear how sleep disturbance manifests in the context of participant's chronic insomnia, has this become her new norm? and whether this problem is bigger for other mothers. And it is not known what some of the strategies participant are used in respond to these problems.
"Because after giving birth, plus I can't sleep well, you know, my body is not so well, all the mechanism started to slow down, my memory is particularly poor, I start to stutter now…It's just blank, usually it's like this" (01)
[Bowers] So good to look at the perceived impact of each of the physical changes and the consequences of lack of recovery or partial recovery. Consequences: slowed speech learning which might increase isolation. Good to ask the 'so what' questions. What are the consequences of slower learning?

1.2 Recovering/transforming psychosocial self
There are three subcategories of recovering psychosocial self—managing image of physical self, managing image of psychosocial self, and managing with postpartum depression. [gap] not clear how these subcategories interrelate to each other.

[Bowers] Acceptability to others (might want to ask to whom? Or generally to others).
Managing image of physical self. The characteristics of physical self were perceived as unacceptable and irreversible. The condition to manage physical self is unacceptability of physical changes.
"I felt that I was not at all presentable, felt that I body was not in a good shape, not attractive at all. I don't feel well mentally. I feel that I was not like this before. Why I have become so sloppy after giving birth. I felt that everything could not be like what it was before." (01)
The consequence of this unacceptable image of physical self is *"I don't feel well mentally."* With conditions of reaching self-realization, spending time in home country, having financial freedom and failing in managing relationships; Participant then started accepting image of physical self. Participant used strategies for accepting new physical self including: accepting her body shape and being good to self (buying fitting clothes and good food for self). And the consequences of these strategies are satisfying self materialistically and momentary suffering relief.
"It was after I stayed in China for some time. Because every time my husband…chatting with my husband end with wanting to commit suicide. I was pretty fat back then and couldn't buy clothes easily, so I'd buy the large size. I wasn't happy then, you know. When I'd be buying stuff at the shops, if I liked this one clothing style, I'd take the large size, so I'd be spending several thousand buying clothes... Yes. I ate what I liked; that's how it was. Back then maybe I had to do this, or else it would have been too hard for my heart to bear. I told my husband that mentally I couldn't satisfy myself, so I had to satisfy myself monetarily." (01)

Managing psychosocial self. The characteristics of psychosocial self was perceived as "useless" "having no value"
"I found myself useless… for a while I just thought I was useless."(01)
"It doesn't have value anymore. You feel like you don't have any value anymore existing in this world." (01)
Strategies participant used to respond to this image of psychosocial self initially included **blaming self**. "*I was so miserable, I blame myself so useless, I wanted to slap myself you know."(01)*
Then her strategy has changed to **becoming new self**, "*I felt that I had to change myself*." Conditions for this change include: reaching self-realization, spending time in home country, and failing in recovering relationships.
[Bowers]: Would be good if it was possible to see the process to accepting
"Since the time where I was about to get back from China, that period of time. Because I felt that my husband was also avoiding me, and then actually my hatred for my mother-in-law has been quite deep and I felt that I couldn't alleviate it. And then the crux of it was that I hated them, and then my husband did not understand me and was still avoiding me. I felt that I myself was in a lot of pain. Why was I letting their pain be inflicted upon me?" (01)
There are two aspects/processes under Becoming new self—striving for independence and hoping "life gets back on the right track."
In terms of **striving for independence**, participant has been satisfying self materialistically (**making substitutions in satisfying self**), staying true to self "*So I now feel better than before. Whatever I do I follow my heart*," standing up for self "*I would look at things objectively, if you do something wrong that hurt me, I would say something. I won't suppress myself anymore*." This is in opposite to traditional beliefs imposed by her mother that this participant decided not to follow (**overcoming traditional learning**)
"I won't suppress myself anymore. I won't l be like that kind of Chinese traditional style. My mom once said elders have seniority. You cannot give elders backtalk. This kind of ideology is instilled into us from childhood, you know. But there are times when elders are wrong; they are people, too, not saints. So you also have to change him, right? You have to speak up, right?" (01)
[Bowers] New view of traditional learning. There is also a realization of the consequences of traditional learning

A strategy that overcomes traditional learning*: "Including not pretending I'm fine with certain things if don't feel so. Let's say, for instance, you're not nice to me, or I was hurt by something you've done, (before) I would pretend everything is fine; I would not be like this now."(01)*

In terms **of hoping for "life gets back on the right track**," participant hopes for better future for herself and her husband.
[**Bowers**] Is hoping a strategy? Are there passive and active strategies. Internal and external strategies. Thinking and saying. Is there a process to get from internal to external or do they happen simultaneously
"I'm also thinking about buying a book to read, seeing if I can get a high school diploma, look for a job, look after some things for myself. When the time comes for him to go to work, he'll definitely have to change his identity. I'll also have to change my identity. I'm hoping that our life truly gets back on the right track." (01)
However, while encountering reality, participant became dispirited or felt "trapped inside"
"I'm now in such a state, and then it's that it's been a long time, and also I haven't studied anything, so I feel like I've become dispirited. I'm feeling dispirited, and it's hard for me to bear this feeling in my heart. It's been such a long time that I feel… I feel like I'm trapped inside." (01)
Participant respond to this situation using these <u>strategies</u>:
giving credit to self
"However, at the very least, I have practiced a little bit listening comprehension." (01)
and making sense of the situation
"Another thing is that it's been a long time that I haven't gone to work. Every day I'm taking care of my kid, and so it's hard to start studying again… I'm like this now-maybe because my body has a bit too many issues." (01)
[**Bowers**]: Picking up things from the past versus making something new
and making plan for incremental progress, This is thinking about recovery and taking steps.
"Now I want to start from 30 min and slowly add up… I'm thinking about taking care of my body a bit in these two months, and to then see if I can sign up for a simple class next year. (01)

1.3 Managing postpartum depression.
[gap] Some of the <u>attributed conditions</u> to experiencing postpartum depression include: partially recovered physical discomfort, monotonous daily life, mismatched expectations on relationships, failure in managing relationships. [compare with another slice of data, survey answer to attributed reasons to PPD].
[gap] Trajectory of PPD, conditions, strategies used and consequences in each phase in comparison to Teetering on the edge.

Teetering on the edge	**Interview 1**
Basic social psychological problem: loss of control (emotion, thought process, action)	
Encountering terror Women were hit suddenly and unexpectedly by the PPD. Sx can begin within the first few weeks after delivery or can be delayed until 6	**Exhausting emotion regulation capacity** **Dual responsibility of helping self while helping others adjust** *"Yea, it fluctuated a lot. You not only need to adjust your own mood. You have to facilitate their relationships. The main thing is at that time you already need someone to help you with adjusting your own mood. Under this circumstance, you still need to help them" (01)* <u>Strategy</u>:

months or more after birth. When ppd hit, mothers felt trapped in a dark tunnel with no foreseeable escape. 3 conditions of encountering terror: - Horrifying anxiety attacks - Relentless obsessive thinking → mentally and physically exhausted - Enveloping fogginess → loss of concentration and sometimes motor skills	Cautious relief, keeping it to self, taking care of self while considering others, Other seems to take precedence "*Maybe just scream, sometimes I would cry. Because with scream, I don't really have any opportunity-my mother in law was here, my kid was there too. If you scream, you still need to worry that she would know. Because at that time I still need to consider her feelings-afraid that things can get really out of hand yet you still live together, that'd be a miserable situation*" (01) Adjusting on my own "*I want to adjust on my own*." (01) <u>Consequences</u> Piling up emotions "*At that time I cry the whole day, cry every now and then, cry like falling rain, very sad. And every night at 3 to 4 o'clock, when I can't sleep I would cry till sun rise. When they got up, I would go sleep…these emotions just kept piling up. I cried every day." (01)* Intensifying relationships, worsening depression
Dying of self As a result of the conditions in the initial stage. Consist of the following 3 consequences Alarming unrealness (normal selves no longer present) Isolating oneself (lost all interest in things previously enjoyed; felt alienated and alone because believed no one understand what they are going through, a lack of interest in sex, distancing self from the baby) Contemplating and attempting self-destruction These are conditions requiring strategies by the women	
Struggling to survive (strategies to survive)	**Encountering crisis,** **Making my pain visible to others**

- battling the system - praying for relief - seeking solace in a postpartum depression support group	"*Then I just had a melt down and started to swear…I stormed out and started to scream…the suppressed fire in my heart, all sorts of screaming. Perhaps it was quite scary (for others in the neighborhood) … I just collapsed on the floor, then my husband supported me to stand up, and I just kept screaming…my hand had some cuts and I did not feel pain at all…" (01)* *"Including when I was depressed, I actually attempted suicide twice at home. For 2 times. (I) turned on the faucet in the bathtub, holding a knife which probably not so sharp. I was just there…so dispirited*." (01) <u>Strategy</u>: Seeking professional help "*I said "now I don't want to see anybody except doctors-they are my only hope now." (01)* Prioritizing own emotional needs "*You know, every time when I'm angry, I would never receive comfort (from my husband). He on the other hand become even worse, angrier.* ***You in the opposite need to comfort him instead?*** *Yes, but at that time I did not*" (01) *"Now, I talk to her straightaway, before I would not say anything, not tell the truth because I don't want to make her angry. But now I need to think from my own standpoint. I can't make myself broken—if I'm broken, what about my kid?" (01)* <u>Consequence</u> Partial recovery/inerasable scarring "*They said (I need to) stay for a few days and gave me medication. I had sertraline which was effective. I felt much better after a while. But the feeling of being hurt cannot be erased. (01)* *"Actually at that time, it was going to get a little better, but it still wasn't completely good. Because at that moment, you have forgotten all that suffering, but once you go back home and things get settled, that thing will still rush up from inside of your heart into your mind." (01)*
Regaining control A slow process consisting of 3 consequences -unpredictable transitioning, - mourning lost time - guarded recovering	**Entering into a new place/Becoming a new self (see above)?** *"I now feel that I still must first change myself. If you don't change yourself at all, then the people around you can't change themselves, either." (01)* *"I had to think of a way to make myself happy again. Because when you're suffering, when you're negative, nobody wants to come across you. When your energy has gone up, it's possible that the people around you gradually wish to be with you again and stuff. So I felt that I had to change myself."(01)*

2. Living as an immigrant mother

Within the category of living as an immigrant mother, three subcategories have been identified—**Struggling with language**, **Struggling with financial independence**, and **Living in a social vacuum**.

2.1 Struggling with language

Language barrier "my English is acutally very bad" has consequences of creating stress (both experienced and anticipatory)
Condition for isolation.
" I actually am stressed in America. I am also thinking that in terms of language, I am not good, I can't communicate, my English is actually very bad." (01)
"It's also pretty hard to bear, I do feel like this just won't fly anymore. The bigger your kids get, the greater your pressure gets. Especially outside of your country, you can't don't know anything during parent-teacher meeting. Other people's parents are all together chatting, but you're sitting there and can't even move, which is not good." (01)
and creating a routine of isolation. (Conditions include poor English and being outside of own country)
"Having secluded myself. At home"(01)
"Moreover, once seclusion becomes a habit, it's then hard for you to come out of it. But in your heart, you also have a lot of these kinds of convoluted feelings, these kinds of states of struggle." (01)
"I feel no matter, like the doctor said, humans are social creatures. people need to go out often, it's always better than him/her being cooped up at home." (01)
Strategies that participant used in response to language barriers include making incremental progress, taking time/being patient, and initiating conversation with native speaker.
"For now, it would be good even if I just practice my gut, even if I'm just practicing listening comprehension and stuff."(01)
"But when I think about it, I realize I still have to take my time. There's nothing much you can do about this kind of thing. With something like languages, you have to take your time."(01)
"Still need to interact with them, it's not going to work just reciting books at home" (01)

2.2 Struggling with financial independence
Participant describe the extent of financial dependency as "*I even have to ask my husband to buy me a tampon…I feel like I have to reach my hand out for everything."(01)*
Participant attributed both short-term and long-term consequences of financial dependence.
Attributed short-term consequences include creating emotional burden.
"It's tiresome depending on others, very tiresome. No matter how much money" (01)
Attributed long-term consequence include: demoralizing self and creating mental illness.
"The thing is, in the short term, it doesn't matter, but when it gets to the long term, that thing of people, but when the psychological time becomes long, it'll metamorphose, even. I become more and more useless, more and more demoralizing."(01)
In response to financial dependence, participant do not have much strategies except hoping "life get back on the right track." Participant has hope for both herself and for her husband. For herself, she hopes for learning English, gaining knowledge and education, finding a job, and changing identity; her hope for her husband is in sync with her hope for herself: graduating, getting job and changing identity.
"I'm also thinking about buying a book to read, seeing if I can get a high school diploma, look for a job, look after some things for myself. When the time comes for him to go to work, he'll definitely have to change his identity. I'll also have to change my identity. I'm hoping that our life truly steps onto the right track, I'll have a bit of time for myself."(01)

2.3 Living in a social vacuum
Conditions for this subcategory are language barrier as mentioned earlier and lack of financial resource as well as social support.
"Back then (I) want to send her for full day day care. Thought about bringing money in China here for it. We really run out of money at here. Because I really can't deal with this anymore, I've had enough"(01)
"Who can help? No one! He comes back occasionally, sometimes my husband is at home" (01)
Participant described this living condition as living a monotonous, secluded daily life.
"one whole day until night it's just kid, father-in-law, mother-in-law, husband"(01)
[Barb]: Its also all internal. I think you really have something important about 'looking out'

The consequence of this living condition includes lacking common topic for communication with husband [gap] unknown strategies respond to this:
"For a whole day he'll tell me he had an interview, today something about wages, and then he'll tell me about school matters. But what can I talk to him about? I can only say that the kid was misbehaving today, or like that I got so pissed off that I whatever. I can only talk about these matters, but if I talk too much, he would get irritated. So the things that the two of us say are not in sync."(01)
Another consequence of living in social vacuum include cherishing/depending on relationship with husband by tolerating conflicts and relieving pressure.
"If we are in China, when we argue, I could run away, to my female or male friends' place. All of these situations are possible. At least I can just go outside or things like that. But here, maybe the conditions don't allow that… Sometimes the two of us will tolerate, and sometimes he will tolerate a bit. But I feel that I have been enduring for too long. Two people after some time will have a point at which they explode. This morning I exploded. After a while I might explode once." (01)

3. Managing relationships
Managing relationships is the core problem for this participant.
Three subcategories of managing relationships include managing relationship with husband, managing relationship with mother in law, and managing relationship with kid.
[Bowers]: what about self?
The conditions for both managing relationships with husband and with mother in law are mismatched expectations.

3.1 Managing relationship with husband
Condition for managing relationship with husband: mismatched expectations

Participant expectation		Participant attributed reality	
Practical aspect	Relational aspect	Practical aspect	Relationship aspect
Providing childcare support	Role in spousal relationship: - mutuality: providing comfort and company, communicating openly, understanding the other half's experience and efforts, spending "we" time, accommodating other's preference - seniority: putting younger half first	Unavailable for childcare support	Role in spousal relationship: - individuality: ignoring/overshadowing wife's emotional needs, prioritizing self, enforcing own preference, having little communication, spending little "we" time, unappreciative of efforts for restoring relationship
	Role in d/m relationship: - recognizing problem - Resolving conflicts		Role in d/m relationship: - failing to recognize and intervene
	Role in child-father relationship: - accepting the child - spending time with the child - taking part and witnessing child's development		Role in child-father relationship: -blaming the kid for individual setbacks (unaccepting kids) - spending little time with the kid

Initially participant tried to manage the mismatched expectation by first making sense of the mismatched expectations by several strategies: finding acceptable excuses for the husband; then tried to manage the mismatched expectation by direct communicating with husband and explaining her preferences repetitively. When her husband unable to accommodate her preferences, she lowered her expectation.

The consequences of failure in managing mismatched expectations are: frequent fights with husband, husband avoiding the participant, emotional pain, and eventually attempting suicides.
"Just because my husband is too busy, he was not able to care for me. And because there were conflict between me and mother in law and he doesn't mitigate this… I felt that I was wronged." (01)
"Normally, when there are people taking care of the baby, he would just going to do nothing, just like this. You know, but he is really busy, can't help me. So I feel quite empty in my heart." (01)
"When he left, I just cry harder because my heart is cold." (01)
"Because every time my husband…chatting with my husband end with wanting to commit suicide." (01)
As her relationship with her husband reaching a dead end and coming to her self-realization, she enlisted several strategies in effort to recover the couple relationship: expressing feeling, seeking professional help, enlisting doctor advice, seeking knowledge from books, enlisting kids, and taking initiative for intimacy. Note that now her strategies are more looking outward with external support rather than looking inward in isolation.
The consequences of the new strategies for restoring relationship with husband include improved (although short lived) spousal relationship with irreversible scarring

"now our spousal relationship is getting better But the feeling of being hurt cannot be erased. However, he couldn't care for very long." (01)

3.2 Managing relationship with mother in law
Condition for managing relationship with mother in law: mismatched expectations

Participant expectation		Participant attributed reality	
Practical aspect	Relational aspect	Practical aspect	Relationship aspect
Recognizing and providing universal household childcare support	Role in d/m relationship: - mind reading - accommodating daughter in law's practical and emotional needs - advising husband to accommodate daughter in law	Providing selective childcare support Creating more work	Role in d/m relationship: - protecting self-image - accommodating selectively

Initially participant tried to **manage the mismatched expectation** by first making sense of the mismatched expectations by several strategies: comparing with other's positive and negative attributes, imaging differential treatment, referencing earlier own behavior and impression received, and imaging an antagonistic situation as well as finding contributing factors to mother in law behavior. The consequence of this mismatched expectation is "*feeling disappointed and miserable*."
Then participant used "**maintaining a harmonious relationship**" with mother in law as her strategies in response to the mismatched expectation. These include: prioritizing mother in law's feeling, enlisting husband as the mediator, hiding feeling, being deliberate and indirect, and "getting out." The consequences of using these strategies include *"feeling stressed" and "I was (heart) broken."*
As her relationship with her husband and her mother in law reaching a dead end and coming to her self-realization, participant changed her strategies to "**achieving an equal footing relationship**." These include: direct communicating with mother in law (include questioning unacceptable behaviors and expressing feeling), normalizing mother in law's concern, and providing technical support and assurance. The consequence of using these strategies include: having mother in law reflecting on her own behaviors and gaining status in d/m relationship.

3.3 Managing relationship with kid
There were only several processes/subcategories mentioned by this participant regarding managing relationship with kid: keeping the family together, punishing self and attempting for external support

during the kid's repellent phase, and enlisting husband for child care support, and prioritizing child's needs with financial constrain.

[Interview 2 1/21/2019]

Differences between participant 1 and 2:

While participant 1 has only one daughter, participant 2 has two boys.

There was an overlap of mother and mother in law visit for participant 1 but not for participant 2.

While managing relationship takes precedence for participant 1, dealing with maternal (breast feeding) and child's (jaundice) health issues, particularly during 'doing the month' take precedence for participant 2.

Managing relationships was tightly interrelated with managing depression for participant 1, while it is a separate process for participant 2.

Similarities

Both participants had their mothers come to visit first after giving birth. Then had their mother in law come to visit after mothers' visa expired. Both regard mother in law's help as only 'practical/selective support" while mother's help as 'practical and emotional/universal support.'

Dealing with depressed mood

Participant's Attributed Conditions of depressed mood include problems below:

Attributed Condition (1) Dealing with difficulty with breast feeding

"I had difficulties letting down milk, I didn't know why." (02)

Conditions of having difficulty breast feeding include having no prior experience *"back then I didn't have any experience"* (02). *"I gave birth to the first child in Oct 2014, at that time, I didn't have any psychological preparation-have no concept of giving birth." (02)*

Strategies participant used to respond to having difficulty breast feeding include

1) insisting on breast feeding *"but I still really want to continue breast feeding."*

2) seeking professional help repetitively, *"(I) went to the hospital right away after getting mastitis"*

Consequence of frequent hospital visit is interrupted "doing the month" And this is another condition for depressed mood.

"So I kept going to the hospital during 'doing the month', this is another reason for depression."

3) enlisting doctor advice and keeping trying alternative methods *"kept letting the baby suck, then pump, then suck."*

4) After seeing improvement and with little knowledge, participant stopped following doctor order re. taking antibiotic medication. This resulted in reoccurring of mastitis.

"I did not know understand this (taking antibiotic for 10 days), I thought it's cured when I feel ok, so I only took it for 6-7 days. Then the mastitis reoccurred. I took the medication full course for the second time, even so I had another mastitis, in total three times."

Consequence of having difficulty breast feeding include having reoccurring mastitis. And the consequence of having reoccurring mastitis is miserable and painful breastfeeding *"And breast feeding was very miserable, it's very painful."* This become one of the conditions for participant's depressed mood.

"At that time I thought because of the pressure from these two things, my mood was terrible everyday. Also I can't sleep well at night-had to wake up 3-4 times usually. So I become depressed and cry every day at home." (02)

Another dimension of breast-feeding difficulty is the *frequency* of breast-feeding, "*I had to breast feed every 3 hours… always just breast feed, breast feed, breast feed*."

Consequence of frequent breast feeding is feeling 'trapped at home' which creates isolation and a monotonous life. And this leads to feeling '*life is ruined* and' '*quite miserable*.'

"*you would feel that you are trapped at home, can't go anywhere, really about 3 month I have not left home, always just breast feed, breast feed, breast feed. As if my life has been completely ruined."*

"So you are quite miserable, you can't go out because at most 2-3 hours you need to come back. So basically you can't go anywhere, at most going to the community center."
"if you do different things every day, you will feel a little better. If you do the same thing every day, you will feel that it won't work."
Another consequence of frequent breast feeding is halting personal goals
"In fact, I was also thinking about taking GRE, and TOEFL, but in the first two months in the confinement, there was basically and really nothing I could do, and I couldn't do it."
Strategy in response to inability to pursuing personal goals is waiting for better timing, "*See if I can start preparing for TOEFL and GRE when he is getting older*."
Attributed Condition (2) Living with interrupted sleep
"Also I can't sleep well at night-had to wake up 3-4 times usually…"
Condition**:** 1) quality sleep prior to giving birth, "*At that time because my sleep was so good before (giving birth), sleep till day light"*
Strategies for living with interrupted sleep: comparing own baby with "angel baby"
"there are some "angel baby" who would sleep the whole night, but not my baby. So back then I would think this is not fair, why other babies are so good but mine is terrible."
Consequence of this comparison is being "*easily affected by other people*." And feel depressed "*sometimes you would feel depressed, 'why other people's babies are so good?'*"
Consequence of having interrupted sleep include depressed mood. *"I was quite miserable…So I become depressed and cry every day at home." (02)*
Attributed condition (3) Dealing with child's Jaundice
"After giving birth, the most important thing is that my child was jaundice,"
The characteristics of the jaundice was described by the participant as "*pretty severe*" (02) and persistent "*his jaundice wouldn't go away*."
Consequences of child's jaundice include generating pressure for participant which contributed to depressed mood.
"At that time I thought because of the pressure from these two things, my mood was terrible everyday. Also I can't sleep well at night-had to wake up 3-4 times usually. So I become depressed and cry every day at home." (02)
Attributed condition (4) Losing sources of comfort and companionship
a. professional
"Yes, the couple of days in the hospital (my mood) was pretty good. Because doctors and nurses kept asking you questions, there are someone you can talk with, and they would comfort you. For example, they would say it's ok when I didn't have milk, so I would feel alright. Then after discharged, (my mood) started to get worse and worse"
b. friends and family → also condition for difficult 'doing the month'
"*in China, our family lives around and my relatives is around. I often meet many friends and relatives, and as a result, there will be people who come and talk about these things with me often, and the confinement may not be so hard for me*."
Attributed condition (5) Interrupted 'doing the month'
See above

Characteristics of depressed mood
Intensity:
"*At that time, the (depressed) feeling was very strong… It was especially particularly tough when my first child was born, and it was the darkest moment in my life in my understanding."*
Irreversibility
"*I feel that this kind of life…seems like my past happy life will never return, (this kind of life) will never end, you know?"*
No end in sight

" (this kind of life) will never end , you know? You won't think that actually breast feeding has an end date, and child will one day sleep the whole night. Back then you won't think this way, you would think that nothing will pass, so you would feel very depressed, very miserable and cry often."
Progression of depressed mood:
"Then after discharged, (my mood) started to get worse and worse, I think it was gradually becoming worse, the worst time was around 40-50 days when I was most miserable. Then after the 40-50 days it started to alleviate. It took about 3-4 month to feel totally fine, I think it was like this."

Strategies participant used to deal with worsening depressed mood include:
(1) Enlisting mother's emotional support
"But (I) was lucky because my mother is here, have someone to comfort me."
"talk with my mother"
The consequence of enlisting mother's emotional support is gaining emotional strength.
Because my mother is a very strong person, she thinks this is nothing, everyone goes through these, so (I) become strong."
(2) Relating experiences with friends alike
"Another thing is that back then I have several friends, despite our group is small, several of them gave birth around the same time, they were 1-2 month earlier than me. After chatting with them, (I found out) they also cry…"
"The community center helped a lot. Because you get to meet other moms here. We can talk with each other… Basically tips and tricks based on own experiences, sometimes we would talk about how difficult it was to give birth, these kind of problem, all about kids."
Consequence of relating experiences with friends alike is finding relief.
"then I was relieved. It turns out I'm not alone, and I feel a little more at ease."
(3) comforting self
"I *comfort myself by saying that jaundice will soon get better*"
(4) "praying for god"
(5) Expressing emotions to others
"Then I talked with my mom or my husband, I think this is a good habit, because I am find someone to talk to. You cannot just put it in your heart, or else you will be more puzzled. I love talking, so I talked to them."
Consequence of expressing emotions to others: finding emotional relief
"I think this is equivalent to a kind of transfer of emotions to others, they will be very uncomfortable. But I felt better when I talk with them, I really felt better. I was looking for someone to talk, sometimes I looked for a friend to talk to, and that's it. If you ask me about how do I adjust, it seems that there is no way, just rely on talking."

Conditions for improved depressed mood
Improved maternal and child's health conditions:
Cured mastitis "*my mastitis was cured, 1-2 month later mastitis was cured*"
"*three months later, your body was feeling good, and then the child became better, and all things became better and better slowly."*
Consequence of cured mastitis is "*breastfeeding was getting easier*" and be able to "*think rationally, you would think maybe after breast feed for a few months, if you really can't do it, you can breast feed till 1 year old, then it's not a big deal*."
Conditions for further improvement: recovery in maternal physical health, and child becoming 'normal' (not sure what this is). The consequence is feeling being liberated.
"When the child was one and a half years old, I felt really liberated, and completely liberated after two years old. My own body has recovered, and he was normal."

Managing relationship with mother in law as a separate process to dealing with depressed mood

"*But actually when my mother was here, it was the most difficult time because I just gave birth. When my mother in law came, although we didn't get along like when my mother was here, my mood was already uplifted*."

Attributed characteristic of mother in law by participant

"*My mother in law is a little weird. She would think you are nothing good and are doing nothing"*

Attributed conditions for mother in law complaints: not contributing at home

"*Back then, several months later, I was preparing to apply for grad school and reviewing GRE at home, so I didn't do much (at home). My mother in law complained quite a bit."*

Strategy for managing in law relationship:

1) attributing to perceived mother in law's characteristics. "*She thinks people in this entire world are bad. Anyways, she doesn't just think I'm not good... But you can tell from her personality, she's hard to get along with, so I just say as little as possible."*

2) keeping things to self, "*I mind my business, they mind theirs*."

3) modifying behavior to match perceived mother in law characteristics: "*Yes very little communication (with my in laws), with my mother I was very (talkative). I'm actually very talkative."*

4) treating mother in law as a friend "*I think you should not treat mother in law as your relative, but as a friend, a regular friend*."

5) remaining passive and avoiding interaction, "*If needed then contact her. But she's my husband's mother so he should be the one contacting her. But I should speak as little as possible. If they want to come over that's fine, but I won't invite them over."*

Consequence of keeping things to self is Discovering mother in law's hidden complaints

"Afterwards many people asked me why your mother in law always say bad things about you outside, nothing good, like you don't know how to cook, how to drive, even need your husband to take you to buy grocery."

Consequence of discovering mother in law's hidden complaints is a mismatch on perception of relationship between daughter in law and mother in law which resulted in an emotional burden.

"*So later I feel it's pretty hard for my heart to bear-I thought everything was pretty good… Actually I didn't think anything was wrong, (because) I did not know by then*."

Strategies participant used in response to this discovery are not responding and reducing interaction

"*Nothing much, anyways I think reducing interaction is the best*."

Relationship with husband going to a new place as a separate process to dealing with depressed mood

Becoming less sexual

"*But I feel our (relationship) completely changed after giving birth. So I think our relationship has less affection between lovers but more affection between family members now*."

Conditions of changing relationship: having a child, getting along well, husband has a good temperament

"But we get along pretty well-we don't have quarrel often because he has a good temperament"

"*Because before having a child, you would think you are caring for each other. After having a child, all the attentions were on the child, especially with two children. Every day we are just so busy with children's matters, barely have any time to ask "how was your day*?

[Interview 3 01/28/2019]

Context – living as an immigrant mother

"I feel that the social circle is also a reason"

"when in the United States, i stayed at home to take care of children in most of time. I felt I had no one to chat or do anything else, which could affect my mood."

"the family was not around"

"*Then because the family was not around, I felt it was very hard for me. There was a lot of pressure over me both physically and psychologically*."

"*So I think I suffered a lot in America. Maybe it wouldn't be so hard at home. Someone would take care of you*."

Transient social ties

[Yu]: same as participant 2

"Yes. I think at here everyone is like…maybe you become good friends with someone, then you need to leave and she needs to leave, so you would feel quite sad."

'We all felt reluctant to leave each other and we missed each other. But it is temporary, not long-lasting staying here. So people come and go would also affect you.'

Ajusting in a new environment

"*Because when I first came here, I was not familiar with this area, and I didn't know so many people, so I could only stay at home every day, and I would be very depressed*."

Strategy: becoming a new social self

"*It's like I am not someone who are good at communicating. But after I had children, maybe because I was so bored [laughing], yeah, I started making friends with other people. Making friends with others on your own initiative*."

Strategy used for making friends:

(1) using food as a social glue

"*I'd ask them to come over to eat or something. I think when abroad, maybe everybody were missing the delicious food in their hometown, so eating was a good way to make friends. When you said to make good food, everybody—Came*."

Consequence: "Yes. So I made many friends in this way"

(2) doing make up as a method to make friend ad to improve self-confidence and improve depression

"*Yes. It is to make more friends"*

"When it comes to make-up, I get fat [laughter] after I had a baby, but at that time I started to like doing make up. Maybe because I want to change myself. I thought if I look better, actually I do make up not for other people, maybe it's more to give myself confidence. So this is my—my method to improve my depression"

Culture

Mother in law daughter in law relationship

Yes. That's true. I have a friend who gave birth to her child in the United States. They both study in the United States. Then, after she had a baby, her mother-in-law came to take care of her. Do you know what her mother-in-law said to her? She said, "you're going to treat him, like a child and to grow up with him [laughter]. That means you need to treat your husband as your child. Like your child. You have to raise both of them. That's what it means [laughter].
Yes. So she was already thinking about divorce [laughter]. I thought she was depressed, too. Very depressed.
He [inaudible], the man, is a boy. He could not share responsibility for you but he needs you to take care of him.
His mother in law thought so.
Yes. So they almost divorced [laughter]. Yes. So I think there may be some reasons for the high divorce rate.
Chinese parents are more authoritative. It's not about making suggestions, it's about doing what I say.
I think China may need professional help this contradiction between mother-in-law and daughter-in-law more.
Yes. There is no such an market in America.
I think it has something to do with the culture.
Yes. It has something to do with the culture.
And our Chinese culture is that elders say you have to obey unconditionally. If you say no or something, you are not filial or something. Perhaps it is this traditional culture that influences us.

Emotion progression

"*Emotions did not fluctuate too much*"
Attributed Conditions for relatively stable emotions: being in the hospital
(1) phyiological needs being met
"Emotions and so on did not fluctuate too much. I was happy because I could eat in hospital or did something else."

"*I felt a little emotional change*"
Attributed conditions for emotional change - returning home
"*quite warm*" – "*suddenly depressed*"

"Suddenly depressed"
Attributed conditions for "suddenly depressed": help not granted to meet physiological needs.
"I got up in the middle of the night and was hungry. Then I asked my husband to get up and help me get food. But he couldn't get up and didn't take it for me, "
Consequences of this unmet physiological needs: "*in a very bad mood*" and replying on self "I *went to get the food myself*."
Strategies used to respond to "very bad mood": (1) expressing mood "*shed tears and cried*"; (2) seeking mother for comfort "*Then in the middle of the night I cried and called my mother and said, "*
【Laughter】 My husband did not bring me any food."

"…it was pretty serious during one month"
"*My emotions were beyond my control*" Contemplating on hurting self
"*I was a little bit willing to do something to hurt myself*."
Attributed conditions:
(1) unable to attribute to a cause for depression
"*Later, when I think about it the next day, I don't know why I was really in a low mood at that time."*
"… I felt depressed after delivery, and I did not know why. Then I thought, I did not know why the mood fell to a lowest point, I wanted to cry, and felt tightness on my chest. But I did not know the reason. It seemed that there were no reasons. It was just any little thing that would intensify the mood and make it bigger. That was the feeling I got.
Strategies used: expressing emotion, "*I would cry. Just cry out. I would cry to give vent to emotion*."
Consequence of expressing emotion: "I felt good after"
(2) Receiving emotional bans from mother in law [**Yu**]: unremovable block
"*But my mother-in-law said to me, "You better not make up the postpartum depression." It was in this tone that she said, "you better not make up the postpartum depression for me*."
Conditions for emotional ban:
Mismatches in perceived norm/causes/controllability of PPD
Participant:
Perceived cause: "*I know in my heart that postpartum depression is sometimes caused by hormones*."
Source of information: "*I read a book before I gave birth…"*
Perceived norm: "…*writing that you will feel depressed after you give birth*."
Mother in law:
Attributed mother in law's perceived cause: participant self, "*She thought that this was caused by me…Just I was making trouble out of nothing."*
Attributed mother in law's Source of information: own experience
Attributed mother in law's perceived norm: "*She thought this (postpartum depression) could be in your control."*

Attributed mother in law's perceived consequence of PPD: 1) own mood being affected-"*She meant that my mood might affect her mood"* 2)own work being delayed "*You were making trouble. You were delaying her work."*
Consequence of emotional ban: "*So this led me to be more depressed*." "*So I felt being wronged. Anyway, I cried a lot."*
Strategies:
1) hiding emotions
"I was afraid to cry at that time, so many times I covered the quilt secretly and then cried in the quilt."
2) endure for maintaining a harmonious relationship
"Yes. Just endure . Because she is my husband's mother after all. It was not that good to make confrontation with her."
"Just for the sake of family harmony, I endured it by myself."
Condition: husband being reasonable and understanding
"My husband knows to be considerate of me, and I know to be considerate of him, Mainly your husband is more considerate of you, and you think I'll put up with it" [**Yu**] not seen in participant 1
3) communicating with mother in law repetitively
Consequence: left speechless (dead-end)
"I tried, but it did not work at all [laughter] - she left you speechless after she replied. She thought you were wrong all the time. For example, you know what I just said that she said you cannot make up postpartum depression for me. I don't have time to take care of your mood. I am busy all day. Maybe she spoke in a bad tune, very furious.
4) enlisting professional opinion
"*I let the doctor determine. I asked the doctor, then I translated what the doctor said to her."*
Consequence: partially effective
"Anyway, if she heard what the doctor said, she would believe in him. While she would not believe me. In fact, it can't be changed even if you translate the doctor's word."
(3) Sibling rivalry [**Yu**]: removable block
Condition: second child being born, young age of the eldest child, sibling
"*After the second child was born, one problem is that the eldest child was still young at that time. He often cried. The two of them would fight for favor... . Sometimes he bullied the second child and pinched him, rubbed him and crushed him or something."*
Consequence: "*very upset and you could not help but want to lose your temper*."
Strategy: time out
Consequence: being criticized by parent's in law
"*So they kept blaming me again and again at that time*."
(4) mismatched parenting strategy with mother in law [**Yu**] unremovable block
"*She said I neglected my children, meaning I kept the child quiet, [time-out?] - That is to say, if he was too naughty, I wanted him to [time-out?], she would think that I was neglecting children, that is, a kind of mental abuse of children. She thought so*."
Strategies:
1) directly communicating with mother in law (ineffective) "*She didn't listen to anything I told her*."
2) enlisting husband for communication (ineffective) "*So I asked my husband to communicate. Then I was scolded [laughed] together with my husband*."
3) teaming up with husband for relief "*He did not adjust his mother. He mainly adjust me [laughter], because he knew that elder people's minds might not be easily changed, so he mainly enlightened my mind*."
4) reducing/avoiding communication: "*We did not argue face-to-face. It is not a big deal not to communicate with them for a period of time, or skip the topic when you face it, or send a Wechat message or something without face-to-face [laughter]."* [**Yu**] *same as participant 2*
Consequences: creating emotional distress for participant

"*Yes. She might think that as a mother, you should put your children first, no matter how emotionally upset or stressful you were. Yes, that's it. So I thought it was hard for me."*
"*I think my own children should be raised by myself. I am supposed to do so. But I think my mother-in-law interfered a little too much with my children. And she had a big impact on my mood."*
"I just felt that she put a little bit of mental pressure over me. Just a lot of pressure."
Strategy: perspective taking
"*I thought my mother-in-law became depressed after a long time here….And they would find something to do because they were depressed. They may vent their anger on our younger generation [laughter]."*

(5) Colic [removable block]
"*I think child's crying is a reason for depression. Because newborns cry for many reasons. Because when I gave the birth to the elder, he would cry very much because he had colic at that time."*
Consequence: "*So as soon as he cried, I would feel upset completely, like sweating*."
Strategies: 1) using various ways to sooth the baby "*You could coax him. If it does not work, you could leave him alone. Then put him at a safe place, like your crib*."
2) attending to own emotions, "*Then you could go out and relax yourself, take a breath and make sure your child is safe, if no one could take care of your child. Because I was afraid I could not stand it, emotionally*."
Consequence: "my mother-in-law would be unhappy if I do this"

(6) "*I did not sleep well, so I was very tired every day*."

Conditions:
1) "*Then the child cried so much that no one helped me*."
2) mother in law providing selective practical help: *"In fact, my mother-in-law said at that time to help, and she was really helping, like some housework or cooking was of her responsibility… Because she said she had insomnia at night, so she couldn't watch the children at night [laughter]."*
3) unable to enlist husband help: "*My husband is someone who could not be awakened up by all means after he had fallen asleep*."

(7) change in physical appearance-gaining weight, partially reversed back to old physical self
"Because I've gained much weight. I've probably gained weight after giving birth to my first child -- I'll think about it. Fifty pounds. On that basis, I gained another five or sixty pounds after giving birth to the second child [laughter]. Of course, I got a slight slimming back, but not as slim as before - that is to say, I gained another five or sixty pounds. So I was really in a bad mood.

(8) unrelieved Asthma from pregnancy

Strategy: starting exercise
Consequence: "*But then I started to exercise – we are talking about exercise. My asthma didn't happen frequently after I exercised. Maybe it--I felt better. Yes. it strengthened my body."*

(9) lacking husband involvement
Conditions: mother in law take over household responsibility
Consequence: under a lor of pressure, feeling depressed
Strategy: seeking professional support→ communicating with husband
Consequence: "*And then he gradually took some burden from me. I felt better then…and then I was not so depressed."*
but after one month, I felt better in two or three months."
Conditions for feeling better: going outside and being together with friends
"I could go out for a walk, that is, I could communicate with friends and hang out together, this way I felt better."

Strategies used in response to emotional distress
1) going out → feel better [looking out]
"I could go out for a walk, that is, I could communicate with friends and hang out together, this way I felt better."

"I felt relieved when we take the kids out together"
2) relating experiences with friends → feel not alone [looking out]
"*I knew others had the same experiences with me, so I would not feel I was undertaking this experience alone."*
3) "*having something to do*" → feel much better
a) exercising
"*I think I still feel a lot of pressure in my heart even if my children is two years old. I just feel tired, because they are noisy everyday. But I think I do fitness ass one of my hobbies, and I feel much better to do so*."
"*I think hobbies are very important. Another way to relieve your depression is to plant the fields [laughter]."*
"Yes. I feel that going to exercise and losing weight also gives me a motivation and a goal. I could have something to do."

Condition: consistent back pain, family history of back disease, doctor advice
Block: mother in law
"After I gave birth to my eldest child, I actually wanted to go to the gym. But no one helped me take care of the children. My mother-in-law would not be happy if I left the child to her to watch. She meant that if she held the baby for too long, she would suffer a sore back. Then she would blame me." –> consequence: And then I quitted exercising."
"Then after giving birth to the second child, I had no time because I have to raise children or something. Later, when the second was a little older, I went to the gym and she said -- that is to say, I exercised too hard, I would get hurt or something. She still were not very supportive." –> consequence: I haven't [talked with her] any more.
b) playing ukulele—enacting new self
"Yes. That's good, too. You can relieve by exercising. And that ukulele.."
"*I learned and played ukulele because I was depressed [Laugher]. Yes. I think it was very helpful*."

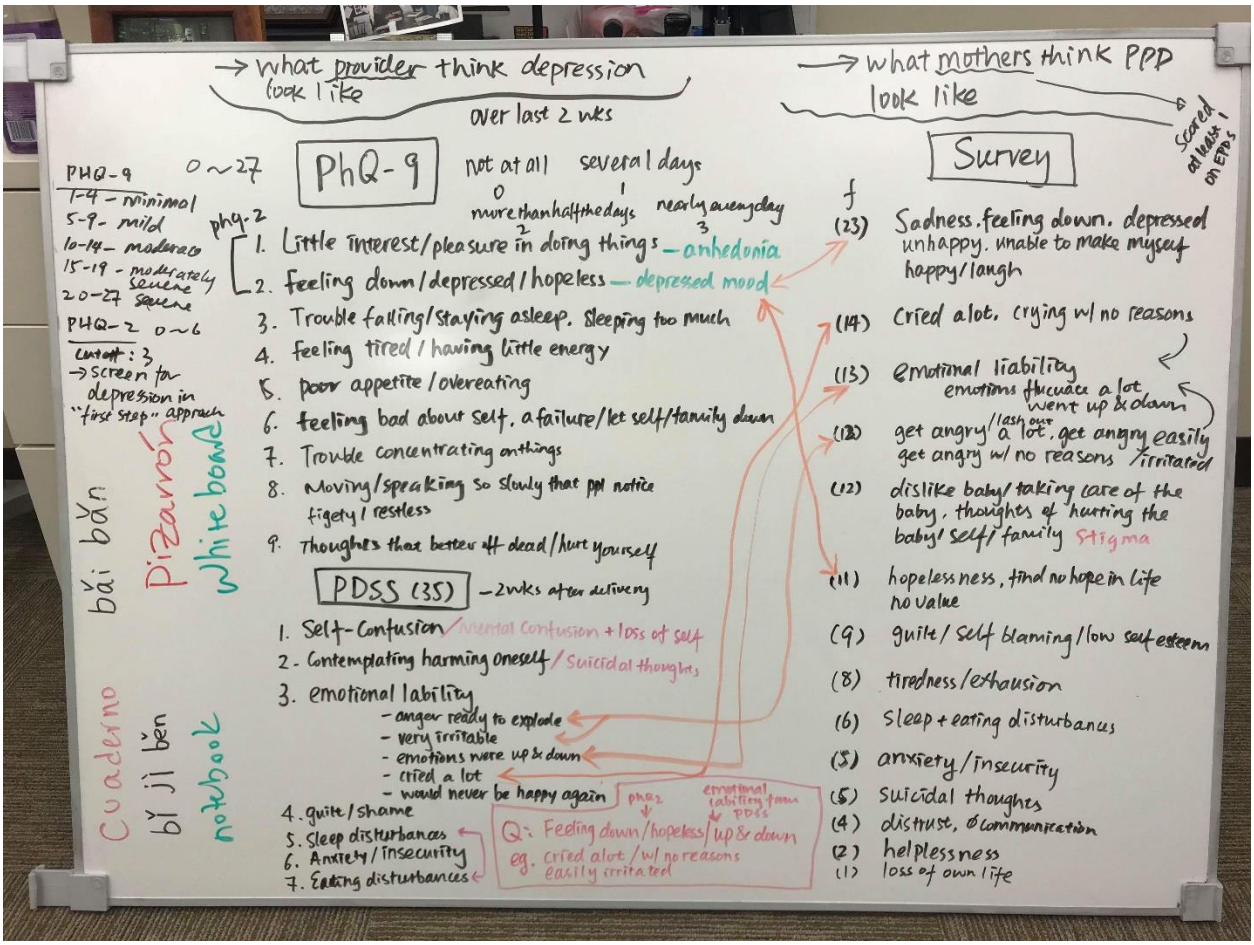
4) comforting self by uncontrollable eating → gaining weight → worse mood → eat more
"Of course, I got a slight slimming back, but not as slim as before - that is to say, I gained another five or sixty pounds. So I was really in a bad mood. But the worse mood you had, the more you thought about eating. Yes. During that period, I'd like to vent my emotions by eating."
"At that time, it was a little uncontrollable, even at midnight I also wanted to eat just to comfort myself."
5) "stay up late" (making time for my own)
Condition: under great stress taking care of children, children always noisy→ mind always alert
Strategy: making time for my own
"*And because I was under great stress of taking care of children and the children was always noisy, my mind was always alert . So after the children went to bed, I would stay up late…Because I think it was the only time for my own*."
Consequence: more tired→ worse mood
"*Yes. It's your time. So it will lead to more and more tiredness. And then worse mood. Yes*."
6) doing make up –enacting new self
"When it comes to make-up, I get fat [laughter] after I had a baby, but at that time I started to like doing make up. Maybe because I want to change myself. I thought if I look better, actually I do make up not for other people, maybe it's more to give myself confidence. So this is my—my method to improve my depression."
7) buying a lot of things –taking alternative satisfaction
"But maybe it was a little exaggerated that I kept shopping. It seemed to be a way for me to relieve my depression [laughter]. But that's not very good."

Condition for change/transition

I think the children are growing, and then they are getting more and more sensible, and I think I'm getting better and better [inaudible].
Then they go to school now, and then I can find something I like to do. Then when they are at school, I can cook, then go to the gym, and tidy up the house, which I feel very happy.

Appendix 5. Thematic analysis result

Counts	Comments	Theme
14	不由自主哭, 经常无缘无故哭, 无理由哭泣, 時常想哭泣, 老是哭, 哭泣, 经常哭, 易流泪、哭泣, 哭泣, 哭, 无缘无故的哭泣, 控制不住地哭, 容易哭 (14)	Crying with no reasons, cried a lot
9	觉得自己不好，觉得自己做不好事情，照顾不好宝宝，自责, 无理由的自责 (5)	Self-blaming, guilt, low self-esteem
	没信心能养活宝宝, 不自信, 认为自己一无是处, 极度不自信, (4)	
11	觉得生活没有希望, 很消极, 觉得活着无意义，对生活失去信心, 覺得生活沈重無法應對, 对未来感到悲观, 悲观, 无望 无价值感, 易悲, 厌世, (11)	hopeless
2	无助, 觉得非常无助 (2)	helpless
1	失去了自己的生活	Loss of self
5	轻生, 有自杀倾向, 自杀死亡, , 甚至想要自杀, 自杀倾向(5)	Suicidal thoughts
2	對周遭事物提不起興趣, 对任何事情都失去兴趣 2	anhedonia
12	经常无缘无故发脾气, 心情烦躁, 易怒, 无故发脾气, 经常性地乱发脾气, 很容易生气, 经常发脾气, 易怒, 没来由的发火和沮丧, 易怒, 暴躁，易怒 (12)	Get angry a lot, easily irritated, angry with no reason
23	不开心, 心情低落悲伤, 情绪低落, 无笑, 沒法笑, 難過憂鬱, 愁眉苦臉, 紧张低潮, 长时间的坏心情难有好转, 情绪低落, 表情阴郁, 情绪低落，抑郁, 抑郁, 不开心, 负能量, 心情不好 愉快不起来, 不开心, 无法让自己高兴起来, 郁郁寡欢,负面情绪无法排解, 想不开 (23)	Sadness, depressed, feeling down
12	不愿意照看宝宝，有伤害自己或宝宝的冲动。伤害自己或宝宝, 有伤害孩子行为，不愿意抱孩子, 想要伤害自己和孩子, 想伤害自己 讨厌孩子, 伤害自己及家人, 或者不愿意照顾宝宝, Hurt self or others, 对孩子过度保护或厌恶 (12)	Dislike baby, thoughts about hurting self/baby/others
13	情绪化,喜怒无常,心情起伏波动大, 情緒不穩定, 情绪波动大, 情绪不稳定, 不稳定, 情绪波动, 情绪失控, 情绪波动, 情绪起伏很大，无法控制自己, 情绪波动很大 (13)	Emotional lability
5	爱钻牛角尖, 焦虑, 紧张 小题大做, , 焦虑 (5)	anxiety
8	无精打采, 疲累, 疲憊, 无精打采, 无精打采、困倦, 疲劳, 很累 (8)	Tiredness, exhaustion
6	失眠, 睡眠不足, 失眠 (3)	Sleep/eating disturbances
	不想吃东西, 沒心情吃飯, 吃不下飯 (3)	
4	对人不信任，拒绝和外界的沟通交,不想说话, 没有人可以理解 (4)	Lack of trust, refuse to communicate
1	發呆 (1)	Spacing out


→ what provider think depression look like
over last 2 wks
PhQ-9
not at all 0
several days 1
more than half the days 2
nearly everyday 3
PHQ-9 0~27
1-4 - minimal
5-9 - mild
10-14 - moderate
15-19 - moderately severe
20-27 severe
PHQ-2 0~6
cutoff: 3
→ screen for depression in "first step" approach
phq-2
1. Little interest/pleasure in doing things — anhedonia
2. feeling down/depressed/hopeless — depressed mood
3. Trouble falling/staying asleep. Sleeping too much
4. feeling tired / having little energy
5. poor appetite / overeating
6. feeling bad about self. a failure/let self/family down
7. Trouble concentrating on things
8. Moving/speaking so slowly that ppl notice fidgety/restless
9. Thoughts that better off dead/hurt yourself
PDSS (35) — 2wks after delivery
1. Self-Confusion / Maternal Confusion + loss of self
2. Contemplating harming oneself / Suicidal thoughts
3. emotional lability
- anger ready to explode
- very irritable
- emotions were up & down
- cried a lot
- would never be happy again
4. guilt/shame
5. Sleep disturbances
6. Anxiety/insecurity
7. Eating disturbances
phq2
emotional lability from PDSS
Q: Feeling down/hopeless/up & down
eg. cried alot/w/o reasons easily irritated
→ what mothers think PPD look like
Survey
scared at least 1 on EPDS
f
(23) Sadness. feeling down. depressed unhappy. unable to make myself happy/laugh
(14) Cried alot. crying w/ no reasons
(13) emotional liability emotions fluctuate a lot went up & down
(12) get angry/lash out a lot. get angry easily get angry w/ no reasons /irritated
(12) dislike baby/taking care of the baby, thoughts of hurting the baby/self/family stigma
(11) hopelessness, find no hope in life no value
(9) guilt/self blaming/low self esteem
(8) tiredness/exhausion
(6) Sleep + eating disturbances
(5) anxiety/insecurity
(5) suicidal thoughts
(4) distrust, ø communication
(2) helplessness
(1) loss of own life
bái bǎn
Pizarron
White board
Cuaderno
bǐ jì běn
notebook