Trauma history, prenatal posttraumatic stress and depressed mood as predictors of postpartum maternal relationship and sexual well-being

by

Debra Torok
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We acknowledge with respect the Lekwungen peoples on whose traditional territory the university stands and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

Supervisory Committee

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Dr. Nichole Fairbrother, Department of Psychology
Supervisor

Dr. Erica Woodin, Department of Psychology
Co-Supervisor

Abstract

The first year postpartum is often a challenging time for romantic partners. During this time, couples tend to experience less relationship intimacy and sexual satisfaction, which may be further exacerbated by individual stressors and vulnerabilities. Little is known about whether a maternal history of adverse life events and mental health prior to the infant's birth negatively interfere with postpartum relationship and sexual well-being. Accordingly, the current study examined whether maternal trauma history, prenatal posttraumatic stress, and prenatal depressed mood were risk factors for poor postpartum couple adjustment. It also investigated whether perceiving a partner as motivated to meet one's interest and disinterest in sexual activity, referred to as *sexual communal strength for having sex* (SCS for having sex) and *sexual communal strength not having sex* (SCS for not having sex), were buffers to relationship deterioration among mothers with this history of adversity. One hundred and sixty women (N = 160) who had completed an earlier study during pregnancy participated in a subsequent online survey between six and twelve months postpartum. Using path analysis to investigate the prospective relationships between maternal trauma history, prenatal mental health difficulties, and postpartum relationship and sexual well-being, trauma history was found to significantly predict sexual satisfaction and desire. Specifically, childhood maltreatment predicted poorer sexual well-being following childbirth, whereas adult sexual victimization predicted improved sexual well-being. No other pathways in the model were significant. Additionally, contrary to predictions, sexual communal strength did not moderate associations between maternal prenatal adversity and postpartum relationship outcomes in the primary analyses. However, follow-up analyses including only mothers who reported some symptoms of PTSD revealed that SCS for having sex moderated the association between these symptoms and relationship satisfaction. Results from

this research highlight that childhood maltreatment likely has enduring detrimental implications for women's sexual well-being as they transition- either again or for the first time - to motherhood. Further implications and directions for future research in this area are discussed.

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Introduction

Positive long-term romantic relationship quality is associated with emotional and sexual intimacy, sexual satisfaction, and physical and mental well-being (Braithwaite & Holt-Lunstad, 2017; Fallis, Rehman, Woody & Purdon, 2016; Greeff, Hildegarde, & Malherbe, 2001; F Pascoal et al., 2017; Proulx, Helms, & Buehler, 2007; Sadovsky & Nusbaum, 2006; Wickrama, Lorenz, Conger, & Elder, 1997). While declines in relationship and sexual satisfaction are common in long-term relationships, they are particularly pronounced for couples in the first year postpartum (e.g., Ahlborg, Dahlöf, & Hallberg, 2005; Belsky & Kelly, 1995; Doss, Rhoades, Stanley, & Markman, 2009; Impett, Muise, & Peragine, 2014 for review). During this period, partners encounter new demands and challenges associated with caring for a new child that often compromise the quality of their relationship and sex life, such as heavier workloads, increased fatigue, and mood concerns (Ahlborg et al., 2005; Belsky, Lang, & Rovine, 1983; Cooklin, Giallo, & Rose, 2011; Doss, & Rhoades, 2017; McBride & Kwee, 2017; Perry-Jenkins, Goldbeerg, Piece, & Sayer, 2007). Although some couples are able to adjust well to the increased demands of parenting, others struggle considerably during this time.

The pre- and postnatal mental health functioning of romantic partners likely contributes to postpartum dyadic adjustment. In general, mental health difficulties and a history of adverse life experiences, including depression, posttraumatic stress, and trauma history, are associated with intimate relationship difficulties and dissatisfaction (Caselli & Motta, 1995; Easton, Coohey, O'Leary, Zhang, & Hua, 2011; Mills & Turnbull, 2001; Rehman, Gollan, & Mortimer, 2008; Taft, Watkins, Stafford, Street, & Monson, 2011). Given the added stress associated with early parenting, it is likely that these factors

compound the difficulties of relationship functioning in the postpartum period and leave romantic partners even more susceptible to relationship deterioration.

In an effort to support positive postpartum dyadic adjustment, it is critical to identify factors that may contribute to improved relationship and sexual well-being. One factor that has been proposed as a potential buffer to relationship declines is partner supportiveness within the sexual relationship under the framework of *sexual communal strength* (Muise, Kim, Impett, & Rosen, 2017). Sexual communal strength refers to a partner's level of motivation to meet and understand the other's sexual needs, and it has been associated with positive postpartum romantic relationship quality (Muise, Impett, Kogan, & Desmarais, 2013; Muise et al., 2017). However, the role of sexual communal strength in relationship and sexual well-being has yet to be explored among couples with mental health issues. It is possible that sexual communal strength may be an important buffer to relationship distress among couples with a history of mental health difficulties and traumatic experiences, who may face additional struggles with intimacy and sex.

To date, many studies have focused solely on first-time parents and have examined *cross-sectional* associations between maternal *postpartum* depression, posttraumatic stress disorder (PTSD) symptoms, and relationship outcomes. Prospective studies in which *trauma history* and *pre-existing* maternal mental health problems are assessed as predictors of postpartum well-being are mostly limited to the impact on mothers' mental health and quality of life. The question of whether prenatal maternal mental health difficulties predict postpartum couple adjustment for first-time and multiparous parents alike has not been reported in the empirical literature. Further, the question of whether perceived sexual communal strength moderates this relationship has

also not been reported. Thus, the purpose of the proposed research is to examine whether prenatal maternal mental health difficulties and a history of traumatic events are potential risk factors for poor relationship and sexual well-being in the first year postpartum, as well as to investigate whether sexual communal strength minimizes postpartum relationship distress among couples with mental health difficulties.

Terminology

For the purposes of this thesis, *relationship and sexual well-being* encompasses relationship satisfaction, sexual satisfaction, and sexual desire. Specifically, the term *relationship satisfaction* refers to one's subjective global evaluation of one's relationship (Fincham & Bradbury, 1987; Graham, Diebels, & Barnow, 2011). *Sexual satisfaction* refers to the extent to which people are happy with their sexual experiences. Additionally, *sexual desire* is used specifically within a dyadic context, in which an individual wishes to engage in sexual activity with their partner (Spector, Carey, & Steinberg, 1996). *Intimacy* describes feelings of closeness to another both psychologically and physically, often involving sharing of feelings and vulnerability (Mills & Turnbull, 2001; Reis & Shaver, 1988). The proposed study examines intimacy in the context of intimate safety, which means feeling safe when being vulnerable with an intimate partner without concern that it will result in a negative emotional consequence (Dunham, 2008 as cited from Cordova, 2007). Finally, in this research, *trauma history* encompasses sexual victimization after age 14 and childhood maltreatment, while *mental health difficulties* encompasses symptoms of PTSD and depressed mood.

Relationship Satisfaction in the First Year Postpartum

Relationship satisfaction may vary over the course of long-term relationships, but on the whole, the literature shows that it more often declines rather than improves (Doss et al., 2009; Karney, & Bradbury, 1995; Huston, Houts, Caughlin, Smith, & George, 2001; Impett et al., 2014; Sprecher, 2002). This trajectory is especially prominent during the first year postpartum, which is a period of heightened vulnerability for romantic partners (Ahlborg et al., 2005; Belsky et al., 1985; Belsky & Kelly, 1995; Doss & Rhoades, 2017). During the first year postpartum, approximately one half (Belsky & Kelly, 1995) to two thirds of couples (e.g., Lawrence, Rothamn, Cobb, Rothman, & Bradbury, 2008; Shapiro, Gottman, & Carrere, 2000) experience deteriorations in relationship satisfaction. In contrast to those whose relationships deteriorate, those resilient to relationship deterioration typically are more satisfied with their relationships prior to childbirth and have partners who possess a strong awareness of the person's life and needs (Lawrence, et al., 2008; Shapiro et al., 2000).

On the whole, however, parenthood is associated with declines in relationship functioning. Compared to non-parent couples, new parents typically experience rapid and more sudden declines, which tend to persist both over time and with the birth of additional children. This suggests that the experience of having a child affects the trajectory of couples' relationship functioning (Doss et al., 2009; Doss & Rhoades, 2017; Lawrence et al., 2008; Twenge, Campbell, & Foster, 2003). Although first-time parents are most vulnerable to relationship deterioration, couples with more than one child (multiparous) are susceptible to it as well (Twenge, Campbell & Foster, 2003). The degree to which multiparous parents experience further relationship declines may depend

upon partners' engagement in adaptive relationship processes (e.g., constructive communication) and their enduring vulnerabilities (Volling, Oh, Gonzalez, Kuo, & Yu, 2015).

Unsurprisingly, declines in relationship satisfaction are associated with increased negative relationship behaviours, a decreased sense of confidence in one's ability to maintain the relationship, and a heightened perception of stress and chaos (Belsky et al., 1983; Doss et al., 2009; Shapiro et al., 2000). From late pregnancy up to one year postpartum, partners often engage in destructive communication and conflict management behaviours, and report fewer relationship maintenance behaviours, such as participating in shared activities (Belsky et al., 1983). In particular, partners express greater criticism toward one another and show patterns of withdrawal, denial, and negative affect when discussing relationship problems (Doss et al., 2009). Among couples transitioning to parenthood, Doss and colleagues (2009) highlighted that new parents report greater levels of problem intensity in multiple areas, including contentions about money and sex (Doss et al., 2009). As relationship and sexual satisfaction share strong associations, increased conflict and decreased relationship satisfaction in this period may have important implications for parents' sexual well-being (McBride & Kwee, 2017; McNulty, Wenner, & Fisher, 2016).

Sexual Well-Being in the First Year Postpartum

Sexual satisfaction. Similar to relationship satisfaction, sexual satisfaction tends to decrease over time in long-term relationships, and these declines are particularly pronounced in the postpartum period (Impett et al., 2014; Sprecher, 2002). In a review of postpartum sexual well-being, McBride & Kwee (2017) revealed that approximately half

of couples resume sexual activity at six weeks postpartum and approximately 90% resume sex by three months postpartum. Despite relatively high levels of sex resumption, many first-time and multiparous parents alike report reduced sexual activity and dissatisfaction with their sex life, persisting as long as eight years after the birth of their first child (Ahlborg, Rudeblad, Linnér, & Linton, 2008; Hansson & Ahlborg, 2012). In a Swedish sample, Ahlborg and colleagues (2008) found that approximately 21% of parents maintained prenatal levels of sexual satisfaction whereas 17% of parents became more dissatisfied between six months and four years after childbirth. Postpartum sexual dissatisfaction is often accompanied by other changes in the sexual relationship that frequently occur after childbirth, such as lower sexual desire and activity.

Sexual desire. Sexual desire plays an important role in postpartum relationship well-being, such that couples that are able to sustain higher levels of sexual desire tend to report greater relationship and sexual satisfaction (Rosen, Bailey, & Muise, 2017). Typically, however, sexual desire is at its peak in the early stages of a relationship and then over time begins to decrease for parents and non-parents alike (Call, Sprecher, & Schwartz, 1995; see Impett et al., 2014 for review). One common issue that partners encounter is discrepancies between each of their desired and actual frequency of sex (Sutherland, Rehman, Fallis, & Goodnight, 2015). As many as 95% of new parents report discrepancies in their sexual desire, with mothers typically reporting lower desire than fathers (Ahlborg et al., 2005; Hansson & Ahlborg, 2012; Rosen et al., 2017). As one would expect, larger discrepancies in sexual desire are associated with reduced sexual satisfaction for both partners (Rosen et al., 2017). For example, the lower-desire partner may feel socially obligated to please the higher-desire partner, whereas the higher-desire

partner may feel negative emotions from experiencing frequent sexual rejection (Sutherland et al., 2015).

Whether the mother or father experiences greater desire (i.e., the direction of the desire discrepancy) also has implications for relationship satisfaction. Specifically, when fathers had higher levels of sexual desire than mothers, both partners experienced greater relationship satisfaction and fathers reported greater sexual satisfaction (Rosen et al., 2017). As women may negatively perceive their desirability postpartum and fear rejection from their partners, both partners may feel more relationship satisfaction and security when mothers have partners that show more sexual interest in them than vice versa (Rosen et al., 2017). However, the literature on this subject is inconsistent. In contrast to Rosen and colleagues (2017), other findings show that fathers with higher levels of sexual desire than their partners tend to be more sexually dissatisfied postpartum, which may be because their sexual needs are unmet (e.g., Hansson & Ahlborg, 2012). These inconsistencies suggest further understanding is needed of the associations between the direction of desire discrepancies and postpartum relationship and sexual satisfaction.

Other sexual well-being concerns. While not a focus of this thesis, there are other factors pertinent to the sexual relationship that are associated with poorer postpartum sexual well-being. For example, sexual frequency declines in early parenthood, particularly for those with children younger than four years old (Call et al., 1995), and those who report less sexual activity are more likely to experience sexual dissatisfaction (Spector et al., 1996; Vannier, Adare, & Rosen, 2018). Additionally, partners may develop increasingly negative perceptions of their sexual relationship in the early postpartum period. When Vannier and colleagues (2018) studied causal attributions

for postpartum sexual concerns, they found that mothers who blamed their partner for their sexual concerns were less sexually satisfied. Mothers also experienced less relationship satisfaction when they endorsed beliefs that that these concerns would not change over time (Vannier et al., 2018). Another negative perception discussed in a qualitative study was mothers' perceived sexual obligation to their partners, who continued to work and financially support their family. Despite completing the majority of the household and childcare labour, mothers felt obliged to compensate for their lack of financial contribution to the family through satisfying their partners' sexual needs (Faircloth, 2015). Prior to childbirth, sexual activity was considered a "bonding" experience for couples that then became a form of "gendered currency" in the postnatal period (Faircloth, 2015 p. 9). This suggests that some mothers engage in sexual activity, even when they would prefer not to, in order to please their partner. Such engagement in unwanted sexual activity may have the potential to harm the quality of the sexual and romantic relationship.

Intimacy in the First Year Postpartum

Emotional and physical intimacy are important aspects of relationship and sexual well-being both inside and outside of parenting relationships. Intimacy tends to grow and then stabilize over the course of a relationship as partners disclose information about themselves and share moments of vulnerability (Greeff & Malherbe, 2001; Impett et al., 2014; Rubin & Campbell, 2012; Sadovsky & Nusbaum, 2006). In the postpartum period however, findings show that parents experience significant, continuous declines in their levels of intimate behaviours up to eight years after the birth of their first child (Ahlborg

et al., 2008; Hanssonn & Ahblorg, 2012[1]). As couples engaged in less intimacy, they unsurprisingly reported less satisfaction with their levels of intimacy (Ahlborg et al., 2008). Interestingly, these decreases in satisfaction with intimacy were more pronounced among couples that had additional children compared to those who had only one child (Ahlborg et al., 2008).

Anxiety about being sexually vulnerable with one's partner and/or fearing rejection from one's partner may negatively impact intimacy and interfere with engagement in sexual activity (McBride & Kwee, 2017). Both mothers and fathers who perceive rejection of their advances for intimacy or sexual activity report lower sexual frequency and satisfaction (Mickelson & Joseph, 2012). In contrast, stronger feelings of intimacy with one's partner may help to sustain sexual activity and satisfaction in the postpartum period. For example, in the first six months postpartum, parents who expressed more intimacy tended to engage in sex more frequently (Ahlborg et al., 2005). In addition, when asked to rank order the factors that contributed to high levels of sexual desire postpartum, mothers ranked the degree of intimacy they felt toward their partner and their perceptions of their partner's level of sexual interest as most important. In fact, these intimacy-related factors were greater contributors over and above birth and maternal factors (e.g., breastfeeding, vaginal issues; Hipp, Kane Low & Van Anders, 2012). This finding aligns with previous research indicating that women's levels of sexual satisfaction are especially contingent upon feelings of intimacy and emotional connection during sexual activity, as compared to their physical response to sexual touch (e.g., arousal; Bancroft, Loftus, & Long, 2003). Taken together, these findings suggest

[1] Authors of these papers used the term "dyadic sensuality" to capture what I define as "intimacy".

that feeling closer to and more secure with one's partner, positive perceptions of one's sexual relationship postpartum, and overall sexual well-being are closely linked in the postpartum period.

Psychosocial Issues that Impact Postpartum Relationship and Sexual Well-being

There are several common issues that arise postpartum and often compound relationship and sexual difficulties, including fatigue, body image and satisfaction, unequal divisions of labour at home, parenting stress, and infant temperament (Doss & Rhoades, 2017; Faircloth, 2015; Hipp et al., 2012; McBride & Kwee, 2017). For the purposes of this proposal, only the first three of these issues will be reviewed below.

Fatigue. Fatigue is consistently reported as a significant barrier to resumption in sex postpartum (Ahlborg et al., 2005; Hipp et al., 2012; McBride & Kwee, 2017). Across multiple studies, low energy is associated with reduced sexual interest, desire, and activity (Ahlborg et al., 2008; Hipp et al., 2012; Nehzad & Goodarzi, 2011). When asked to rate the factors that most impacted feelings of low sexual desire, mothers ranked fatigue as the strongest contributor (Hipp et al., 2012). Issues of fatigue continue to interfere with sexual activity even as children age. At six months postpartum, almost half of first-time Swedish mothers and fathers reported feeling too tired for sexual activity. By the time their children were four years old, 10% more parents - both with and without additional children - experienced this problem (Ahlborg et al., 2008). Fatigue also interplays with other issues that arise postpartum and are associated with lower sexual and relationship well-being, including breastfeeding and depression (Kendurkar & Kaur, 2008).

Body image and satisfaction. Women's bodies continue to change after childbirth and women tend to report increased body dissatisfaction from pregnancy to postpartum (Clark, Skouteris, Wertheim, Paxton, & Milgrom, 2009; McBride & Kwee, 2017). At six-months postpartum, women in an Australian sample expressed high levels of concern around feeling overweight, and 91% of the women reported desiring a smaller body (Rallis, Skouteris, Wertheim, & Paxton 2007). Maternal postpartum body dissatisfaction and negative feelings about one's body are associated with negative outcomes for mothers, including worsened mental health and negative perceptions of their partner's level of sexual interest in them (Clark et al., 2009). Mothers who were dissatisfied with their bodies were more likely to perceive rejection from their partners when initiating sex, which in turn was related to lower satisfaction with intimacy (Mickelson & Joseph, 2012). As such, negative body image and satisfaction may significantly interfere with partners' feelings of intimacy and sexual satisfaction.

Division of labour. Division of household and childcare labour is often a source of conflict in parental relationships, particularly for first-time parents (Belsky & Kelly, 1995). From pregnancy to the postnatal period, the total workload at home increases for both parents; however, mothers typically assume greater responsibility for the childcare and household duties (Gjerdingen & Center, 2005; Lachance-Grzela & Bouchard, 2010; Yavorsky, Dush, & Schoppe-Sullivan, 2015). As mothers shoulder more household duties, they tend to report greater dissatisfaction with their partners (Gjerdingen & Center, 2005). A review of the division of labour reported that North American women are responsible for two-thirds of routine household tasks and perform double the household work performed by their partners (Lachance-Grzela & Bouchard, 2010).

However, trends show that men have increased their participation in household labour tasks in the last several decades and that couples in gender-egalitarian countries (e.g., Sweden, Canada) divide the work more equally.

Equally important to consider are individuals' perceptions of and satisfaction with the division of labour. In general, perceptions of unfairness in household work arrangements are associated with decreased relationship satisfaction and conflict over time (Grote & Clark, 2001; Gjerdingen & Center, 2005). However, these perceptions are often influenced by relationship factors outside of each partner's objective contribution to domestic tasks (Grote & Clark, 2001; Tang & Curran, 2013). For example, Grote and Clark (2001) found that couples who experienced greater relationship distress were more likely to perceive inequity in the division of labour (Grote & Clark, 2001). In contrast, another study demonstrated that women who perceived high levels of commitment in their relationships were overall more likely to perceive the workload as equitably split between partners (Tang & Current, 2013). Some have hypothesized that perceived unfairness exacerbates relationship conflict, leading to greater perceptions of unfairness and enabling a cycle of relationship distress (Grote & Clark, 2001).

Satisfaction with the division of household and childcare tasks may have implications for the couples' sexual relationship as well. A recent study found that satisfaction with household work arrangements at six months postpartum predicted higher sexual satisfaction, cuddling frequency, and passion for one's partner at twelve months (Maas, McDaniel, Feinberg, & Jones, 2018). It remains to be examined whether these factors share a bidirectional relationship, as well as whether satisfaction with the division of labour is associated with aspects of non-sexual physical intimacy and emotional

intimacy (Maas et al., 2018). The literature in this area highlights the complex relationships between objective contributions to domestic labour, perceptions of inequity, and satisfaction with domestic labour arrangements, which appear to have considerable impacts on romantic relationship outcomes.

As partners transition to becoming parents – either again or for the first time, they are confronted with new demands and lifestyle changes that they must navigate with respect to their relationship. Fatigue, dissatisfaction with body image, and unequal divisions of household and childcare labour represent only a few of the factors that may interfere with relationship and sexual well-being. The current study addresses another important factor implicated in postpartum dyadic adjustment, namely mental health. Moreover, the ways in which these various psychosocial factors interact with one another potentially affects the degree to which couples experience postpartum relationship distress.

Mental Health and Relationship and Sexual Well-being

The relationship between posttraumatic stress, depression, and romantic relationship distress is well-established. In general, couples with these difficulties often experience poor overall sexual well-being and struggle to create and maintain intimacy in their relationships compared to those without these difficulties (Basco, Prager, Pita, Tamir, & Stephens, 1992; Kendurkar & Kaur, 2008; Leifker, White, Blandon & Marshall, 2015; Rehman et al., 2008; Yehuda, Lehrner, & Rosenbaum, 2015). Findings have been mixed as to whether trauma history, independently of current mental health symptoms, is related to adult sexual and relationship well-being. While some findings suggest that a history of trauma is closely linked to poorer relationships outcomes (Easton

et al., 2011; Nelson & Wampler, 2000), other findings indicate that trauma history either may not have substantial impacts on the relationship (Henry et al., 2011) or that it only exerts effects through the presence of current psychological distress (Perry, Dilillo and Peugh, 2007; Yehuda et al., 2015). Despite some inconsistencies in the trauma literature, it does appear that on the whole, mental health difficulties tend to negatively interfere with relationship well-being. It is also understood that mental health difficulties may exacerbate relationship and sexual dissatisfaction during times of stress, such as the first year postpartum.

Prevalence of Perinatal Depression and Posttraumatic Stress Disorder

Across the perinatal period, women are susceptible to a range of mental health problems, of which depression, anxiety, posttraumatic stress, and eating disorders are most commonly reported (Fairbrother, Janssen, Antony, Tucker, & Young, 2016; McBride & Kwee, 2017; Yildiz, Ayers & Phillips, 2017). The prevalence of both major and minor depression in the perinatal period has been well-established. In a systematic review of perinatal depression prevalence, the prevalence of both major and minor depression in pregnancy ranged from 8.5 % to 11% (Gavin et al., 2005). Other studies show similar findings, reporting prevalence rates within this range (e.g., Gotlib et al., 1989; Yildiz et al., 2017). In comparison, across the first seven months postpartum, the prevalence of major and minor depression ranged from 4.9% to 12.9% (Gavin et al., 2005), which has been corroborated in other studies (e.g., Yildiz et al., 2017).

The prevalence of PTSD in pregnancy and postpartum is less well understood compared to that of depression. A recent review of studies that examined PTSD, from all types of traumatic event, in the perinatal period (i.e., not exclusively childbirth-related)

obtained a prevalence estimate of 1.1% (Fawcett et al., 2019). However, other estimates of PTSD prevalence specifically in pregnancy ranged from approximately 3.3 to 6%, and these are thought to remain fairly consistent postpartum, ranging from 4 to 5.4% (Khoramroudi, 2018; Yildiz et al., 2017). Yildiz and colleagues (2017) also suggest that their estimates may be an underestimation of the true prevalence of postpartum PTSD since the majority of studies included in their review examined childbirth-related PTSD (as opposed to the full range of traumatic events). Approximately 1% to 3% of women develop PTSD as a direct result of childbirth (Ayers & Ford, 2016). As such, increases in postpartum PTSD prevalence from pregnancy may reflect a new occurrence from traumatic childbirth, or a recurrence of PTSD among women with a trauma history that was triggered by a traumatic childbirth experience (Yildiz et al., 2017). On the whole, these findings highlight that many women struggle with psychological distress during the perinatal period, which is concerning due to the potential negative impacts on both maternal and child outcomes (Gavin et al., 2005; Yildiz, 2017). As many women with prenatal mental health difficulties continue to experience them after childbirth (e.g., Parfitt & Ayers, 2014), identifying these difficulties during pregnancy may be one way to provide early assistance to couples with the transition to parenthood and mitigate potential relationship distress.

Maternal Mental Health and Postpartum Relationship and Sexual Well-being

The extant literature on the associations between maternal mental health and relationship and sexual well-being is based primarily on cross-sectional research conducted during the postpartum period. As might be expected, this literature indicates that poor postpartum mental health is linked to impaired relationship outcomes, including

compromised sexual interest and a perceived lack of partner support (Doss & Rhoades, 2017; McBride & Kwee, 2017; Parfitt & Ayers, 2014).

Depression. Symptoms of postpartum depression are negatively associated with couple satisfaction and dyadic adjustment after childbirth (Cox, Paley, Burchinal, & Payne, 1999; Parfitt & Ayers, 2009; Wenzel, Haugen, Jackson & Brendle, 2005). In addition, postpartum depression has been associated with decreased sexual desire, frequency, ability to orgasm, and pleasure during sexual activity (De Judicibus & McCabe, 2002; McBride & Kwee 2017; Kim et al., 2016), and these effects may last as long as six months.

There is also preliminary evidence that *prenatal* depression predicts poor relationship satisfaction postpartum. Among couples in Denmark, both depression during the second trimester of pregnancy and less constructive communication predicted significant declines in marital satisfaction at six and 30-months postpartum (Trillingsgaard, Baucom, & Heyman, 2014). Thus, it may be that the added stressors of parenthood exacerbate the negative relationship behaviours that are often seen among couples with depression. Based on findings that indicate a negative association between depression and sexual well-being in general (e.g., Kendurkar & Kaur, 2008; Kim et al., 2016), it may be that that women who experience depression in pregnancy face additional barriers to sexual satisfaction and intimacy with their partners following childbirth.

PTSD and trauma history. The majority of studies on PTSD and postpartum relationship well-being have been conducted with mothers who develop postnatal PTSD subsequent to a traumatic childbirth experience. Childbirth-related PTSD is distinct from PTSD caused by experiences that are unrelated to and occurred prior to mothers'

childbirth. However, given that research on childbirth-related PTSD is virtually all that is available, we are limited to looking to it for insight into postpartum relationship well-being among mothers with a trauma background. On the whole, the literature suggests that postnatal PTSD places a strain on the relationship, including heightened negative emotions, interference with sex and intimacy, and a lack of understanding and empathy (Ayers, Eagle, & Waring, 2006; McKenzie-McHarg et al., 2015; Nicholls, & Ayers, 2007; Parfitt & Ayers, 2009). Couples may face even more severe relationship difficulties if mothers also have comorbid depression (Parfitt & Ayers, 2009). Further, the toll of postnatal PTSD may endure for up 18 years postpartum for some couples (Ayers et al., 2006). In a qualitative interview-based study, partners reported challenges with both their relationship and sexual satisfaction since the onset of childbirth-related PTSD (Nicholls & Ayers, 2007). Specifically, they experienced issues with communication, such as heightened conflict, arguments, and avoidance of discussing the trauma. Mothers also reported avoiding sex as a form of self-protection. The ensuing lack of sexual activity contributed to feelings of rejection among fathers and ultimately a loss of intimacy between the couple. Further, couples faced significant difficulty resolving these issues because their time together was constrained by childcare and other demands at home (Nicholls & Ayers, 2007).

Although childbirth-related PTSD research may be a helpful starting point to understanding the role of trauma in relationship well-being during the perinatal period, it provides an incomplete picture. Many women enter into relationships with pre-existing PTSD and traumatic experiences, or experience such events during their relationship or pregnancy. These women may differ in their relationship outcomes compared to those

who develop PTSD after birth. Of the women who reported symptoms consistent with a diagnosis of PTSD in a perinatal mental health prevalence study, none of their traumas pertained to their current or past birth experiences (Fairbrother et al., 2016). This finding highlights the importance of taking into account these women's experiences as well.

Moreover, only two studies have examined postpartum relationship outcomes among parents with a trauma history – one with a sample of women who experienced sexual assault under the age of 17 (Roberts, O'Connor, Dunn, Golding, & ALSPAC Study Team, 2004), and another with Chinese first-time parents focusing on experiences of childhood emotional abuse (Liu, Wang, Lu, & Shi, 2018). In the former, investigators found that women with a sexual assault history were more likely than those without this history to report low relationship satisfaction and poor communication with their partner at 33 months postpartum (Roberts et al., 2004). In the second study, maternal history of emotional maltreatment was indirectly associated with decreased relationship satisfaction through current levels of depression (Liu et al., 2018). Further research that examines a range of childhood maltreatment experiences and sexual victimization experiences through adolescence and adulthood is needed to substantiate these findings. As the literature demonstrates that relationship satisfaction and sexual well-being decline among couples in which at least one partner has PTSD *and* in the early postpartum period, it is likely that couples in which women have this mental health vulnerability while entering into the postpartum period will be at risk for adverse relationship outcomes. Through incorporating a focus on maternal prenatal PTSD and a range of possible traumas, we gain a longitudinal understanding of how these experiences are associated with adult relationship and sexual well-being in the postnatal period.

Protective Factors in Postpartum Couple Adjustment: Sexual Communal Strength

Poor relationship and sexual well-being in the postpartum period may have negative implications for both quality of life and child development (e.g., Doss et al., 2009). Therefore, in addition to identifying risk factors for maladjustment, it is equally important to consider factors that may protect couples.

Partner Support

Partner supportiveness has been shown to buffer declines in relationship satisfaction across the transition to parenthood. Mothers who have partners who express fondness and demonstrate a strong awareness of their partner's world and needs are more likely to maintain or show higher levels of postpartum relationship satisfaction (Shapiro et al., 2000). Furthermore, couples that engage positively with one another prenatally, show a greater willingness and ability to problem-solve, and openly deal with conflict also tend to experience more positive adjustment (Cox et al., 1999; Houlston, Coleman, & Mitcheson, 2013).

Sexual Communal Strength

Partner supportiveness in the sexual relationship may be an equally important buffer to postpartum relationship deterioration. This has only recently been examined in the literature via the concept of sexual communal strength (Muise et al., 2017). Sexual communal strength represents an extension of the concept of *communal strength* in relationships into the domain of sexuality. In communal relationships, individuals feel responsible for meeting the needs of their partner and strive to respond to and meet these needs unconditionally (Mills, Clark, Ford, & Johnson, 2004). Accordingly, sexual

communal strength refers to the motivation to respond to a partner's sexual needs, including a willingness to do so even when partners differ in their desire for sex (Muise et al., 2013). Individuals high in sexual communal strength are typically driven by a genuine concern for their partner's well-being, engage in sexual activity to foster positive relationship outcomes, and report greater sexual satisfaction and desire (Muise et al., 2013). Furthermore, findings from a daily experience study demonstrate that the partners of those high in sexual communal strength *perceived* them as such, which in turn was associated with higher levels of relationship satisfaction (Muise & Impett, 2015).

Although not described this way in the literature, the concept of sexual communal strength shares similarities with enthusiastic sexual consent, in which consent is an affirmative, ongoing, and voluntary process that does not permit coercion or inferred compliance (Gilbert, 2018). Similarly, sexual communal strength involves respecting and showing an understanding of a partner's *interest* and *disinterest* in sex (Muise et al., 2017). Nevertheless, there may be times when those high in sexual communal strength engage in unwanted sexual activity in order to meet their partners' needs. Such engagement in unwanted sexual activity has *not* been considered sexual coercion because it occurs without partner pressure or fear of negative repercussions had the undesiring partner refused sex. However, in light of socio-historical expectations that women must satisfy their partners' sexual needs in mixed-gender relationships (Cacchioni, 2007), high levels of sexual communal strength among women may also reflect internalized beliefs of sexual obligation to their partners. Furthermore, given that women often assume responsibility for their partner's sexual needs, they likely risk engaging in sexual activity more often when it is unwanted compared to their male counterparts. Thus, to promote

both equity and well-being in the sexual relationships of mixed-gender couples, it may be especially important that women have male partners who are high in sexual communal strength. At present, research on sexual communal strength indicates that it is associated with positive relationship and sexual outcomes for both partners in mixed-gender relationships (Muise & Impett, 2016; Muise et al., 2017). Nonetheless, further research investigating the distinctions between sexual communal strength, sexual obligation, and relationship and sexual outcomes is needed.

Sexual communal strength in the postpartum period. The postpartum period is an important time to examine sexual communal strength due to the added challenges that couples face in their sexual relationship, including discrepancies between each partner's level of sexual desire and perceived obligations to have sex with one's partner (Faircloth, 2015; Rosen et al., 2017). Among first-time parents, Muise and colleagues (2017) examined two different aspects of sexual communal strength - the motivation to respond to one's partner's *need for sex* (SCS for having sex) and the *need to not have sex* (SCS for not having sex) - in relation to relationship and sexual satisfaction. Both mothers and fathers whose partners prioritized their need for sex or not for sex, as well as their partners' needs, reported greater relationship satisfaction. In comparison, only mothers whose partners were motivated to understand their need *not* to have sex reported greater relationship *and* sexual satisfaction; their male partners also reported greater relationship satisfaction. In other words, both individuals in the relationship benefit when their partner is motivated to meet the other person's sexual needs, and mothers particularly benefit when their partners are accepting of their desire not to have sex (Muise et al., 2017).

As the first study to assess the role of sexual communal strength in the postpartum period, Muise and colleagues' (2017) conclusions highlight that being understanding of discrepant desires is important for relationship satisfaction during this period, particularly for mothers with lower sexual desire. Given that mothers tend to experience larger declines in their sexual desires, having a partner who respects their diminished interest in sex may buffer the relationship deterioration that most parents experience postpartum.

Sexual communal strength and mental health difficulties. Another context in which high levels of sexual communal strength may particularly benefit relationship well-being is among couples with mental health difficulties, who often face struggles with sex and intimacy (e.g., Basco et al., 1992; Mills & Turbull, 2001). Specifically, having a partner high in sexual communal strength may relieve perceived pressures and obligations to go along with sex when it is undesired. Thus, for those with mental health difficulties, it is possible that perceiving partners as highly motivated to understand their specific sexual needs may deepen their comfort, feelings of safety, and satisfaction in their relationships. When situated within the postpartum context, mothers with a history of mental health difficulties may show a lesser interest in sex that is then exacerbated by lower levels of sexual desire commonly experienced in this period. For this reason, it may be especially important to investigate sexual communal strength as a buffer to declines in the postpartum relationship in this population.

The Current Study

Rationale

There is ample literature demonstrating that the first year postpartum is one of heightened vulnerability for couples' relationship and sexual well-being, and this is particularly true for mothers (e.g., Ahlborg et al., 2008; Belsky & Kelly, 1995; Doss et al., 2009; Rosen et al., 2017). Difficulties with relationship and sexual well-being are also encountered by couples in which one partner experiences symptoms of PTSD or depression (Rehman et al., 2008). Additionally, a negative relationship between relationship and sexual well-being and trauma history has been found, albeit less consistently (e.g., Mills & Turnbull, 2001; Yehuda et al., 2015). In the perinatal period, the association between maternal mental health difficulties and relationship well-being has primarily been studied in the *postpartum* period using cross-sectional designs. Only three published studies have been conducted on whether mothers with a history of mental health difficulties or trauma are more likely to experience postpartum relationship deterioration (Liu et al., 2018; Roberts et al., 2004; Trillingsgaard et al., 2014). These studies each focused on a different concern, namely sexual victimization prior to age 17, childhood emotional maltreatment, and prenatal depression. As such, there is still a need to investigate a broader range of mental health difficulties and possible trauma through the lifespan in association to postpartum relationship outcomes. Moreover, these studies did not investigate the relationship of these factors with postpartum sexual satisfaction and intimacy. Thus, our understanding of whether maternal *prenatal* mental health difficulties are risk factors for poor postpartum couple adjustment is incomplete. This is an important research question in that it may be pertinent to preventative interventions

that seek to identify and assist couples that need extra support around the transition of caring for a new child.

Moreover, in an effort to better support couples during this transition, research has investigated potential buffers to relationship declines in this period, including sexual communal strength (Muise et al., 2017). Among first-time parents, sexual communal strength was significantly associated with relationship satisfaction for both partners and mothers felt sexually satisfied when they had partners who prioritized their disinterest in sex (Muise et al., 2017). As of yet, perceived sexual communal strength has not been examined in relation to mothers with trauma history and prenatal mental health difficulties, who may be particularly susceptible to experiencing challenges with sexual well-being.

Objectives

Accordingly, the purpose of the current study was to examine maternal mental health difficulties as predictors of relationship and sexual well-being in the first year postpartum, with a focus on prenatal symptoms of PTSD, depressed mood, and trauma history. Trauma history encompassed sexual victimization since the age of 14 as well as different types of maltreatment (i.e., physical, sexual, emotional, neglect, and exposure to violence). The study also investigated women's perceptions of their partners' levels of sexual communal strength as potential moderators of these relationships. I examined these factors prospectively using a sample of women followed from their third trimester of pregnancy up to 12 months postpartum. In so doing, this study sought to advance knowledge about potential risk factors for dyadic outcomes postpartum, as well as about

potential buffers to declines in relationship satisfaction and sexual satisfaction and desire in this period among women with adverse mental health and trauma history.

Research question 1: **Do prenatal symptoms of PTSD and depression, sexual victimization past age 14, and childhood maltreatment each uniquely predict postpartum relationship satisfaction, intimacy, sexual satisfaction and desire?**

Based on the reviewed literature (Nicholls, & Ayers, 2007; Parfitt & Ayers, 2009; Roberts et al., 2004; Trillingsgaard et al., 2014), it seemed likely that maternal trauma history and/or prenatal PTSD and depression symptoms would further compound difficulties in couples' relationship and sexual well-being after the arrival of a new child. Accordingly, I hypothesized that prenatal symptoms of PTSD, depressed mood, sexual victimization, and childhood maltreatment would each uniquely predict relationship and sexual well-being postpartum, including relationship satisfaction, intimacy, and sexual satisfaction and desire. I hypothesized that prenatal PTSD and depression symptoms would be stronger predictors of postpartum relationship outcomes than trauma history (Henry et al., 2015; Yehuda et al., 2015).

Research question 2: Do perceived SCS for having sex and SCS for not having sex (i.e., the perception that the non-childbearing partner is motivated to meet the mothers' *interest* and *disinterest* in sex) each moderate the relationship between a) prenatal symptoms of PTSD, depressed mood, sexual victimization, and childhood

maltreatment, and (b) postpartum relationship satisfaction, intimacy, and sexual satisfaction and desire?

In light of previous findings on sexual communal strength in the postpartum period (Muise et al., 2017), I hypothesized that mothers' perceived level of their partners' sexual communal strength would moderate the relationship between maternal mental health difficulties and postpartum relationship and sexual well-being. Specifically, given that (a) mothers experience decreased sexual desire in the postpartum period (Hansson & Ahlborg, 2012), and (b) individuals with a history of trauma, PTSD, and depression tend to struggle with intimacy and sex (e.g., Yehuda et al., 2015), I expected that women with a trauma background and these adverse prenatal experiences would see the greatest increases in their relationship and sexual well-being when they perceived that their partners were higher in SCS for not having sex.

Methods and Procedures

Participants

460 mothers of infants were contacted from an earlier study. The initial data (N = 895) was collected from a sample of Canadian women who were in their third trimester of pregnancy (at least 33 weeks' gestation). The women who participated were also fluent in English and above the age of 18. Participants were eligible to participate if they: (a) had participated in the earlier study, (b) consented to be contacted regarding opportunities to partake in future studies, (c) had an infant between the ages of 6 and 12 months of age, and (d) had a romantic partner with whom they had maintained a romantic relationship since a time point prior to the birth of their infant. These eligibility criteria were outlined in both the study participation invitation email and in the study consent form.

Of the women contacted, 166 agreed to participate in the postpartum follow-up research. Six participants were later removed from the dataset because they did not meet eligibility requirements (i.e., they were not in romantic relationships), leaving a total of 160 participants. No significant differences were found between those who did and did not complete the postpartum follow-up survey in terms of PTSD symptoms, depressive symptoms, maltreatment, experiences of pregnancy-related medical problems, family income, and total number of children ($p > .05$). However, those who participated reported significantly higher levels of sexual victimization ($M = 13.91$, $SD = 17.29$) than those who did not participate ($M=10.11$, $SD = 14.34$), $t(238.575) = 2.08$, $p < .05$.

Procedures

For the first wave of data collection, participants were recruited from BC (British Colombia) Women's Children Hospital and Health Centre in Vancouver, Island Ultrasound in Victoria, as well as online and at various community centres, prenatal fitness classes, classrooms, and maternity-related events in BC. Once participants completed a registration form for the study, they were emailed an invitation to participate in the study via an online survey platform (i.e., Fluid Surveys and Qualtrics). Women who consented to participate completed several questionnaires, including those pertaining to their pregnancy and their mental health. In appreciation of their time, participants were offered a community resource list and entered into a draw for a chance to win a prize of $150.

For the current wave of data collection, participants were contacted via email and invited to take part in our study extension. Those interested in the study were able to access the online anonymous consent form and survey (created on Qualtrics) via a link in their email invitation. The consent form explained the nature of the survey, the types of questions they could expect to answer, and how they would be compensated for their time. Women who were eligible and consented to participate completed an online questionnaire from a computer of their choosing. The questionnaire inquired about their relationship satisfaction, sexual satisfaction and desire, experiences of intimacy with their partner, satisfaction with division of household labour, and current symptoms of depression and posttraumatic stress. Those who did not meet the study eligibility criteria were directed to the end of the survey.

At the conclusion of the survey, participants received feedback about their current mood and relationship satisfaction based on the Couples Satisfaction Index-32 (CSI-32) and Edinburgh Postnatal Depression Scale (EPDS) respectively. The feedback for the CSI-32 was provided by one of the original authors of the scale, Dr. Ronald Rogge, and the feedback for the EPDS was developed by Dr. Fairbrother and myself. Both were granted approval by the C&W Ethics Board. In addition, participants who completed all of the questionnaires in the study had their name entered into a draw for a 1 in 100 chance to win a prize of $100. Finally, they were also given a debriefing form that included additional details about the study objectives, contact information for the lab if they had any questions or concerns, and resources for mood, parenting, and other common postpartum concerns.

Prenatal Measures

Trauma History

Sexual victimization. To determine the frequency and severity of non-consensual sexual experiences, participants completed the Sexual Experiences Survey – Short Form Victimization (SES-SFV, Koss et al., 2007; Appendix A) in their third trimester of pregnancy. The original short form contains ten items. Participants reported the occurrence of each unwanted sexual experience on a scale from ‘0’ times to ‘3+’ times for both the past 12 months and since the age of 14. For the purposes of this research, only non-consensual experiences that occurred since the age of 14 were included for analysis.

The first seven items of the SES-SFV assess: (a) the types of sexual victimization (i.e., unwanted sexual contact, attempted rape and completed rape), and (b) the tactics that perpetrators used to assault the victim. The tactics included in the measure are verbal coercion (e.g., telling lies, making verbal threats), incapacitation (i.e., intoxication), and physical force (i.e., threatening force or actual use of force). The remaining items ask whether any of these experiences occurred more than once, and whether participants have ever been raped, to which they could respond "yes" or "no". One item that asked about sex and age was removed from the survey to prevent redundancy.

Scores for this measure were obtained using a scoring scheme validated by Davis and colleagues (2014). This method combines experiences of attempted and completed rape into one type of unwanted sexual experience, but it distinguishes them from experiences of unwanted sexual contact. The severity of unwanted experiences is then ranked according to the coercive tactic used, yielding six possible outcomes of sexual victimization. To account for both the severity and frequency of unwanted experiences, the severity rank of each of the six outcomes was multiplied by the number of times the participant reported experiencing that type of outcome and then sum them for an overall score. Following this procedure, a ceiling value of three was applied to the maximum number of times that participants can report experiencing a given outcome. In other words, if a participant responded affirmatively to having an experience that falls under one of the six categories of sexual victimization, the maximum number of times their frequency score would be counted *for that particular category* is three. As such, the possible range of scores is 0 to 63.

This scoring method was preferable for two reasons. First, it distinguished between different experiences of unwanted sexual contact (i.e., by verbal coercion, incapacitation, and force), and thereby considered a wider range of sexual assault outcomes than Koss and colleagues (2007) original methods (Davis et al., 2014). Second, it offered an appropriate level of variability for use with a community sample, with whom lower scores of coercive experiences are expected. Strong convergent validity was found for this scoring scheme. Experiences of sexual victimization significantly correlated with measures of relationship abuse, violence, somatization, depression, anxiety, and the intrusion symptoms of PTSD (Davis et al., 2014). In addition, internal consistency of the SES-SFV was .95 in this sample.

Maltreatment experiences. The Ratings of Past Life Events Scale (ROPLES, McGee, Wolfe, Yuen, Wilson, & Carnochan, 1995; Appendix B) was administered prenatally to assess participants' maltreatment experiences. Participants rated the extent to which they experienced the following five maltreatment types: physical, sexual, emotional, exposure to violence, and neglect. Ratings are made for each of their "mother", "father" or "other" on a four-point scale from 0 (not at all) to 3 (severely). Scores were determined for this scale by summing across the categories, with higher scores indicating greater frequency and severity of maltreatment. The ROPLES has satisfactory psychometric properties. Predictive validity has been established with the Child Behaviour Checklist Internalizing scale (r = .27, p = .05) and the Youth Self Report Internalizing and Externalizing scales (r = .38, p <.001 and r = .25, p < .01; McGee et al., 1995). A Cronbach's alpha of .88 indicated that the ROPLES had strong internal consistency in this sample.

Mental Health

Depressed mood. The Edinburgh Postnatal Depression Scale (EPDS, Cox, Holden & Sagovsky, 1987; Appendix C) was used to assess prenatal depressed mood. The EPDS is a well-established 10-item screening tool used to assess depression across the perinatal period (Boyd, Le, & Somberg, 2005; Ji et al., 2011). Example items include, "I have been able to laugh and see the funny side of things" and "Things have been getting on top of me". Participants' responses are scored from 0 (e.g., Never; Not at all) to 3 (e.g., Yes, most of the time; As much as I always could) based on the degree of frequency with which they experience these feelings. The scores range from 0 to 30. Scores greater than 9 suggest more persistent negative mood and scores greater than 14 suggest a high likelihood of depression.

Validity of the EPDS for use with pregnant women was established in the 1990s (Murray & Cox, 2009). In the current study, internal consistency for participants in their third trimester was 0.87, indicating that the measure was reliable.

PTSD symptoms. The PTSD Diagnostic Scale-5 (PDS-5, Foa et al., 2016; Appendix D) was administered in pregnancy to assess symptoms of posttraumatic stress. The PDS-5 is a brief, widely used 24-item self-report measure that assesses symptoms PTSD in the last month. It is comprised of two trauma history screening questions, 20 questions that assess the presence and severity of symptoms, and four items that inquire about both symptom duration and any distress and interference caused by these symptoms. This measure accounts for each of the PTSD DSM-5 symptom clusters, intrusion (Items 1-5), avoidance (Items 6-7), changes in mood and cognition (Items 8 – 14), and arousal and hyper reactivity (Items 15 – 20), which are rated on a five-point

scale of frequency and severity from 0 (not at all) to 4 (6 or more times a week/severe). PTSD severity is determined through totalling the 20 symptom ratings. Scores can range from 0 to 80, with higher scores indicating more severe symptoms. In order to determine severity levels, clinical guidelines for interpreting scores are as follows: 0 to 10 indicates minimal symptoms, 11 to 23 indicates mild symptoms, 24 to 41 indicates moderate symptoms, 43 to 59 indicates severe symptoms, and scores greater than 60 indicate very severe symptoms.

Strong support for the reliability and validity of the PDS-5 has been found (Foa et al., 2016). In sample of urban community residents, veterans, and undergraduates, the PDS-5 demonstrated high levels of test-retest reliability (r = .90) and convergent validity with different PTSD symptom measures, such as the PTSD Symptom Scale—Interview Version for DSM–5 (PSSI–5; r = .85). The PDS-5 had excellent reliability in this sample, with a Cronbach's alpha of .95.

Postpartum Measures

Demographic and childbirth history information. Using a questionnaire developed by the Perinatal Anxiety Research Lab, participants provided demographic information (i.e., age, relationship status, relationship length, gender identity, occupation, education, family income, race/ethnicity, language, and total number of children), and childbirth history information (i.e., baby's date of birth, mode of delivery, primary care provider, number of previous births, and maternal and infant health problems related to the recent birth).

Mental Health

Depressed mood. Following childbirth, the EPDS (Cox et al.,1987; Appendix C) was re-administered to assess postpartum depressed mood. See prenatal measures section for details about the questionnaire content. Validity for use with women following childbirth was established in the 1980s (Cox et al., 1987). Among women six to twelve months postpartum in this sample, the EPDS had an alpha reliability coefficient of .81.

PTSD symptoms. The PDS-5 (Foa et al., 2016; Appendix D) was also used to assess for symptoms of PTSD postpartum. The internal consistency of the PDS-5 when measured postnatally remained strong with a Cronbach's alpha of .94. See prenatal measures section for details about the questionnaire content and psychometrics.

Relationship and Sexual Well-being

Relationship satisfaction. As a measure of relationship satisfaction, participants completed the Couples Satisfaction Index (CSI-32, Funk & Rogge, 2007; Appendix E). The CSI-32 is a 32-item self-report questionnaire, in which participants rate different aspects of their relationship satisfaction in the last month on a 6- or 7-point Likert scale. For example, participants responded to "Please indicate the degree of happiness, all things considered, of your relationship" from "Extremely unhappy" (=0) to "Perfect" (=6), and ranked the degree to which statements applied to their relationship (e.g., "I sometimes wonder if there is someone else out there for me", "I can't imagine ending my relationship with my partner") from "Not at all true" (=0) to "Completely true" (=5). Scores can range from 0 – 161, with higher scores indicating greater satisfaction and a score below 104.5 suggesting relationship dissatisfaction (Funk & Rogge, 2007).

Compared to other measures of relationship satisfaction, the CSI-32 has been found to have greater precision and power at detecting differences both within and between partners in an Item Response Theory analysis (Funk & Rogge, 2007). The CSI-32 has also been previously validated for use in samples of postpartum women (Vannier et al., 2018). In the current sample, the CSI-32 demonstrated very high internal consistency ($\alpha = .98$).

Dyadic intimacy. The Intimate Safety Questionnaire- Revised (ISQ-R, Cordova, 2007, as cited in Dunham, 2008; Appendix F) was used to assess postpartum intimacy levels. It is a 28-item questionnaire that assesses participants' emotional and sexual safety, as well as the degree to which they feel secure being vulnerable with their partner. Participants responded on a five-point Likert scale from 0 (never) to 4 (always) to statements, such as "When I need to cry I go to my partner" and "When I am with my partner I feel anxious, like I'm walking on eggshells". Scores on the ISQ-R span from 0 to 112, with higher scores indicating stronger levels of intimate safety. The ISQ-R had excellent reliability, as indicated by a Cronbach's alpha of 0.94.

Sexual satisfaction and desire. A total of 15 items were used to assess sexual satisfaction and desire. They were taken from the New Sexual Satisfaction Scale-Short (NSSS-S, Štulhofer, Buško, & Brouillard, 2011) and three items from the Sexual Desire Inventory-2 (SDI-2, Spector, Carey & Steinberg, 1996; Appendix G). The NSSS-S is a 12-item measure that asks participants about their sexual satisfaction in the last six months. For the purposes of this study, the time frame was changed to the previous month in order to maintain consistency within the proposed research. Participants evaluated different aspects of their sexual satisfaction on a 5-point scale from "Not at all

satisfied" (=1) to "Extremely satisfied" (=5), including "My 'letting go' and surrender to sexual pleasure during sex" and "The balance between what I give and receive in sex". Scores are calculated by summing the items and range from 12 to 50. Higher scores indicate greater satisfaction.

Three items from the SDI-2 that specifically assess partner-focused dyadic sexual desire were selected to minimize redundancy in the survey and ensure relevancy to a sample of postpartum women (Moyano, Velljo-Medina, & Sierra, 2017). Partner-focused desire is a distinct aspect of dyadic sexual desire in that it specifically refers to sexual desire for a romantic partner, as opposed to general sexual desire for an attractive person (Moyano et al., 2017). In order to ensure prospective participants consistently respond about their current significant other, the phrase "your partner" rather than "a partner" was used in the items. Participants rated their desired frequency of sexual activity on an eight-point scale (0 = Not at all, to 7 = More than once a day), as well as reported the strength and importance of fulfilling their desire on a nine-point scale (0 = No desire/Not at all important, to 8 = Strong desire/Extremely importance).

In order to analyze sexual satisfaction and desire as one outcome variable, items on the NSSS-S and SDI-2 were standardized and then summed into a single composite scale score. As the scales correlated at $r = .99$ ($p < .01$), this was an appropriate action. Internal consistency of the full scale was strong ($\alpha = .93$).

Sexual communal strength. The Sexual Communal Strength for Having Sex (SCSS, Muise et al., 2013) and the Sexual Communal Strength for Not Having Sex (SCSN; Muise et al., 2017) measures were used to measure sexual communal strength. The SCSS is a six-item measure that assesses a person's motivation to meet their

romantic partner's sexual needs. As only data from mothers was collected, with the priority of understanding their perceptions of the sexual relationship, some of the language was replaced to reflect the extent to which mothers *perceive* that their partner prioritizes their sexual needs. For example, the phrase "do you think" was incorporated when appropriate, such as by replacing "how easily could *you* accept not meeting your partner's sexual needs?" with "how easily *do you think your partner* could accept not meeting your sexual needs?". Participants responded to these questions on a five-point Likert scale from 0 (Not at all) to 4 (Extremely). Higher scores indicate that participants believe their partner is more motivated to meet their desire for sex. Cronbach's alpha indicated excellent reliability in this sample ($\alpha = .85$), which is higher than previous reliability estimates in samples with individuals in romantic relationships ($\alpha = .77 – .80$; Muise et al., 2013; Muise et al., 2017).

The SCSN is a four-item measure adapted from the SCSS that measures motivation to respond to and meet romantic a partner's need not to engage in sex (Muise et al., 2017). Similar to the approach with the SCSS, mothers were asked about the extent to which they *perceive* their partner is motivated to meet their need to not have sex. Participants responded on a five-point scale from 0 (Not at all) to 4 (Extremely) to questions such as, "If you are not in the mood for sex, how easily can your partner accept not having sex with you?". Again, higher scores suggest that participants perceive their partner as showing a greater understanding of their disinterest in sex. Consistent with past research (Muise et al., 2017), alpha reliability for this scale was adequate ($\alpha = .79$).

Data Analysis

Data Cleaning and Preparation

A number of steps were taken to prepare the dataset for analysis, specifically merging data sets, analyzing missing data patterns, identifying outliers, and assessing multicollinearity.

Merging data sets. Participant data from the initial wave of data collection was merged with their data from the current survey so that both predictor and outcome variables were in a single dataset. After matching participant ID numbers in the two datasets, the responses collected prenatally on the SES-SFV, ROPLES, PDS-5, and EPDS were input into the current data set (using SPSS 24).

Missing data. Missing data patterns were assessed via R's MissMech package (Jamshidian, Jalal, & Jansen, 2014). This package tests whether the data are missing completely at random (MCAR), meaning that missing variables in the dataset are not systematically related to the other observed or missing variables (Jamshidian et al., 2014). Missing data was present in all of the independent and dependent variables except for the CSI-32, with the highest proportions of missing data being in the ROPLES and SES-SFV scales (32.5% and 18.75% respectively). Non-parametric analyses revealed there was not sufficient evidence to reject MCAR ($p > .49$). In other words, this suggests that the missing values were MCAR. However, the concentration of missing data in the distinct, yet related, predictor variables (i.e., maltreatment and sexual victimization) indicate that this finding should be viewed with caution.

Missing data was handled in two ways. The first research question used full information maximum likelihood (FIML), which estimates model parameters for missing

values based all the available information in the dataset (Acock, 2005). The second research question employed multiple imputation (MI), which is an iterative process whereby missing values are replaced by simulating versions of the dataset. It is advantageous in that it is flexible, capable of handling large amounts of missing data, enables researchers to analyze the data as though it were complete, and yields similar estimates as FIML (Schafer, 1999; Kenward & Carpenter, 2007).

Normality and outliers. Using the MVN package on R (Korkmaz, Goksuluk, & Zararsiz, 2014), multivariate normality was assessed. As multivariate normality and outliers could only be assessed with complete data, only 76 participants (listwise deletion) were included in these analyses. Therefore, the findings may not fully reflect the true properties of the complete data set. Using Mardia's test, the sample did not meet the assumptions for a multivariate normal distribution (skewness: $\chi_2 = 474.24$, $p < .01$). These findings were not surprising given the study's focus on atypical experiences. Multivariate outliers were then identified in R using Mahalonobis distances (Korkmaz et al., 2014; Tabachnick & Fidell, 2001), which measures the distance between each case in the dataset from the central distribution. Each case is identified as a potential outlier using a chi-square distribution, in which those that fall below the threshold of $p < .001$ are considered outliers (Tabachnick & Fidell, 2001). One case met the cutoff to be considered a multivariate outlier ($df = 8$, $p < .001$). As the values for this case still fell within the possible ranges of the scales included in this study, this case was kept in the dataset.

The majority of the predictor and outcome variables did not exhibit univariate normality. Specifically, the univariate distributions of the measures of posttraumatic

stress, sexual victimization, and maltreatment were positively skewed, indicating that participants reported a low frequency of these experiences. See Figure 1 for graphical depictions of these predictor variables and Table 3 for their skewness values. In comparison, responses on the relationship satisfaction measure were negatively skewed (see Figure 1 and Table 3), suggesting that participants were fairly satisfied in their relationships. Univariate outliers on the predictor and outcome variables were detected by identifying values three standard deviations above or below the mean of each of these variables. These outliers were then winsorized, whereby extreme or skewed values were replaced by those that were next highest or lowest. This technique is preferred over methods that trim the data because winsorizing retains the same number of values in the dataset (Tabacknik & Fidell, 2001).

Multicollinearity. Bivariate correlation analyses were conducted to determine the magnitude of the association between responses on the predictor and outcome measures. No issues of multicollinearity were found between the predictor variables (i.e., $r < .70$). Thus, sexual victimization (SES-SFV), maltreatment (ROPLES), prenatal posttraumatic stress (PDS-5), and prenatal depressed mood (EPDS) were analyzed as distinct experiences. However, the CSI-32 and ISQ-R correlated at $r = .82$. In order to minimize redundancy in the analysis and avoid potential statistical problems (e.g., unreliable parameter estimates), only the CSI-32 was retained in the analysis (Tabachnik & Fidell, 2001; Klem, 1995). The CSI-32 was selected due its level of precision and recognition as a gold standard measure in the relationship literature (Funk & Rogge, 2007).

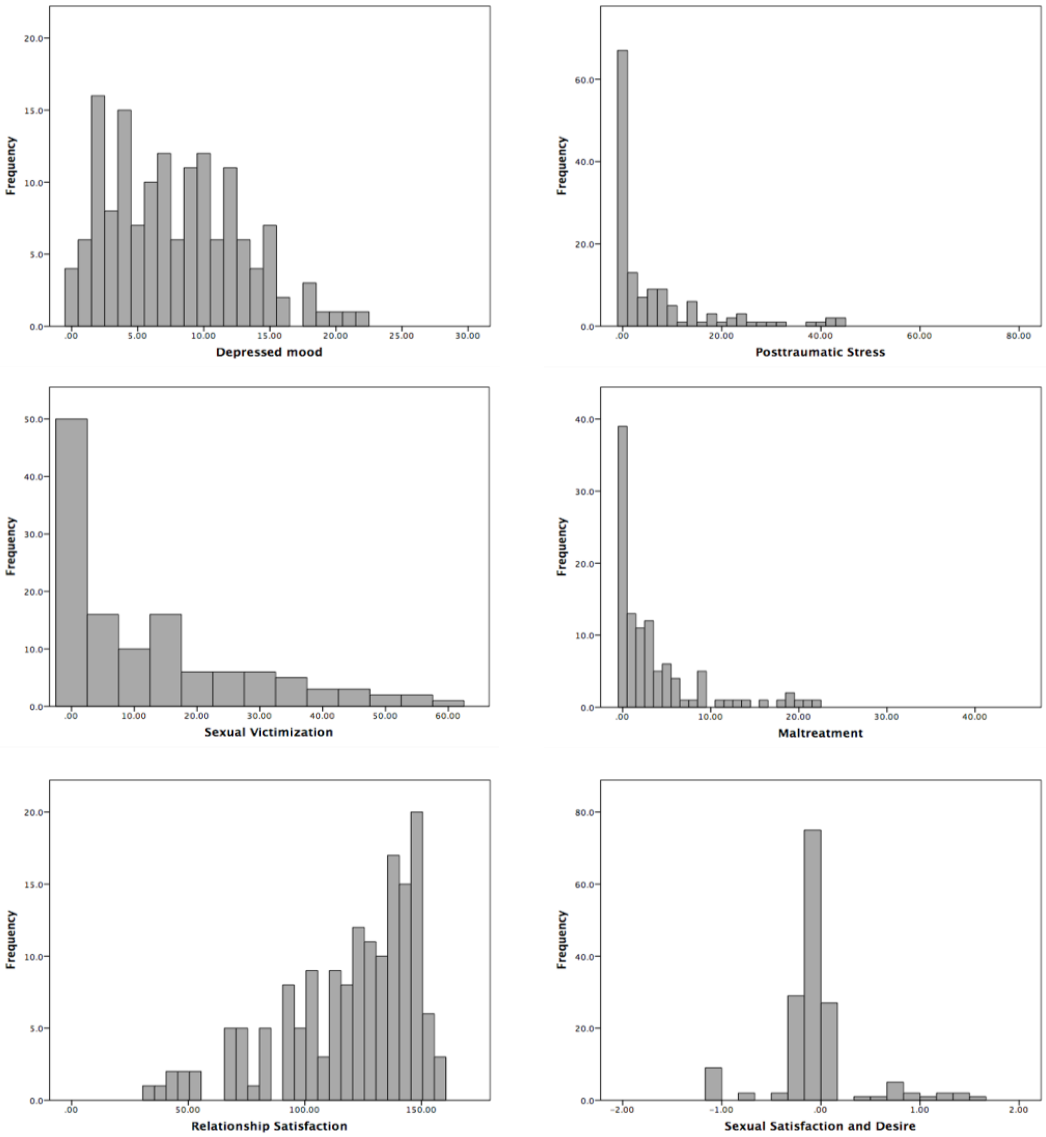

Figure 1. Histograms of the frequencies of depressed mood, posttraumatic stress symptoms, sexual victimization, maltreatment, relationship satisfaction, and sexual satisfaction and desire.

Covariates. Age, relationship length, family income, years of education, health problems since birth, infant health, and total number of children were checked as potential covariates using one-way ANOVAs and bivariate correlations. Years of education was significantly associated with relationship satisfaction ($r = .24$, $p < .05$) and was thus included as a covariate in the analyses. None of the other variables listed above were significantly related to either relationship satisfaction or sexual satisfaction and desire.

Data Analysis Plan: Research Question 1

Using R's lavaan package (Rosseel, 2012), I conducted a path analysis to determine whether maternal trauma history and prenatal mental health difficulties predicted postpartum relationship and sexual well-being.

Path analysis was the method of choice for several reasons. First, it estimates the relationships between multiple variables simultaneously in a single equation (Klem, 1995; Timm & Keiley, 2011). In so doing, it bypasses the risk of inflating Type I error, which occurs from conducting several multiple regressions. Second, path modelling attenuates the variance in the observed variables by removing their error variance. This enables the estimation of the true magnitude of the individual paths between the observed predictor and outcome variables. Third, it employs FIML, which is a robust method of estimating missing data (Acock, 2005). Finally, path analysis takes into account the sequential ordering of variables (Klem, 1995), which is important given the prospective nature of the data used for this research.

The hypothesized model included the following predictor variables: sexual victimization, as measured by the SES-SFV, childhood maltreatment, as measured by the

ROPLES, PTSD symptoms, as measured by PDS-5, and depressed mood, as measured by the EPDS. It also included the following as outcome variables: relationship satisfaction, as measured by the CSI-32, postpartum dyadic intimacy, as measured by the ISQ-R; and sexual satisfaction and desire, as measured by the composite measure of the NSSS-S and the SDI-2 (see Figure 2). However, this model was ultimately modified to only include relationship satisfaction and sexual satisfaction and desire as outcome variables because of multicollinearity between the measures of relationship satisfaction and intimacy. The path analysis was also run twice, once including years of education as a covariate of relationship satisfaction and once without. All of the variables were standardized prior to entering them into the model. The model was fully recursive, meaning it accounted for all of the possible direct links between variables. Accordingly, the regression loadings between the hypothesized pathways were the subject of analyses rather than model fit indices (Klem, 1995).

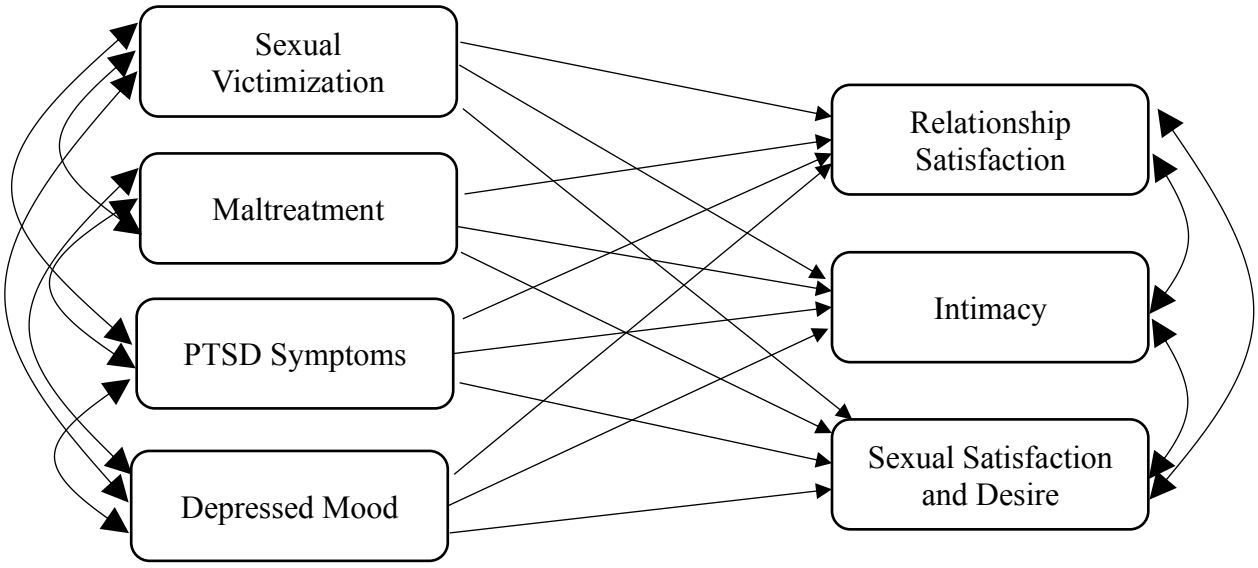

Figure 2. Hypothesized path analysis of maternal trauma history and prenatal mental health difficulties as predictors of postpartum relationship and sexual well-being. Relationships between all variables in the model will be estimated simultaneously.

Data Analysis Plan: Research Question 2

I conducted moderated hierarchical regression analyses to investigate whether sexual communal strength moderated the potential effect of maternal trauma history and mental health difficulties on postpartum dyadic adjustment. Prior to conducting these analyses, as a significant proportion of data was missing, I subjected the dataset to MI to account for its missing values. Following recommendations to impute data between 3 to 10 times, the current dataset was simulated 8 times (Schafer, 1999; Acock, 2005). The results from each dataset were combined to yield estimates that account for missing-data uncertainty (Schafer, 1999). To ensure the MI reasonably predicted the missing data, the descriptive statistics of an imputed and the original dataset were compared, and they evidenced similar properties (e.g., mean, skewness values etc., Schafer, 1999).

Initially, six separate moderated hierarchical regression analyses were planned for the two measures of sexual communal strength - for having sex and not having sex - on each of the three outcome variables (postpartum relationship satisfaction, intimacy, and sexual satisfaction and desire) (see Figures 3-5). However, only four moderated hierarchical regressions were conducted because postpartum dyadic intimacy was excluded as an outcome variable due to its multicollinearity with relationship satisfaction. Using this regression approach, the predictor variables and sexual communal strength were first added to the model, followed by the interaction terms between each of the predictor variables and sexual communal strength (Hayes, 2013). Years of education was also entered as a covariate in the models of relationship satisfaction (but not sexual satisfaction and desire) prior to entering the predictor variables. The regression approach was chosen because it can test the interaction between two or more *continuous* variables

(Hayes, 2013). It derives estimates from the complete sample, thereby retaining more power compared to those that subgroup the data and test it at different levels of the moderator (Hayes, 2013).

Significant findings were evaluated with the Benjamini-Hochberg (1995) procedure of controlling for the false discovery rate (FDR), which is the expected proportion of type I errors among all significant findings (i.e., $p < .05$; Storey, 2002). The threshold selected for the FDR was 0.1. FDR is considered a viable alternative to conventional family-wise error approaches, such as the Bonferroni correction, which are often considered too conservative (Storey, 2002). Although the FDR is a more liberal approach, it minimizes the proportion of false positive findings and has greater power to detect effects (Benjamini-Hochberg, 1995; Simes, 1986; Storey, 2002).

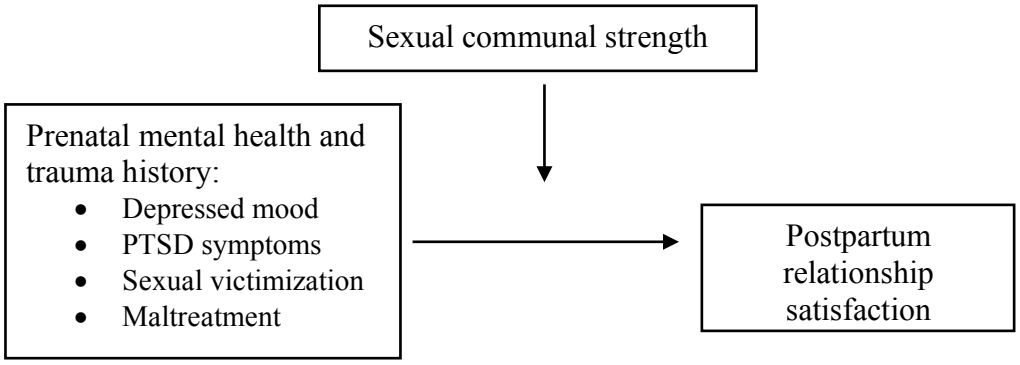

Figure 3. Hypothesized moderation analysis wherein sexual communal strength moderates the association between maternal trauma history and prenatal mental health difficulties and postpartum relationship satisfaction.

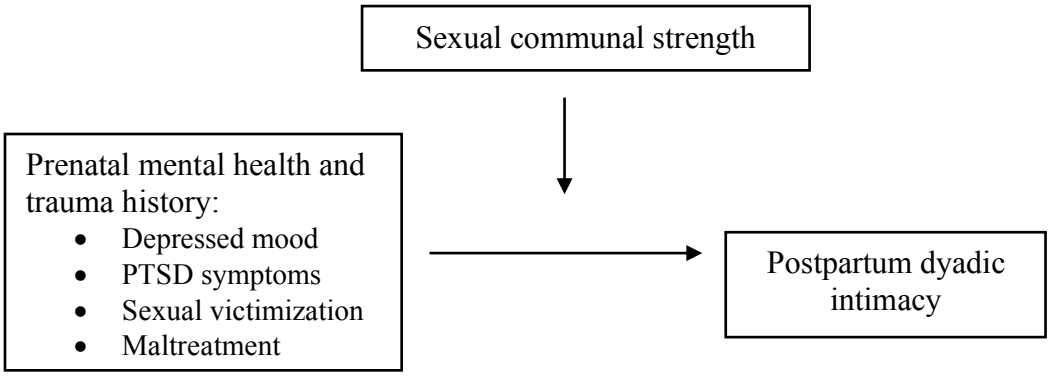

Figure 4 . Proposed moderation analysis wherein sexual communal strength moderates the association between maternal trauma history and prenatal mental health difficulties and postpartum dyadic intimacy.

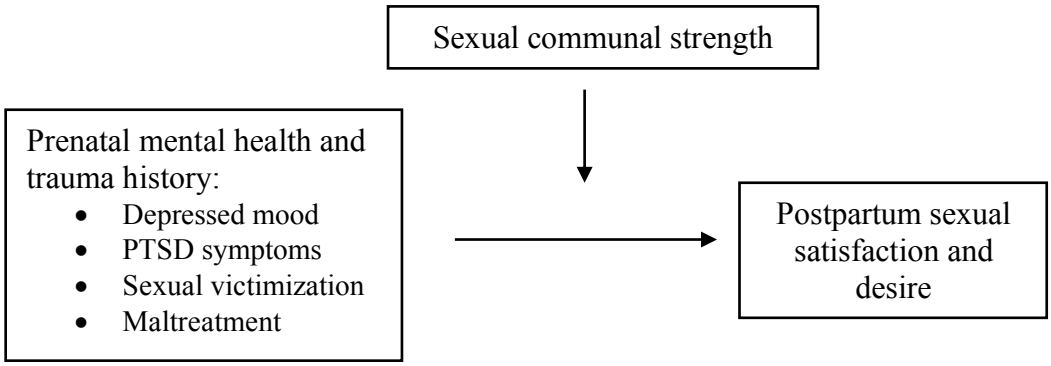

Figure 5. Hypothesized moderation analysis wherein sexual communal strength moderates the association between maternal trauma history and prenatal mental health difficulties and postpartum sexual satisfaction and desire.

Results

Descriptive Statistics

The final sample included 160 new mothers between the ages of 25 and 46 years. Of the respondents, nearly all were in mixed-gender relationships (n = 159) and nearly half had maintained a relationship with their partner for 6-10 years (46.9%). Following clinical guidelines for the EPDS (Cox et al., 1987) and PDS-5 (Foa et al., 2016), 13.33% (n = 20) and 6.57% (n = 9) of participants presented with a high likelihood of prenatal depression and PTSD respectively. Please refer to Table 1 for further details on the sample characteristics (i.e., age, education, ethnicity, income, relationship length, total number of children, mode of birth, primary care provider, and health and birth concerns). The descriptive statistics of the predictor and outcome variables and their bivariate correlations are provided in Tables 2 and 3.

Table 1. Demographic and childbirth information

Demographic Information		Childbirth and Relationship Information	
Age (*M, SD*)	33.63 (3.69)	**Months postpartum (*M, SD*)**	8.31 (1.52)
Education (*M, SD*)	17.3 years (2.59)	**Type of birth**	
Ethnicity		Vaginal	124
European	127	Caesarean	18
Middle-Eastern	1	Emergency Cesarean	18
Latinx	3	**Total children**	
East Asian	8	1 child	64
South Asian	1	2 children	71
Southeast Asian	2	3 children	18

North American Aboriginal	2	4 + children	7
Other	1	**Primary care provider**	
Multi-ethnic	15	Family doctor	34
Income		Midwife	89
$20 000 - 40 000	8	Obstetrician	37
$40 000 – 60 000	11	**Health issues prenatally**	
$60 000 - 80 000	18	Yes	39
$80 000 – 100 000	20	No	121
$100 000 >	91	**Recent birth traumatic**	
Occupation		Yes	36
Student	3	No	124
Full time employed	93	**Relationship length**	
Part time employed	31	1 – 5 years	30
Full time homemaker	28	6 – 10 years	75
Disabled	1	11 – 20 years	53
Unemployed/other	4	> 20 years	2

Note. Values may not total N = 160 because not every participant responded to these questions.

Table 2. Bivariate correlations between the main predictor and outcome variables presented with confidence intervals

Variable	1	2	3	4	5	6	7	8
1. Depressed Mood								
2. PTSD Symptoms	.44**							
3. Sexual Victimization	.21*	.34**						
4. Maltreatment	.18	.50**	.42**					
5. Relationship Satisfaction	-.13	-.25**	-.17	-.33**				
6. Intimacy	-.28**	-.24**	-.23**	-.33**	.82**			
7. Sexual Satisfaction and Desire	.14	.03	.17	-.16	.03	.06		
8. SCS for having sex	.00	-.24**	-.13	-.32**	.49**	.42**	.12	
9. SCS for not having sex	-.03	-.15	-.17*	-.05	.12	.30**	.38**	.18*

Note. SCS = sexual communal strength; * $p < .05$, ** $p < .01$

Table 3. Descriptive statistics for the main variables in the path and regression analyses

	N	Mean	SD	Min	Max	Skewness	Kurtosis
Depressed mood	150	7.82	4.96	0	22	0.50	-0.38
PTSD Symptoms	137	6.28	10.41	0	44	2.05	3.67
Sexual Victimization	130	13.91	17.29	0	63	1.31	0.80
Maltreatment	108	3.61	5.21	0	22	1.95	3.23
Relationship Satisfaction	160	119.15	28.85	33	160	-0.99	0.27
Sexual Satisfaction	159	33.32	14.56	0	58	-0.66	-0.33
Sexual Desire	159	10.47	0.48	0	22	-0.30	-0.93
Intimacy	156	87.46	15.49	42	112	-0.96	0.46
SCS for having sex	148	16.70	4.78	3	24	-0.77	0.18
SCS for not having sex	159	10.59	4.34	0	16	-1.09	0.35

Note. SD = standard deviation; Min = minimum; Max = maxiumum; SCS = sexual communal strength

Research Question 1: **Do symptoms of prenatal PTSD and depression, sexual victimization past age 14, and child maltreatment each predict postpartum sexual and relationship well-being?**

The path analysis model indicated that of the hypothesized variables, none of prenatal symptoms of PTSD, depressed mood, sexual victimization, nor childhood maltreatment significantly predicted relationship satisfaction. Further, neither symptoms of PTSD nor depression significantly predicted sexual satisfaction and desire. However, sexual victimization and childhood maltreatment significantly predicted sexual satisfaction and desire (see Figure 6). Contrary to my hypothesis, sexual victimization predicted sexual satisfaction and desire in a positive direction, suggesting that more

frequent and severe victimization predicted better postpartum sexual well-being, ß = 0.25, $p < .05$, 95% CI = 0.04 – 0.47. In comparison, consistent with my hypothesis, childhood maltreatment negatively predicted sexual satisfaction and desire, such that greater maltreatment was associated with poorer postpartum sexual well-being, ß = -0.27, $p < .01$, 95% CI = -0.44 – (-0.10). Nearly identical results were obtained when running the path analysis with and without education as a covariate of relationship satisfaction. As such, only the model without education were reported here; however, both sets of results are reported in Table 4.

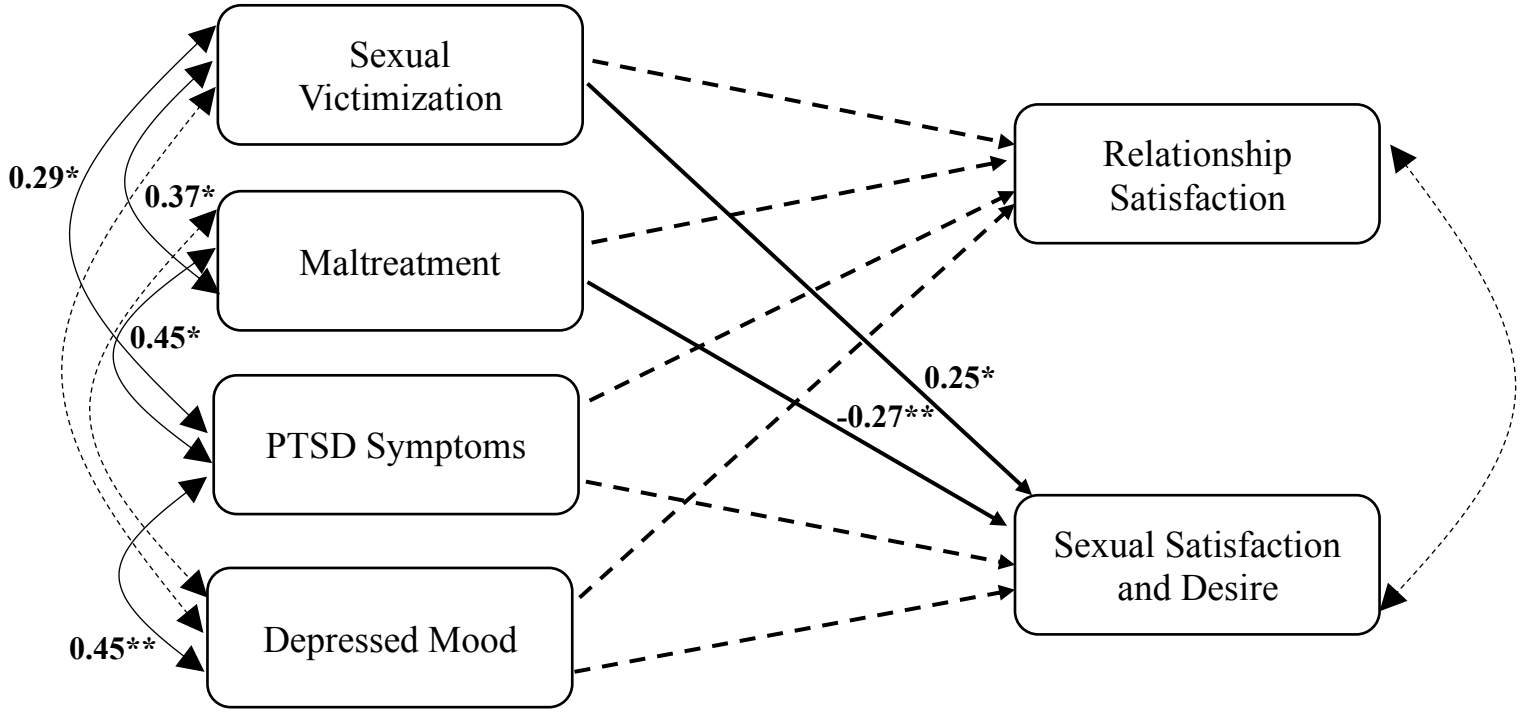

Figure 6. Path analysis modelling sexual victimization, childhood maltreatment, PTSD symptoms, and depressed mood as predictors of relationship satisfaction and sexual satisfaction and desire. The figure shows standardized coefficients. Solid lines indicate significant beta values and dotted lines indicate nonsignificant beta values. * $p < .05$, ** $p < .01$

Table 4. Path analysis regression loadings for models with and without covariates

	ß	SE	CI	ßa	CIa	SEa
Relationship satisfaction						
Depressed Mood	-0.03	0.09	-0.22- 0.17	-0.02	-0.21 – 0.16	0.09
PTSD Symptoms	-0.13	0.12	-0.37 – 0.11	-0.13	-0.37 – 0.11	0.12
Sexual Victimization	-0.03	0.09	-0.21 – 0.14	0.01	-0.17 – 0.18	0.09
Maltreatment	-0.21	0.11	-0.42 – 0.00	-0.19	-0.38 – 0.01	0.03
Education	---		-----	0.17*	0.02 - 0.31*	0.08
Sexual satisfaction and desire						
Depressed Mood	0.15	0.08	-0.03 - 0.32	0.14	-0.02 - 0.32	0.09
PTSD Symptoms	0.02	0.13	-0.22 – 0.26	0.02	-0.23- 0.28	0.13
Sexual Victimization	0.25*	0.11	0.04 – 0.47	0.24*	0.04- 0.45	0.11
Maltreatment	-0.27**	0.08	-0.44 – (-0.10)	-0.27**	-0.44 - (-0.10)	0.09

Note. a = estimates for the model including education as a covariate; *b* = unstandardized regression weights; ß = standardized regression weights
* $p < .05$, ** $p < .01$

Research Question 2: **Do perceived SCS for having sex and SCS for not having sex each moderate the relationship between (a) prenatal symptoms of PTSD, depressed mood, history of sexual victimization, and childhood maltreatment and (b) postpartum relationship and sexual well-being?**

Hierarchical regression analyses revealed that maternal perceived SCS for having sex was significantly associated with relationship satisfaction ($b = .40$, $p < .001$), but not with sexual satisfaction and desire ($b = .09$, $p = 0.38$). In addition, SCS for not having sex

was significantly associated with sexual satisfaction and desire (b = .41, p = < .001, but not with relationship satisfaction (b = .09, p = .26). However, neither forms of sexual communal strength significantly interacted with prenatal maternal mental health and trauma experiences to predict postpartum relationship well-being. These non-significant interaction terms indicate that sexual communal strength did not moderate the associations between maternal mental health difficulties and postpartum dyadic adjustment in this sample. Therefore, it was not necessary to proceed with simple slope analyses. All findings remained the same after accounting for the FDR. Results from these regression models are outlined in Table 5 and 6.

Table 5. Results for SCS for having sex (Model 1) and SCS for not having sex (Model 2) as moderators of relationship satisfaction

	Model 1: SCS for having sex		Model 2: SCS for not having sex	
Predictor Variables	*b*	SE	*b*	SE
Block 1				
Intercept	-0.01	0.52	-0.01	0.52
Education	0.24*	0.03	0.24*	0.03
Block 2				
Intercept	0.01	0.07	0.00	0.07
Education	0.14	0.07	0.17	0.08
Depressed Mood	-0.07	0.08	-0.01	0.09
PTSD Symptoms	-0.03	0.09	-0.12	0.10
Sexual Victimization	-0.04	0.09	0.00	0.10
Maltreatment	-0.13	0.08	-0.19	0.10
SCS	0.40***	0.08	0.09	0.08
Block 3				

Intercept	0.04	0.07	0.02	0.08
Education	0.15*	0.07	0.16	0.08
Depressed Mood	-0.05	0.07	-0.02	0.09
PTSD Symptoms	0.004	0.09	-0.10	0.11
Sexual Victimization	-0.001	0.09	0.02	0.11
Maltreatment	-0.11	0.09	-0.20	0.11
SCS	0.38***	0.08	0.10	0.08
Depressed Mood*SCS	0.02	0.09	0.14	0.08
PTSD Symptoms*SCS	0.07	0.09	-0.01	0.10
Sexual Victimization*SCS	0.04	0.10	0.11	0.10
Maltreatment*SCS	0.04	0.07	0.01	0.11

Note. All significant values remained significant after accounting for FDR. *b* = unstandardized regression weights; SCS = sexual communal strength
* $p < .05$, ** $p < .01$; *** $p < .001$

Table 6. Results for SCS for having sex (Model 3) and SCS for not having sex (Model 4) as moderators of sexual Satisfaction and desire

	Model 3: SCS for having sex		Model 4: SCS for not having sex	
Predictor Variables	*b*	SE	*b*	SE
Block 1				
Intercept	0.05	0.07	0.09	0.07
Depressed Mood	0.14	0.10	0.14	0.09
PTSD Symptoms	0.02	0.13	0.05	0.10
Sexual Victimization	0.19	0.10	0.26**	0.09
Maltreatment	-0.20	0.10	-0.24**	0.09
SCS	0.09	0.10	0.41***	0.07
Block 2				
Intercept	-0.02	0.08	-0.01	0.07
Depressed Mood	0.14	0.10	0.14	0.09
PTSD Symptoms	0.03	0.13	0.03	0.11
Sexual Victimization	0.20	0.10	0.23**	0.09
Maltreatment	-0.21	0.11	-0.23**	0.09
SCS	0.08	0.10	0.40***	0.07
Depressed Mood*SCS	-0.01	0.10	-0.08	0.08
PTSD Symptoms*SCS	0.04	0.13	0.01	0.08
Sexual Victimization*SCS	-0.03	0.13	-0.11	0.12
Maltreatment*SCS	-0.01	0.10	0.01	0.09

Note. All significant values remained significant after accounting for FDR. *b* = unstandardized regression weights; SCS = sexual communal strength
* $p < .05$, ** $p < .01$; ***$p < .001$

Exploratory and Post-Hoc Analyses

Although one of my predictions was supported by the data, namely that childhood maltreatment significantly predicted lower sexual satisfaction and desire, the remainder were not supported. Specifically, contrary to predictions, neither prenatal maternal

symptoms of PTSD nor depression predicted postpartum relationship and sexual well-being. Moreover, contrary to prediction, sexual victimization predicted higher, rather than lower, sexual satisfaction and desire. To better understand the null and contradictory findings, I ran several exploratory and post-hoc analyses.

Prenatal Symptoms of Depression

In an effort to limit the number of exploratory analyses conducted, I have chosen not to include additional analyses pertaining to depression and have instead oriented these analyses to the other study predictors (i.e., symptoms of PTSD, sexual victimization, childhood maltreatment and sexual communal strength). First, these other predictors were a more central aspect of this research than were symptoms of depression. Second, symptoms of depression did not show significant skew in the dataset, and therefore there was limited justification for exploring it further.

Prenatal PTSD Symptoms

I chose to further analyze symptoms of PTSD as predictors of relationship satisfaction and sexual satisfaction and desire for two reasons. First, as the study of PTSD symptoms in the perinatal period that were not exclusively childbirth-related was a novel component of this research, closer scrutiny was merited. Second, because many women did not report PTSD symptoms, the variability of this measure, and thereby my ability to detect potential significant associations, may have been limited. In order to address this limitation, I retested my initial hypothesis with respect to PTSD symptoms, but only among women in this sample who reported these symptoms.

Exploratory research question 1: When limited to participants who reported some symptoms of PTSD, (a) would prenatal symptoms of PTSD predict postpartum relationship and sexual well-being, and (b) would SCS for having sex and SCS for not having sex moderate any associations between prenatal PTSD symptoms and these postpartum outcomes? Out of 160 participants, 67 women reported no prenatal symptoms of PTSD and 23 failed to complete the PDS-5. Of the remaining 70 women who reported some symptoms of PTSD, they most commonly reported symptoms arising from accidents (n = 15), serious life-threatening illnesses (n = 13), child abuse (n = 11), and other or unspecified trauma (n = 31). Among women who reported trauma symptoms, I conducted a post hoc moderated hierarchical regression analyses that investigated whether having trauma symptoms (i.e., PDS-5 > 0) was associated with postpartum dyadic outcomes. I used the regression approach, as opposed to a path analysis, so that I could conduct the moderation analyses. In the models of relationship satisfaction, the variables were entered in the following order: education as a covariate, followed by PTSD symptoms, sexual communal strength, and the interaction term between PTSD symptoms and sexual communal strength. The same steps were followed for the models of sexual satisfaction and desire without the inclusion of education as a covariate. These steps were taken in order to determine whether the conditional model better accounts for variation in postpartum dyadic adjustment than the unconditional model (Hayes, 2013). All of the predictor variables were mean centered prior to fitting the models.

The best fitting model of relationship satisfaction (n = 64) included education, PTSD symptoms, SCS for having sex, and the interaction term between PTSD symptoms

and SCS for having sex, $R^2 = 0.48$, $F(4, 59) = 13.89$, $p < .01$. Specifically, after controlling for education, symptoms of PTSD (b = -0.95, ß = -0.37, $p < .05$), SCS for having sex ($b = 2.43$, ß = 0.42, $p < .01$), and the interaction term ($b = 0.09$, ß = 0.38, $p < .05$) significantly predicted relationship satisfaction. This model showed a significant improvement in fit compared to the model without the interaction term, $\Delta R^2 = 0.04$, $F(1, 59) = 4.55$, $p < .05$. In other words, it explained approximately 4% more variance in relationship satisfaction. Compared to the model with SCS for having sex, the model of relationship satisfaction including PTSD symptoms and SCS for *not* having sex was not significant after controlling for education.

To probe the nature of the significant interaction between PTSD symptoms and SCS for having sex, I used the Johnson-Neyman technique via the Rockchalk package in R (Johnson & Grothendieck, 2019). This technique identifies a zone of significance, whereby the association between the independent and outcome variables are significant across certain values of a continuous moderator (Johnson & Fay, 1950). The findings show that the association between PTSD symptoms and relationship satisfaction were significant when the values for SCS for having sex were 9.91 units below the mean. In other words, when mothers perceived that their partner was motivated to meet their sexual needs at values of 5.76 or lower on the SCSS questionnaire, the association between prenatal PTSD symptoms and relationship satisfaction was significant. Figure 7 depicts these trends, indicating that relationship satisfaction decreases as PTSD symptoms increase at low levels of SCS for having sex.

Finally, no models predicting sexual satisfaction and desire were significant. Accordingly, among mothers with PTSD symptoms, neither those symptoms nor the

interaction between PTSD symptoms and sexual communal strength were significant predictors of sexual satisfaction and desire.

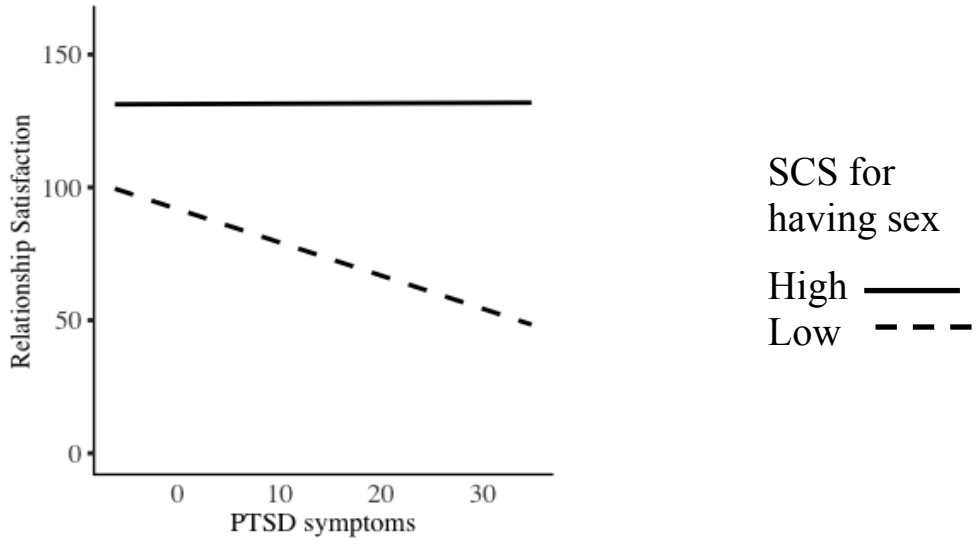

Figure 7. Post-hoc moderated hierarchical regression analysis depicting maternal relationship satisfaction as predicted by prenatal PTSD symptoms plotted at low (-1 SD) and high (+1 SD) levels of SCS for having sex.

Sexual Victimization

As the finding that sexual victimization positively predicted postpartum sexual well-being was both unexpected and unusual, I conducted two sets of exploratory analyses to obtain a clearer understanding of the relationship between these variables in this sample.

Exploratory Research Question 2: Does the association between sexual victimization and sexual satisfaction and desire differ in magnitude at lower and higher levels of victimization? I assessed whether the associations between sexual

victimization and postpartum sexual well-being changed as a function of trauma severity, with the hypothesis that women who reported higher levels of sexual victimization would report lower sexual satisfaction and desire compared to those who experienced lower levels of victimization.

To distinguish between lower and higher levels of sexual victimization, I grouped the data into quartiles based on level of victimization. Bivariate correlations were then run between each of the upper three quartiles (i.e., 50th, 75th and 100th) with sexual satisfaction and desire. A correlation could not be tested for the bottom quartile because it contained only values of 0, reflecting individuals who reported no victimization. None of the associations were significant; however, the pattern of results is interesting. Participants who reported low-to-moderate levels of victimization (i.e., second and third quartiles) had negative associations with sexual satisfaction and desire, $r = -.05$, $p = .82$ and $r = -.23$, $p = .20$. However, for those reporting higher levels of victimization (i.e., top quartile), the association was positive, $r = .19$, $p = .30$, indicating that mothers with a history of more severe and more frequent sexual victimization also reported better postpartum sexual well-being. While the associations between sexual victimization and postpartum sexual well-being were different in their directionality at lower and higher severity levels, the lack of a statistically significant finding indicates that interpretations of these results should be made cautiously. There were also no statistically significant differences between participants in each quartile in their self-reported levels of postpartum sexual satisfaction and desire, $F(3, 128) = 2.42$, $p = .07$. This means that more frequent and severe levels of sexual victimization were not predictive of lower

postpartum sexual satisfaction and desire in this sample. Thus, these findings do not substantially aid in the interpretation of the results.

Exploratory Research Question 3: What is the nature of the variance in sexual well-being explained by sexual victimization and maltreatment experiences? Specifically, (a) after removing the variance in sexual satisfaction and desire associated with maltreatment, how much of the remaining variance does sexual victimization explain? (b) After removing the variance in sexual satisfaction and desire associated with sexual victimization, how much of the remaining variance does maltreatment explain? To better understand how trauma history was related to postpartum sexual well-being, I further investigated the nature and magnitude of the associations between sexual victimization, childhood maltreatment, and postpartum sexual well-being. When examining the results from the correlation and path analyses, there was an indication of a suppression effect. Specifically, the beta weights (i.e., regression loadings in the path analysis) of the predictors, sexual victimization and maltreatment, exceeded their bivariate non-significant correlations with sexual satisfaction and desire (Kline, 2015). As such, the "true" associations between each of these predictors with sexual well-being could only be detected when controlling for the other. Thus, to analyze the data in a more granular way, I measured the degree to which postpartum sexual well-being was explained by each of sexual victimization and childhood maltreatment.

I ran two sets of regression analyses. First, I analyzed sexual victimization (or maltreatment) as a predictor of sexual satisfaction and desire and then saved the residual (remaining) variance of sexual satisfaction and desire left to be accounted for. Second,

maltreatment (or sexual victimization) was analyzed as a predictor of this residual variance. Missing data were deleted listwise for these analyses (n = 76). After partialling out the variance attributed to sexual victimization, maltreatment significantly predicted the residual variance of sexual satisfaction and desire in the expected direction, b = -0.01, ß = -0.27, p <.05, R_2 = .04. However, after partialling out the variance attributed to maltreatment, sexual victimization did not significantly predict the residual of sexual satisfaction and desire, b = 0.003, ß = 0.19, p = .10, R_2 = .02. These findings indicated that the magnitude of the association between sexual victimization and sexual well-being was attenuated when taking into account maltreatment as a predictor. Taken together, this shows that childhood maltreatment experiences explained a greater proportion of the variance in postpartum sexual well-being as compared to sexually victimizing experiences in adolescence and adulthood.

Discussion

The primary purpose of this study was to investigate whether maternal mental health difficulties (i.e., symptoms of PTSD and depression) and trauma history (sexual victimization after age 14 and childhood maltreatment) were risk factors for poor postpartum relationship and sexual well-being (i.e., relationship satisfaction or sexual satisfaction and desire). A secondary goal was to investigate whether mothers' perceptions of their partners' levels of SCS for having sex and SCS for not having sex moderated associations between prenatal mental health difficulties, trauma history, and postpartum outcomes. To my knowledge, this was the first study to examine maternal prenatal symptoms of PTSD, and the second to examine prenatal depressed mood, as potential risk factors for decreased postpartum relationship well-being. It was also the first to examine these predictors in relation to sexual satisfaction and desire as well as sexual communal strength in the perinatal period.

Neither prenatal symptoms of PTSD nor depressed mood significantly predicted postpartum relationship satisfaction or sexual satisfaction and desire. Sexual victimization and childhood maltreatment also failed to significantly predict postpartum relationship satisfaction. However, sexual victimization and childhood maltreatment predicted sexual satisfaction and desire in opposite directions. Specifically, while sexual victimization predicted better sexual well-being, childhood maltreatment predicted lower sexual well-being. Moreover, neither SCS for having sex nor SCS for not having sex moderated associations between prenatal maternal mental health difficulties, trauma history, and postpartum relationship and sexual well-being in the primary analyses. However, in post-hoc moderation analyses with a subset of the sample who reported

some PTSD symptoms, it was found that mothers with elevated levels of PTSD experienced declines in relationship satisfaction when they perceived their partners as low in SCS for having sex.

Overall, prenatal symptoms of PTSD, depressed mood, and sexual victimization were not significant risk factors for poorer maternal relationship and sexual adjustment following childbirth. However, childhood maltreatment may increase maternal vulnerability to poorer sexual well-being in the early postpartum period. Additionally, SCS for having sex may be a protective factor for postpartum relationship satisfaction among mothers who experience greater symptoms of PTSD.

Predictors of Relationship and Sexual Satisfaction and Desire

Prenatal symptoms of PTSD and depression. Contrary to my hypotheses, and largely inconsistent with prior literature, neither symptoms of PTSD nor depression were significantly related to postpartum relationship or sexual well-being. The majority of past research has shown that postpartum PTSD (childbirth-related) and depressed mood are *concurrently* associated with strained relationship outcomes, such as heightened conflict and avoidance of sexual activity (Cox et al., 1999; McBride & Kwee, 2017; Nicholls & Ayers, 2007; Parfitt & Ayers, 2009). In addition, the only published study to have examined *prenatal* depressed mood in this context found that it did predict relationship satisfaction declines during the first year postpartum (Trillingsgaard et al., 2014).

Potential explanations exist for discrepancies between prior research and the current study. First, with respect to PTSD, research in the perinatal period has focused on childbirth-related trauma. While childbirth-related PTSD is associated with intimate relationship difficulties (Mckenzie-McHarg et al., 2015), this association may not

generalize to PTSD from other traumatic experiences. This may be especially true when childbirth-related PTSD is associated with a recent birth because those symptoms are likely acute compared to symptoms from past trauma. As such, the relationship in this study between prenatal symptoms of PTSD and postpartum dyadic outcomes was potentially attenuated because it examined PTSD more broadly (i.e., not exclusively childbirth-related). Second, with respect to both PTSD and depression, given that this study was carried out over time, it is not surprising that the associations between maternal mental health difficulties and relationship and sexual well-being were weaker than those found in studies using cross-sectional designs. Prenatal mental health difficulties may be overshadowed by proximal and more prevalent concerns parents experience in the postpartum period, such as postpartum psychological distress and fatigue. These proximal concerns may better account for postpartum relationship satisfaction as well as sexual satisfaction and desire. Finally, there may be a statistically significant relationship between prenatal mental health difficulties and postpartum relationship and sexual well-being that could not be detected given limitations with the current sample. Limitations with the current sample are discussed in greater detail in the limitations section below.

Sexual victimization and childhood maltreatment. My hypothesis that maternal sexual victimization and childhood maltreatment would predict postpartum relationship well-being was also not supported. This was less surprising given inconsistencies in the published literature about whether trauma history and relationship well-being are directly associated with one another (Easton et al., 2011; Henry et al., 2011; Rellini Vujanovic, Gilbert, & Zvolensky, 2012; Roberts et al., 2004; Yehuda et al., 2015). Rather, they may share an indirect association, in which they are related through processes such as

psychological distress, insecure attachment, and increased emotion dysregulation, **(**Liu, Wang, Lu, & Shi, 2018; Perry, Dilillo & Peugh, 2007; Rellini et al., 2012). Therefore, the present study may not have found a statistically significant association between trauma history and relationship well-being because it analyzed only their direct association without taking into account potential mediating factors.

In addition, my hypothesis that sexual victimization and childhood maltreatment would negatively predict postpartum sexual well-being was only partially supported. Aligning with my hypothesis, childhood maltreatment predicted decreases in postpartum sexual satisfaction and desire, corroborating previous research that child abuse is associated with poorer adult sexual well-being (Easton et al., 2011; Nelson & Wampler, 2000; Rellini et al., 2012). However contrary to expectations, sexual victimization predicted increases in sexual satisfaction and desire. This finding was inconsistent with both my hypothesis and the published literature, which widely recognizes sexual trauma as a barrier to intimacy and sex in adult relationships (Easton et al., 2011, Laumann, Paik, & Rosen, 1999; Lemieux & Byers, 2008; Henry et al., 2011; Mills & Turnbull, 2001; Njaman, Dunne, Purdie, Boyle, Coxeter, & 2005).

Exploratory Analyses and Considerations with respect to Sexual Victimization

Given these unexpected findings pertaining to sexual victimization, I conducted two follow-up exploratory analyses to better understand the association between sexual victimization and postpartum sexual well-being in this sample. In the first analysis, I explored whether the association between sexual victimization and postpartum sexual well-being differed according to level of trauma severity. Surprisingly, women with lower versus higher levels of sexual victimization did not significantly differ from one

another in their self-reported sexual satisfaction and desire. As such, taking into account trauma severity did not further aid in the interpretation of the results.

In the second exploratory analysis, I examined the extent to which sexual victimization and childhood maltreatment explained the variance in postpartum sexual well-being. After accounting for the variance in postpartum sexual well-being explained by sexual victimization, childhood maltreatment remained a significant, negative predictor of the residual variance. However, sexual victimization failed to significantly predict postpartum sexual well-being after accounting for the variance explained by childhood maltreatment. Thus, childhood maltreatment appeared to be a stronger predictor of negative sexual outcomes than adult sexual victimization in this sample. In other words, adult sexual victimization did not explain postpartum sexual outcomes over and above what had already been captured by childhood maltreatment.

There are a few theoretical possibilities that may further elucidate the nature of the relationships between childhood maltreatment, sexual victimization, and postpartum sexual satisfaction and desire in this sample. Interestingly, the finding that childhood maltreatment better accounted for postpartum sexual outcomes than sexual victimization past age 14 aligns with theories on the association between child abuse and attachment functioning. While adult sexual victimization is associated with negative sexual outcomes (Lemieux & Byers, 2008; Livingston et al., 2007), childhood maltreatment may exert more enduring effects on later life sexual well-being (Mackey et al., 1991) because it disrupts core attachment processes (Riggs, 2010). Specifically, childhood maltreatment is associated with the formation of negative internal working models of oneself (e.g., self as unworthy, powerless) and of others (e.g., as untrustworthy, unavailable) (Bowlby, 1973;

Bretherton & Munholland, 2008), which then inform how individuals relate to key attachment figures (i.e., caregivers, romantic partners) (Riggs, 2010). Individuals who report childhood maltreatment are more vulnerable to developing insecure attachment styles, which can negatively interfere with multiple aspects of sexual well-being, including sexual satisfaction and desire (Bigras, Godbout, Hébert, & Sabourin, 2017; Lemieux & Byers, 2008; Mickelson, Kessler & Shaver, 1997; Riggs, 2010, Riggs & Kaminski, 2010; Seehuus et al., 2015; Watson & Halford, 2010). Thus, participants who reported childhood maltreatment may be less resilient in their sexual outcomes compared to those who reported adult sexual victimization because of potential connections between their early adverse experiences and negative entrenched beliefs about the availability and sensitivity of their romantic partners.

Moreover, a range of types of childhood maltreatment (i.e. physical, emotional, and sexual) appear to contribute to worsened adult sexual well-being (Bigras et al., 2017; Seehus et al., 2015). Of all types of childhood trauma, emotional maltreatment (including neglect) is theorized to be the most strongly associated with an insecure attachment style (Riggs, 2010) and global sexual dissatisfaction (Lemieux & Byers, 2008). Incidentally, emotional maltreatment (including neglect) was the most frequent type of childhood maltreatment reported in the current study (n = 95), compared to physical maltreatment (n = 42), sexual maltreatment (n = 37), and exposure to violence (n = 32). Perhaps by taking into account multiple forms of maltreatment, the childhood maltreatment measure used in this study captured the detrimental effects of traumatic experiences on postpartum sexual well-being over and above what could be explained by sexual victimization in late adolescence and adulthood, which aligns with findings from the exploratory analyses.

Another possible explanation is that the positive association between sexual victimization and postpartum sexual well-being in this sample is, in part, because mothers may have made positive attributions about their sexual relationships. Lemieux and Byers (2008) postulated that attributions about past sexually victimizing experiences play a role in self-reported levels of sexual satisfaction. In particular, they suggested that women with a history of unwanted sexual experiences report lower sexual satisfaction in subsequent relationships partially because they compare their negative experiences to positive ones that preceded them. However, given that current study participants mostly reported satisfying relationships, it may be that women with a history of unwanted sexual experiences in the current study made downward comparisons to previous sexual partners instead. Specifically, they may have compared past unwanted sexual experiences to those with their current, more supportive partner, which enhanced their ratings of sexual satisfaction.

Finally, the positive association between sexual victimization and postpartum sexual well-being may also be attributable to protective factors in the current sample. In general, women who are in long-term committed relationships, living with others, and/or of a higher socioeconomic status (SES, e.g., higher household income) are less likely to experience adult sexual victimization compared to those who are not (Elliot, Mok, & Briere, 2004; Siddique, 2016). These protective demographics align with the demographics reported in this sample, as the majority of women in the current study were primarily cohabiting with a long-term committed romantic partner and were of a higher SES. Additionally, adult sexual victimization is more strongly associated with negative outcomes, such as lower sexual self-esteem and higher psychological distress, in the first

two years after the event(s) than if the event(s) occurred further in the past (Kucharska, 2016). Since most women in this sample reported positive romantic relationships lasting six years or more, their experiences of adult sexual victimization likely preceded these relationships. Thus, drawing from previous findings (e.g., Elliot et al., 2004, Kucharska, 2016), it is possible that current study participants with a history of sexual victimization had protective factors that buffered some of the negative outcomes typically associated with these victimizing experiences.

Sexual Communal Strength as a Moderator

Contrary to my hypotheses, neither SCS for having sex nor SCS for not having sex interacted with maternal prenatal mental health difficulties (i.e., symptoms of PTSD and depression) and trauma history (i.e., sexual victimization and childhood maltreatment) to predict postpartum relationship and sexual well-being. In other words, perceiving high levels of sexual communal strength in general did not buffer relationship distress among mothers with a history of mental health difficulties and traumatic experiences. A lack of support for a statistically significant moderation may be in part attributable to the low levels of maternal mental health difficulties and traumatic experiences, and the high levels of relationship and sexual well-being reported in this sample. It is possible that there was a minimal need to buffer negative postpartum relationship and sexual outcomes given that this sample was already high functioning. In other words, mothers' history of mental health difficulties and trauma may not have been salient enough to warrant the need for sexual communal strength to increase postpartum relationship and sexual satisfaction, which were already generally satisfactory.

Given these limitations, I re-tested my original hypothesis about sexual communal strength as a moderator with only participants who reported some PTSD symptoms. Specifically, I assessed whether prenatal symptoms of PTSD predicted postpartum relationship and sexual well-being, and whether sexual communal strength moderated associations between prenatal PTSD symptoms and these postpartum outcomes. Of these analyses, the only significant finding was that PTSD symptoms significantly interacted with SCS for having sex in predicting relationship satisfaction (but not sexual satisfaction and desire). Women with higher levels of prenatal PTSD symptoms reported lower relationship satisfaction when they perceived their partners to be low in SCS for having sex compared to when they perceived their partners to be high in SCS for having sex. Thus, mothers' symptoms of PTSD were indirectly associated with their relationship satisfaction via the extent to which they perceived their partner as willing to prioritize their sexual needs.

It was surprising that SCS for not having sex was not a significant moderator, as I had hypothesized that perceiving a partner as motivated to meet one's disinterest in sex (as opposed to interest in sex) would be a stronger buffer of negative relationship outcomes. This was hypothesized because (a) mothers typically report lower sexual desire following childbirth (Serati et al., 2010), and (b) greater PTSD symptoms are associated with barriers to intimacy (e.g., Yehuda et al., 2015). It is possible that only SCS for having sex was a significant moderator because of how it may relate to sexual rejection sensitivity and feelings of sexual desirability in the postpartum period. In general, women tend to be more sensitive than men to sexual rejection (Kim, Horne, Muise & Impett, 2019). This sensitivity may be exacerbated in the postpartum period

when women experience heightened concerns about their physical appearance, attractiveness, and their partners' level of sexual interest in them (Hipp et al., 2012; Mickelson & Joseph, 2012; von Sydow, 1998). Moreover, it may be exacerbated for those who experience symptoms of PTSD given their higher levels of vulnerability in romantic relationships (Leifker et al., 2015; Nicholls & Ayers, 2007; Parfitt & Ayers, 2009). If postpartum women with higher PTSD symptoms perceive that their partner is not motivated to meet their desires for sex, they may feel less desirable and subsequently more vulnerable and insecure in their relationships. However, given the exploratory nature of these follow-up analyses, these findings need to be replicated in a sample where PTSD symptoms are more prevalent to ensure the validity of these results.

Finally, corroborating past research (Muise et al., 2017), findings from the regression models in both the primary and follow-up analyses indicated that sexual communal strength is significantly related to maternal postpartum relationship and sexual well-being. Specifically, perceived SCS for having sex was positively associated with relationship satisfaction, whereas perceived SCS for not having sex was positively associated with sexual satisfaction and desire. Muise and colleagues (2017) also found that women reported higher relationship, but not sexual, satisfaction when their partners were high in SCS for having sex. As SCS for having sex is associated with closeness and less conflict in relationships (Muise et al., 2017), it may be that SCS for having sex is an indicator of, or proxy for, global positive relationship engagement, such as engaging in approach-behaviours to build closeness. In comparison, SCS for not having sex may play a greater role in contexts that are specific to the sexual relationship. Given the inherent vulnerability associated with expressing disinterest in sex to a partner (Byers & Heinlein,

1989; Kim, Muise, & Impett, 2018), it may be that perceiving one's partner as receptive to rejections of sexual advances bolsters feelings of safety in physically intimate situations, which in turn enhances sexual satisfaction. Given that postpartum couples commonly report decreased sexual activity, greater disparities in each partner's level of sexual desire, and more negative perceptions of the sexual relationship (McNulty et al., 2017; McBride & Kwee, 2017; Rosen et al., 2017; Vannier et al., 2018), it follows that both SCS for having sex and SCS for not having sex play an important role in supporting relationship and sexual well-being at this time.

Limitations

This study had overarching limitations that may have impacted and accounted for a proportion of its findings. Firstly, the use of a community sample in which participants generally reported high SES may have limited my ability to detect significant associations between experiences that might otherwise be observed in higher risk or clinical samples. A substantial proportion of participants in this sample were well-educated, healthy, and from high earning households. Women also self-selected to participate in this research, meaning that the sample was likely biased to inclusion of a subset of postpartum women with greater time and resources to devote to activities outside of childcare and other responsibilities. Previous research indicates that SES moderates the association between stressful life events, mental health, and relationship satisfaction (Maisel & Karney, 2012). Accordingly, it is possible that certain demographic factors, such as higher SES, buffered some of the stress typically associated with the postpartum period, including declines in relationship and sexual well-being.

Consistent with this possibility, participants generally reported high levels of relationship satisfaction, and low levels of traumatic experiences and mental health difficulties. On the measure of relationship satisfaction, participants' scores were on average ten points higher compared to another study with postpartum women using the same measure (Muise et al., 2017), potentially due to differences in sample characteristics. While the current study sample included nulliparous and multiparous women whose relationship duration was six to ten years on average, Muise and colleagues' (2017) sample included only first-time parents with an average relationship duration of three years. Nevertheless, it may have been difficult to detect potential significant effects in the current study due to limited variability in the relationship satisfaction measure with participants reporting high levels of satisfaction. With respect to trauma, while over 60% of the sample reported at least one experience of each of childhood maltreatment and sexual victimization, the frequency and severity of these experiences were low. In addition, while the proportion of participants who reported a high likelihood of prenatal depression and PTSD is reasonably consistent with prevalence estimates in the literature (Gavin et al., 2005; Khoramroudi, 2018; Yildiz et al., 2017), the scores on the trauma and mental health measures clustered at the low end of the scales, suggesting that the measures had limited variability in my sample. In combination with a relatively small sample size, the restricted variability of these measures may have weakened my ability to detect potential significant effects in both the path and moderation analyses. Taken together, using a larger, more diverse, and higher risk sample (e.g., greater levels of mental health concerns and traumatic experiences) may be better

able to address the current study research questions and lead to more generalizable results.

Second, the current findings were based entirely on self-report questionnaires, which have inherent shortcomings (Chan, 2009). Recall bias is a concern on self-report measures of trauma history (e.g., Leahy, Tenenbaum, & Gershon, 2004), as participants may not accurately recount the amount or severity of their maltreatment and victimizing experiences. For example, a high proportion of false negative responses has been found in adult retrospective reports of adverse experiences in childhood (Hardt and Rutter, 2004). Accordingly, it is possible that the frequency and severity of child maltreatment and sexual victimization in this sample were (unintentionally) underreported. In addition, although the online survey was anonymized, many participants may not have felt comfortable disclosing sensitive information about their mental health and traumatic experiences. It is possible that participants who experienced greater adversity in these areas chose not to respond to these questionnaires, which may have led to a sample that did not fully represent the full range of women's experiences in the perinatal period. However, while self-report measures have limitations, they are currently a widely used and viable method for assessing constructs such as trauma history, which would be difficult to ascertain through other means.

Finally, certain aspects of the methodology employed in the current study likely weakened its ability to draw conclusions. Importantly, the lack of prenatal measurements of relationship and sexual well-being meant that declines in these domains across the perinatal period could not be assessed. Consequently, it could not be determined whether childhood maltreatment predicted poorer sexual well-being for women in adulthood in

general, or whether this association was specific to, or exacerbated in, the postpartum period. Relatedly, as noted previously, proximal events and concerns may have greater bearing on postpartum relationship and sexual well-being over and above earlier life and prenatal experiences. As couples undergo many changes to their relationship postpartum (McNulty et al., 2017; McBride & Kwee, 2017; Serati et al., 2010), the six to twelve months following childbirth is not representative of general adult relationship and sexual experiences. Accordingly, research that places greater emphasis on the unique psychosocial factors that characterize the postpartum period (e.g., fatigue, division of labour) in connection to relationship and sexual well-being may provide a more nuanced and richer understanding of parents' experiences at that time.

Implications and Future Directions

There are a few notable implications from this research. The significant finding with respect to childhood maltreatment advances theoretical knowledge about the implications of adverse childhood experiences on later life well-being. Several studies have documented that adverse events in childhood are predictive of negative outcomes in adulthood, such as health risk behaviours, medical issues, and poorer socioemotional functioning (Felitti et al., 1998; Kalmakis & Chandler, 2014; Liming & Grube, 2018). In the postpartum period in particular, maternal childhood maltreatment is an established predictor of poorer mental health and parenting outcomes (Bert, Guner, & Lanzi, 2009; Leeners, Richter-Appelt, Imthurn, Bruno & Rath, 2006; Kendall-Tacket, 2007); however, its association with postpartum dyadic outcomes is less well-known. Thus, the current study contributes to the literature in this field in indicating that maternal childhood maltreatment also predicts diminished postpartum sexual satisfaction and desire.

From a clinical perspective, this has implications for perinatal care providers and mental health care professionals. For example, screening for a history of child abuse in routine prenatal check-ups, alongside current symptoms of psychological distress, would help to identify and intervene with mothers who may be vulnerable to experiencing a range of negative postpartum outcomes. Pregnancy in particular offers a unique opportunity for preventative intervention because many women seek medical care (White, 2014). Given that childhood abuse is associated with postpartum concerns related to mood, parenting, and sexual well-being, providing interventions to mothers and their partners around these issues may mitigate poor adjustment following childbirth. However, even when screening practices are implemented, care providers may still struggle to adequately respond to disclosures of past trauma (White, 2014). Thus, while implementing screenings for child abuse and mental health symptoms is critical, it is of equal importance to develop response guidelines for care providers so that they can offer appropriate support for physical and mental health care and referrals throughout perinatal period.

In addition, findings from this research provide preliminary evidence for SCS for having sex as a protective factor for relationship satisfaction among mothers with higher levels of PTSD. While replication of this finding is needed, it does have potential implications for perinatal couple interventions. Specifically, interventions with parents who have clinical levels of distress may consider incorporating education and training in sexual communal strength, such as through teaching parents how to sensitively communicate about each other's sexual needs (Muise et al., 2017). Doing so may bolster healthy relationship behaviours and overall relationship quality among parents who might

otherwise be vulnerable to experiencing greater intimate relationship difficulties postpartum.

Given the several null and surprising findings, this study provides several potential avenues for future research. First, to obtain confidence in the findings from this study, these research questions should be replicated and extended in samples that are larger, more diverse, and contain higher risk populations (e.g., higher rates of mental health difficulties). Inclusion of all primary caregivers/parents (e.g., mothers and fathers) and the use of a longitudinal design are also critical for facilitating a more comprehensive and accurate analysis of the mental health and trauma factors that predict postpartum relationship and sexual well-being over time (Linville, et al., 2010). For example, longitudinal research designs that examine changes in relationship outcomes from pregnancy to postpartum would permit assessments of whether the postpartum period, as compared to other times of life, is a time of increased risk for poor sexual well-being among parents with a history of child maltreatment. Additionally, these research questions can be extended to investigate other potential mediating and moderating factors. As examples, researchers may investigate whether demographic factors, such as SES, or clinical factors, such as the severity of PTSD and depression, would fully account for associations between prenatal mental health difficulties, trauma history, and postpartum relationship and sexual adjustment.

Second, future research is needed to better understand the association between maternal sexual victimization history and postpartum sexual well-being. Given that these variables had an unexpected positive association in the current study, further research would help determine whether this association represents many mothers' experiences or

whether it is unique to the current sample. Here again, future studies may explore the role of moderators in buffering detrimental sexual outcomes among adults with a history of sexual victimization. Some moderators that merit investigation include dispositional resiliency factors (e.g. optimism, self-efficacy, Day & Kearney, 2016), situational resiliency factors (e.g., access to care, SES), and post-traumatic growth (PTG). PTG – referring to a positive growth and change in functioning following trauma - is a particularly exciting and underexplored avenue for future research (Tedeschi & Calhoun, 2004). Preliminary research in this area suggests that trauma survivors experience PTG through developing a stronger sense of self and becoming involved in social justice and political advocacy (Ulloa, Guzman, Salazar, & Cala, 2016). In the wake of the current #MeToo movement against sexual violence, women now have more opportunities to speak out against sexual violence, advocate for change, and leverage these opportunities to initiate their healing (Rodino-Colocino, 2018; Miller, 2019). Therefore, it is likely of increasing importance to investigate the role of PTG when seeking to understand associations between sexual victimization and sexual well-being.

In addition, particularly in mixed-gender relationships, it may be that those with a sexual trauma history come to derive sexual satisfaction and desire from satisfying their partner's sexual needs as opposed to their own. From experiences of sexual victimization, women often become attuned to the sexual needs of their subsequent male partners and learn to meet these needs as a part of both having a 'healthy' sex life and filling the role of a 'good' partner (Cacchioni, 2007). Moreover, women who have been sexually victimized are typically less assertive in their subsequent sexual experiences (Kucharska, 2016; Livingston, Testa, & VanZile-Tamsen, 2007) and perhaps self-protect by

suppressing or unlearning their own sexual desires. Consequently, women with this history likely become accustomed to prioritizing their partner's sexual needs and higher levels of sexual satisfaction may reflect their satisfaction derived from fulfilling a perceived role obligation to their partner.

Alternatively, it may be that particular groups of people do not experience negative sexual outcomes following sexual trauma. For example, in a study of sexual minority women, those who experienced adolescent and adult sexual victimization did not differ in their sexual well-being from those who experienced no history of abuse (Crump & Byers, 2017). Thus, further research aimed at understanding *who* is likely to experience negative sexual outcomes and *why* would enrich literature in this field.

Finally, the exploratory findings on sexual communal strength provide a fruitful basis for generating future research questions. As discussed previously, it was surprising that SCS for not having sex did not moderate the associations between maternal symptoms of PTSD and relationship and/or sexual well-being among women with trauma symptoms. To better understand the reasons for this null finding, researchers can investigate whether SCS for having sex and SCS for not having sex are each uniquely important to specific perinatal populations (e.g., mothers who experienced childbirth-related trauma, low versus high risk couples) and postpartum outcomes, as well as the mechanisms for these potential differences. Drawing from the findings in my study, a potential direction for future research is to examine how SCS for having sex and SCS for not having sex each relate to mental health difficulties and sexual rejection sensitivity in the perinatal period, particularly in samples with elevated levels of psychological distress. In addition, it would be beneficial to investigate overlaps and distinctions between sexual

communal strength, sexual consent, and sexual obligation in mixed-gender couples, particularly in the postpartum period when divisions based on gender roles become exacerbated (e.g., Faircloth, 2015). Given that SCS for having sex and SCS for not having sex are relatively new constructs, further research focused on theory development in terms of how they are associated with relationship and sexual well-being across different periods in long-term relationships is needed.

Conclusion

While the birth of a child is often a time of joy, it also introduces new challenges and stressors for many parents that are associated with declines in relationship and sexual satisfaction. These declines may be exacerbated for mothers with a history of trauma and who struggle with mental health difficulties. Thus, the aim of the current study was twofold: first, it investigated maternal prenatal symptoms of PTSD and depression, sexual victimization past age 14, and childhood maltreatment as predictors of postpartum relationship and sexual well-being. Second, it examined whether perceived levels of sexual communal strength (for having sex and not having sex) buffered associations between prenatal maternal mental health difficulties, trauma history, and postpartum relationship and sexual well-being. None of the study predictors were significantly associated with relationship satisfaction, and only sexual victimization and childhood maltreatment significantly predicted sexual satisfaction and desire. Contrary to previous research, sexual victimization predicted higher sexual satisfaction and desire, which merits further investigation in future research. However, consistent with expectations, childhood maltreatment predicted lower postpartum sexual well-being. This finding suggests that women with a history of childhood maltreatment approach the early

postpartum period with greater vulnerability and may be more likely to experience greater difficulties with sexual intimacy. In addition, when examining only mothers who reported some PTSD symptoms, SCS for having sex moderated associations between these PTSD symptoms and relationship satisfaction. Specifically, mothers who reported more symptoms of PTSD experienced poorer relationship satisfaction when they perceived their partners as low in SCS for having sex. Future research should further investigate how sexual communal strength can buffer deterioration in relationship well-being in the postpartum period, particularly for those experiencing elevated psychological distress. Moreover, given that many women in the current sample were higher functioning, future research should replicate these research questions using longitudinal analyses and a more diverse or higher risk sample to ensure the validity of the study findings.

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Appendix A

Sexual Experiences Survey- Short Form Version (SES-SFV)

The following questions concern sexual experiences that you may have had that were unwanted. We know that these are personal questions, so we do not ask your name or other identifying information. Your information is completely confidential. We hope that this helps you to feel comfortable answering each question honestly. Place a check mark in the box showing the number of times each experience has happened to you. If several experiences occurred on the same occasion--for example, if one night someone told you some lies and had sex with you when you were drunk, you would check both boxes a and c. The past 12 months refers to the past year going back from today. Since age 14 refers to your life starting on your 14th birthday and stopping one year ago from today.

Sexual Experiences	How many times in the past 12 months?	How many times since age 14?
Someone fondled, kissed, or rubbed up against the private areas of my body (lips, breast/chest, crotch or butt) or removed some of my clothes without my consent *(but did not attempt sexual penetration)* by:	0 1 2 3+	0 1 2 3+
Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
Taking advantage of me when I was too drunk or out of it to stop what was happening.		
Threatening to physically harm me or someone close to me.		
Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		
Someone had oral sex with me or made me have oral sex with them without my consent by:	0 1 2 3+	0 1 2 3+
Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
Taking advantage of me when I was too drunk or out of it to stop what was happening.		
Threatening to physically harm me or someone close to me.		
Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		

	Sexual Experiences	How many times in the past 12 months?	How many times since age 14?
2.	**Someone had oral sex with me or made me have oral sex with them without my consent by:**	0 1 2 3+	0 1 2 3+
a.	Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
b.	Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c.	Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d.	Threatening to physically harm me or someone close to me.		
e.	Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		

		How many times in the past 12 months?	How many times since age 14?
	If you are a male, check box and skip to item 4		
3.	**A man put his penis into my vagina, or someone inserted fingers or objects without my consent by:**	0 1 2 3+	0 1 2 3+
a.	Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
b.	Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c.	Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d.	Threatening to physically harm me or someone close to me.		
e.	Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		
4.	**A man put his penis into my butt, or someone inserted fingers or objects without my consent by:**	0 1 2 3+	0 1 2 3+
a.	Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
b.	Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c.	Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d.	Threatening to physically harm me or someone close to me.		
e.	Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		
5.	**Even though it didn't happen, someone TRIED to have oral sex with me, or make me have oral sex with them without my consent by:**	0 1 2 3+	0 1 2 3+
a.	Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
b.	Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c.	Taking advantage of me when I was too drunk or out of it to stop what was happening.		

		How many times in the past 12 months?	How many times since age 14?
	d. Threatening to physically harm me or someone close to me.		
	e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		
	If you are male, check this box and skip to item 7.		
6.	**Even though it didn't happen, a man TRIED to put his penis into my vagina, or someone tried to stick in fingers or objects without my consent by:**	0 1 2 3+	0 1 2 3+
	a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
	b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
	c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
	d. Threatening to physically harm me or someone close to me.		
	e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		
7.	**Even though it didn't happen, a man TRIED to put his penis into my butt, or someone tried to stick in objects or fingers without my consent by:**	0 1 2 3+	0 1 2 3+
	a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.		
	b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
	c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
	d. Threatening to physically harm me or someone close to me.		
	e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.		

8. I am: Female Male My age is _____ years and _____months.

9. Did any of the experiences described in this survey happen to you 1 or more times? Yes No

What was the sex of the person or persons who did them to you?

Female only

Male only

Both females and males

I reported no experiences

10. Have you ever been raped? Yes No

Appendix B

Ratings of Past Life Events

As an important part of what we are doing, we want to hear your thoughts nad feelings about things you have experienced in your past. Particularly we are interested in your perceptions of how you have been treated as adults during your life.

Some people find these questions to be personal. If they make you uncomfortable, just let us know. You do not have to answer if you do not want to.

0	1	2	3
Not at all	Mildly	Moderately	Severely

Physically Maltreated (e.g., hit, slapped):

Mother	0 1 2 3
Father	0 1 2 3
Other	0 1 2 3

Sexually maltreated (e.g., touched in a sexual way that made you feel uncomfortable):

Mother	0 1 2 3
Father	0 1 2 3
Other	0 1 2 3

Exposed to violence between adults (i.e., physical fighting between your parents, parent/partner):

Mother	0 1 2 3
Father	0 1 2 3
Other	0 1 2 3

Neglected (e.g., not looked after properly, ignored, not paid attention):

Mother	0 1 2 3
Father	0 1 2 3
Other	0 1 2 3

Emotionally maltreated (e.g., criticized, yelled at, treated in a way that way unfair to you).

Mother	0 1 2 3
Father	0 1 2 3
Other	0 1 2 3

Appendix C

Edinburgh Postnatal Depression Scale

As you are pregnant or have recently had a baby, we would like to know how you are feeling.
Please MARK the answer that comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

Here is an example, already completed.

I have felt happy:

- □ Yes, all the time
- □ Yes, most of the time
- □ No, not very often
- □ No, not at all

This would mean "I have felt happy most of the time" during the past week. Please complete the other questions the same way.

You may choose to not answer any questions that you are not comfortable answering.

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - □ As much as I always could
   - □ Not quite so much now
   - □ Definitely not so much now
   - □ Not at all

2. I have looked forward with enjoyment to things
   - □ As much as I ever did
   - □ Rather less than I used to
   - □ Definitely less than I used
   - □ Hardly at all

3. I have blamed myself unnecessarily when things went wrong
   - □ Yes, most of the time
   - □ Yes, some of the time
   - □ Not very often
   - □ No, never

4. I have been anxious or worried for no good reason
   - □ No, not at all

□ Hardly ever
□ Yes, sometimes
□ Yes, very often

In the past 7 days:

5. I have felt scared or panicky for no very good reason
   □ Yes, quite a lot
   □ Yes, sometimes
   □ No, not much
   □ No, not at all

6. Things have been getting on top of me
   □ Yes, most of the time I haven't been able to cope
   □ Yes, sometimes I haven't been coping as well as usual
   □ No, most of the time I have coped quite well
   □ No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping
   □ Yes, most of the time
   □ Yes, sometimes
   □ Not very often
   □ No, not at all

8. I have felt sad or miserable
   □ Yes, most of the time
   □ Yes, quite often
   □ Not very often
   □ No, not at all

9. I have been so unhappy that I have been crying
   □ Yes, most of the time
   □ Yes, quite often
   □ Only occasionally
   □ No, never

10. The thought of harming myself has occurred to me
    □ Yes, quite often
    □ Sometimes
    □ Hardly ever
    □ Never

Appendix D

PTSD Diagnostic Scale for DSM-5 (PDS-5)

TRAUMA SCREEN

Have you ever experienced, witnessed, or been repeatedly confronted with any of the following: (Check all that apply)

☐ Serious, life threatening illness (heart attack, etc.)

☐ Physical assault (attacked with a weapon, severe injuries from a fight, held at gunpoint, etc.)

☐ Sexual assault (rape, attempted rape, forced sexual act with a weapon, etc.)

☐ Military combat or lived in a war zone

☐ Child abuse (severe beatings, sexual acts with someone 5 years older than you, etc.)

☐ Accident (serious injury, or death from a car, at work, a house fire, etc.)

☐ Natural disaster (severe hurricane, flood, earthquake etc

☐ Other trauma (Please describe briefly):

_____

☐ None

If you marked any of the above items, which single traumatic experience is on your mind and currently bothers you the most: (Check only one)

☐ Serious, life threatening illness (heart attack, etc.)

☐ Physical assault (attacked with a weapon, severe injuries from a fight, held at gunpoint, etc.)

☐ Sexual assault (rape, attempted rape, forced sexual act with a weapon, etc.)

☐ Military combat or lived in a war zone

☐ Child abuse (severe beatings, sexual acts with someone 5 years older than you, etc.)

☐ Accident (serious injury, or death from a car, at work, a house fire, etc.)

☐ Natural disaster (severe hurricane, flood, earthquake etc.)

☐ Other trauma (Please describe briefly):

_____

Instructions: Below is a list of problems that people sometimes have after experiencing a traumatic event. Write down the most distressing traumatic event that you checked on the last page:

Please read each statement carefully and choose the option that best describes how often that problem has been happening and how much it has affected you over THE LAST MONTH. Rate each problem with respect to the traumatic event that you wrote above.

0 Not at all
1 Once a week or less/a little
2 2 to 3 times a week/somewhat
3 4 to 5 times a week/vary much
4 6 or more times a week severe

1. Unwanting upsetting memories about the trauma
2. Bad dreams or nightmares related to the trauma
3. Reliving the traumatic event, acting or feeling as if it was happening again.
4. Feeling EMOTIONALLY upset when reminded of the trauma

5. Having PHYSICAL reactions when reminded of the trauma (for example, sweating, heart racing)
6. Trying to avoid thoughts or feelings related to the trauma
7. Trying to avoid activities, situations, or places that remind you of the trauma or that feel more dangerous since the trauma
8. Not being able to remember important parts of the trauma
9. Seeing yourself, others, or the world in a more negative way (for example, "I can't trust people," "I'm a weak person")
10. Blaming yourself or others (beside the person who hurt you) for what happened
11. Having intense negative feelings like fear, horror, anger, guilt or shame
12. Losing interest or not participating in activities you used to do
13. Feeling distant or cut off from others
14. Having difficulty experiencing positive feelings
15. Acting more irritable or aggressive with others
16. Taking more risks or doing things that might cause you or others harm (for example, driving recklessly, taking drugs, having unprotected sex)
17. Being overly alert or on-guard (for example, checking to see who is around you, being uncomfortable with your back to a door)
18. Being jumpy or more easily startled (for example, when someone walks up behind you)
19. Having trouble concentrating
20. Having trouble falling or staying asleep

DISTRESS AND INTERFERENE

21. How much have these difficulties been bothering you?
22. How much have these difficulties been interfering with your everyday life

SYMPTOM ONSET AND DURATION

23. How long after the trauma did these difficulties begin?

- ○ Less than 6 months
- ○ More than 6 months

24. How long have you had these trauma-related difficulties?

- ○ Less than 1 month
- ○ More than 1 month

Appendix E

Couples Satisfaction Index (CSI-32)

Extremely Unhappy **0**	Fairly Unhappy **1**	A Little Unhappy **2**	Happy **3**	Very Happy **4**	Extremely Happy **5**	Perfect **6**

Please indicate the degree of happiness, all things considered, of your relationship.

Most people have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list.

	Always Agree	Almost Always Agree	Occa-sionally Disagree	Fre-quently Disagree	Almost Always Disagree	Always Disagree
Amount of time spent together	5	4	3	2	1	0
Making major decisions	5	4	3	2	1	0
Demonstrations of affection	5	4	3	2	1	0

	All the time	Most of the time	More often than not	Occa-sionally	Rarely	Never
In general, how often do you think that things between you and your partner are going well?	5	4	3	2	1	0
How often do you wish you hadn't gotten into this relationship?	0	1	2	3	4	5

	Not at all TRUE	A little TRUE	Some-what TRUE	Mostly TRUE	Almost Completely TRUE	Completely TRUE
I still feel a strong connection with my partner	0	1	2	3	4	5
If I had my life to live over, I would marry (or live with / date) the same person	0	1	2	3	4	5
Our relationship is strong	0	1	2	3	4	5
I sometimes wonder if there is someone else out there for me	5	4	3	2	1	0
My relationship with my partner makes me happy	0	1	2	3	4	5
I have a warm and comfortable relationship with my partner	0	1	2	3	4	5
I can't imagine ending my relationship with my partner	0	1	2	3	4	5
I feel that I can confide in my partner about virtually anything	0	1	2	3	4	5
I have had second thoughts about this relationship recently	5	4	3	2	1	0
For me, my partner is the perfect romantic partner	0	1	2	3	4	5
I really feel like **part of a team** with my partner	0	1	2	3	4	5
I cannot imagine another person making me as happy as my partner does	0	1	2	3	4	5

	Not at all	A little	Some-what	Mostly	Almost Completely	Completely
How rewarding is your relationship with your partner?	0	1	2	3	4	5
How well does your partner meet your needs?	0	1	2	3	4	5
To what extent has your relationship met your original expectations?	0	1	2	3	4	5
In general, how satisfied are you with your relationship?	0	1	2	3	4	5

	Worse than all others (Extremely bad)					Better than all others (Extremely good)
How good is your relationship compared to most?	0	1	2	3	4	5

For each of the following items, select the answer that best describes *how you feel about your relationship*.

	Never	Less than once a month	Once or twice a month	Once or twice a week	Once a day	More often
Do you enjoy your partner's company?	0	1	2	3	4	5
How often do you and your partner have fun together?	0	1	2	3	4	5

Base your responses on your first impressions and immediate feelings about the item.

INTERESTING	5	4	3	2	1	0	BORING
BAD	0	1	2	3	4	5	GOOD
FULL	5	4	3	2	1	0	EMPTY
LONELY	0	1	2	3	4	5	FRIENDLY
STURDY	5	4	3	2	1	0	FRAGILE
DISCOURAGING	0	1	2	3	4	5	HOPEFUL
ENJOYABLE	5	4	3	2	1	0	MISERABLE

Appendix F

Intimate Safety Questionnaire-Revised

Please answer with respect to how you have felt in the last month:

1. When I am with my partner I feel safe and comfortable	Never	Rarely	Sometimes	Almost Always	Always
2. I feel comfortable when my partner initiates sex with me.	Never	Rarely	Sometimes	Almost Always	Always
3. I feel threatened when my partner tells me I have done something to upset him/her.	Never	Rarely	Sometimes	Almost Always	Always
4. I like to tell my partner about my day.	Never	Rarely	Sometimes	Almost Always	Always
5. When my partner and I meet at the end of the day, I feel tense and anxious.	Never	Rarely	Sometimes	Almost Always	Always
6. I feel comfortable telling my partner when I'm feeling scared/anxious.	Never	Rarely	Sometimes	Almost Always	Always
7. It makes me uncomfortable for my partner to disagree with me.	Never	Rarely	Sometimes	Almost Always	Always
8. Sharing a difference of opinion with my partner is upsetting.	Never	Rarely	Sometimes	Almost Always	Always
9. When I need to cry I go to my partner.	Never	Rarely	Sometimes	Almost Always	Always
10. I feel comfortable listening to my partner talk about his/her day.	Never	Rarely	Sometimes	Almost Always	Always

11. I feel uncomfortable disagreeing with my partner when we are with other people.	Never	Rarely	Sometimes	Almost Always	Always
12. I am comfortable being physically affectionate with my partner.	Never	Rarely	Sometimes	Almost Always	Always
13. When I have thoughts or feelings that are vague or uncertain, I find it helpful to talk with my partner.	Never	Rarely	Sometimes	Almost Always	Always
14. Being physically affectionate with my partner makes me uncomfortable.	Never	Rarely	Sometimes	Almost Always	Always
15. In public, I feel like I'm in danger of being "put down" by my partner.	Never	Rarely	Sometimes	Almost Always	Always
16. Sex with my partner makes me uncomfortable.	Never	Rarely	Sometimes	Almost Always	Always
17. I feel comfortable initiating sex with my partner.	Never	Rarely	Sometimes	Almost Always	Always
18. I feel comfortable telling my partner things I would not tell anyone else.	Never	Rarely	Sometimes	Almost Always	Always
19. When things aren't going well for me, it's comforting to talk to my partner.	Never	Rarely	Sometimes	Almost Always	Always

20. When we are out with other people, my partner hurts my feelings or makes me mad.	Never	Rarely	Sometimes	Almost Always	Always
21. I feel comfortable telling my partner when I'm feeling sad.	Never	Rarely	Sometimes	Almost Always	Always
22. I feel comfortable consoling my partner when he/she cries.	Never	Rarely	Sometimes	Almost Always	Always
23. When I'm upset, there are other people that I would rather talk to than my partner.	Never	Rarely	Sometimes	Almost Always	Always
24. I avoid having sex with my partner.	Never	Rarely	Sometimes	Almost Always	Always
25. My friends seem to genuinely like my partner.	Never	Rarely	Sometimes	Almost Always	Always
26. When I am with my partner I feel anxious, like I'm walking on eggshells.	Never	Rarely	Sometimes	Almost Always	Always
27. It's hard to apologize to my partner when I've done something wrong.	Never	Rarely	Sometimes	Almost Always	Always
28. I feel like I have to watch what I do or say around my partner.	Never	Rarely	Sometimes	Almost Always	Always

Appendix G

Sexual Desire Inventory- 2 – Revised (3 items)

1. During the last month, how often would you have liked to engage in sexual activity with your partner (for example, touching each other's genitals, giving or receiving oral stimulation, intercourse etc.)?

- ○ Not at all
- ○ Once a month
- ○ Once every two weeks
- ○ Once a week
- ○ Twice a week
- ○ 3 - 4 times a week
- ○ Once a day
- ○ More than once a day

2. How strong is your desire to engage in sexual behaviour with your partner?

- ○ No desire 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ Strong desire 8

3. How important is it for you to fulfill your sexual desire through activity with your partner?

- ○ Not at all important 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ Extremely important 8