

ONE-ARM PILOT TRIAL OF AN ONLINE, ADAPTED VERSION OF THE HOLD ME
TIGHT PROGRAM FOR PERINATAL DEPRESSION

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ABSTRACT

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Perinatal depression is prevalent and significantly impacts many facets of a couple's life. Despite the need for more couple-focused interventions for perinatal depression (PD), few interventions address the prevention and treatment of PD from a dyadic lens. Given the growing demand for and use of computer or online interventions, it is vital to examine how computer or online interventions can be employed to deliver couple interventions for PD to a larger audience. In this dissertation, I present findings from a one-arm pilot study testing the initial efficacy of a computer or online couple intervention for PD. The intervention tested was an adapted version of the Hold Me Tight (HMT; Johnson, 2015) program, which was adapted to meet the unique needs of perinatal couples. Findings from the first study suggested that participation in the program was associated with a significant decrease in women's PD and avoidant attachment patterns and improvement in women's relationship satisfaction and sexual satisfaction over the course of the study. However, women's participation in the program was not associated with significant changes in their anxious attachment patterns and attachment behaviors, and men's participation in the program was not associated with significant changes in any of the outcomes. The goal of the second study was to examine participant characteristics that predicted participants' outcomes in the intervention to better understand who benefits from the intervention. The results illustrated baseline participant characteristics that predicted whether men and women experienced positive or negative outcomes in PD from participation in the adapted HMT intervention. The findings and their implications are explored further in the discussion section.

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To my village –
my family, my friends, and my husband –
thank you for always supporting and believing in me.

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CHAPTER 1: INTRODUCTION TO THE STUDY

Statement of the Problem

Perinatal depression (PD), which affects 6.5% to 20% of perinatal women, is the most common perinatal psychiatric disorder (Duan et al., 2019; Goodman, 2019). Perinatal depression is defined as the occurrence of at least one major depressive episode during pregnancy and/or during the first year postpartum, and research suggests that PD is a distinct entity from major depression occurring outside of the perinatal period (Cohen & Schiller, 2017; Duan et al., 2019). The strongest predictor of PD is a personal history of anxiety and/or depression prior to or during pregnancy, followed by inadequate social support, high stress, unintended pregnancy, abuse history, history of interpersonal violence, significant conflict with partners, perceived lack of support from partners, and poor maternal health (Duan et al., 2019; Goodman, 2019; Pilkington et al., 2015a). Due to systemic factors and barriers to care at system, provider, and patient levels, PD disproportionately impacts women with low socioeconomic statuses, women in low-to-middle-income countries, racially/ethnically diverse women in urban settings, and immigrant women (Duan et al., 2019; Goodman, 2019; Grote et al., 2015). The impacts of PD are not limited to the mother as many components of the family system, namely the infant, the father or partner, the romantic relationship between the couple, the sexual relationship between the couple, and the financial stability of the family, are also affected. The following paragraphs will further elucidate the corollaries of PD on the broader family system to demonstrate the importance of preventing and treating PD within a wholistic, systemic context.

The effects of PD on infant, child, and adolescent development have been well documented in the literature. More specifically, PD is associated with low birthweight and premature birth in infants, both of which could negatively impact children's lifelong trajectories

(Grote et al., 2015). In infants, PD is also correlated with behavioral dysregulation, disturbed or disorganized sleeping patterns, and difficult temperament, potentially contributing to or further exasperating PD (Goodman, 2019). In childhood, PD is linked to a heightened risk of developing depression, anxiety, attention deficit hyperactivity disorder (ADHD), conduct disorder, attachment insecurity, impaired cognitive and social development, and long-term behavioral problems (Goodman, 2019; Grote et al., 2015). Adolescents whose mothers experienced PD are at a greater risk for developing affective disorders, in addition to the residual consequences of the aforementioned risks (Duan et al., 2019). For infants, children, and adolescents, the risks related to PD are significant and can leave a lasting impact on their biological, psychological, and social functioning.

For mothers, PD is characterized by depressed mood, persistent sadness, anxious and/or compulsive thoughts, anhedonia, perceived loss of control, feelings of inadequacy, self-doubt, and/or guilt, changes in weight or appetite, irritability, difficulty concentrating, unfounded fears, sleep disturbances, fatigue and lethargy, and despair (Duan et al., 2019; Goodman, 2019). Approximately 5% to 14% of women with PD develop suicidal and/or infanticidal thoughts, elevating mortality risk for mothers and infants, and at present, maternal suicide poses a greater risk to maternal mortality than hemorrhage and hypertensive disorders (Duan et al., 2019; Goodman, 2019). Exacerbating the negative impacts of PD, women with PD are less likely to prioritize and address their personal health and wellbeing (Goodman, 2019). For example, women with PD are more likely to discount their personal health by underutilizing prenatal care, increasing substance use, consuming poor nutrition, engaging in insufficient physical activity, and gaining weight beyond what is recommended by physicians, which impacts mothers and infants alike (Duan et al., 2019; Goodman, 2019). These effects are not limited to the perinatal

period where they initially manifest, and consequently, approximately 20% of women with PD will experience a depression relapse during subsequent perinatal periods or periods unassociated with pregnancy or childbirth (Duan et al., 2019).

While child and maternal health have been the primary focuses of PD prevention and intervention efforts, fathers and partners are impacted by PD, as well. Fathers and partners also experience higher rates of psychological distress during the perinatal period (Rominov et al., 2016). More specifically, approximately 10.4% to 50% of men with perinatal partners experience paternal PD, with men whose partners have PD experiencing higher rates of paternal PD than those whose partners do not (Cameron et al., 2016; Rominov et al., 2016). Maternal and paternal or partner PD are highly correlated, and as a result, an increase in depression in one partner is associated with an increase in depression in the other partner (Cameron et al., 2016). This affective concordance amongst partners is alarming given that infants and children exposed to two parents with perinatal psychological distress are at a higher risk of developing future psychopathology than those exposed to only one parent with perinatal psychological distress (Cameron et al., 2016). Furthermore, for fathers and partners, perinatal psychological distress is highest during the first postnatal year, a time which is characterized by significant changes in the family system and substantial infant growth and development (Rominov et al., 2016).

The effects of depression on relationship distress and functioning have been well documented in the literature (Adler et al., 2018; Denton et al., 2012; Woods et al., 2015). Adding to this body of literature, researchers have begun to examine the relationship between PD and relationship distress and functioning (Cohen & Schiller, 2017). Perinatal depression negatively impacts relationship satisfaction and functioning (e.g., relationship dedication and positive communication) between romantic partners (Cohen & Schiller, 2017; Pilkington et al., 2015a). In

part stemming from PD, marital conflict often increases during the perinatal period, and marital quality and satisfaction decrease correspondingly (Pilkington et al., 2015a). Bidirectionally, relationship distress and dysfunction during the perinatal period are also associated with higher levels of PD (Cohen & Schiller, 2017; Pilkington et al., 2015a). Research indicates that relational factors are strong predictors of PD, and partner support during the perinatal period acts as a protective factor against PD (Cohen & Schiller, 2017; Pilkington et al., 2015a). As a result, researchers suggest that couple therapy for PD more effectively addresses the relational nature of PD and its symptoms than traditional individual therapy methods (Cohen & Schiller, 2017.)

Perinatal depression also significantly impacts couples' sexual relationships. Decreased sexual activity and functioning are prevalent during the perinatal period (Wallwiener et al., 2017). In comparison to women without PD, women with PD experience significantly lower sexual functioning during pregnancy, and this decreased sexual functioning is often still present at six months postpartum for women with PD (Galbally et al., 2019). If depressive symptoms persist at one-year postpartum, lower sexual functioning is likely to occur, as well (Galbally et al., 2019). Similar to its impact on relationship satisfaction and functioning, partner support is associated with higher sexual functioning during the perinatal period (Galbally et al., 2019). Consequently, researchers recommend that perinatal educators and therapists address perinatal sexual functioning and partner support when providing services to perinatal individuals and couples (Galbally et al., 2019; Wallwiener et al., 2017).

Another consideration is the negative influence that PD has on the financial stability of families. Perinatal depression is associated with decreased work productivity, stemming from disruptions in employment due to mental illness (Grote et al., 2017; Rominov et al., 2016). Furthermore, PD is linked to lower educational attainment in families, contributing to or

exacerbating intergenerational economic disparities (Grote et al., 2017). Perinatal depression also demands increased utilization of healthcare services, further taxing economic resources (Rominov et al., 2016). Effectively preventing or treating PD could support families in obtaining and maintaining financial stability.

Couple Interventions for Perinatal Depression

While individual psychotherapy, use of antidepressants, and increased interaction with medical providers have historically been the most commonly prescribed treatments for PD, perinatal couples express a preference for receiving support from their partners (Pilkington et al., 2015a). Congruently, dyadic, or couple-focused, interventions for PD are gaining more attention and have demonstrated effectiveness in reducing negative health outcomes and increasing positive health outcomes for perinatal couples (Cohen & Schiller, 2017). For example, couple interventions for PD have been shown to increase men's relationship satisfaction and mindfulness, reduce men's negative affect (Gambrel & Piercy, 2015), enhance women's sense of competence, and decrease women's PD symptoms (Matthey et al., 2004).

Despite the evidence demonstrating the effectiveness of couple interventions for PD, reviews of research on interventions for PD resoundingly assert that few studies have approached the prevention and treatment of PD from a dyadic lens (Cohen & Schiller, 2017; Pilkington et al., 2015a; Wang, 2018). This is problematic given perinatal couples' stated predilection for partner support and the systemic, bidirectional effects of PD on couples' relationship and sexual satisfaction and functioning. As a result, the current one-arm pilot study aims to test the initial efficacy of an online couple intervention in addressing PD and some of its relational correlates.

The Hold Me Tight (HMT) program, the couple intervention that will be tested in this study, has been shown to produce statistically significant changes in couples' relationship

satisfaction, experience of a cancer diagnosis, trust, depression, attachment security, and/or family functioning (Lynch, 2015; Stavrianopoulos, 2015; Wong et al., 2018). Narrowing the scope, the HMT program has demonstrated success in reducing couples' symptoms of anxiety and depression and in increasing emotional dialogue between first-time parents (Kennedy et al., 2019; Wang, 2018). While the HMT program has been effective in improving couples' relationship satisfaction and depression, two of the focuses of the current study, there is no prior research on the efficaciousness of the HMT program with couples at risk for or experiencing PD. This substantial gap in the literature necessitates an examination of the efficacy of the HMT program with couples experiencing PD.

Given the accessibility, timeliness, convenience, flexibility, and affordability of computer and online interventions and the lack of safety inherent in in-person interventions due to the coronavirus disease 2019 (COVID-19), some researchers and clinicians are beginning to employ computer or online interventions to reach their populations (Ashford et al., 2016). Furthermore, research indicates that computer or online interventions designed to treat PD have produced encouraging results (Ashford et al., 2016; Lee et al., 2016). Despite the unique attributes of computer or online interventions and the encouraging results, only a limited number of studies have been conducted using computer or online interventions for couples experiencing PD, and of those studied, most interventions are partner-inclusive, not couple-specific (Alves et al., 2018). The accessibility of computer or online interventions and the limited research available on their use and effectiveness with couples experiencing PD presents researchers a distinctive opportunity to contribute to the literature and body of clinical knowledge.

The Current Study

Given the effectiveness of couple interventions for PD and the HMT program, the gap in the research on employing the HMT program with couples at risk for or experiencing PD demands further investigation to determine if the HMT program is efficacious at preventing and reducing symptoms of PD and increasing protective factors in couples. Moreover, to ensure that the HMT program meets the specific needs of couples at risk for or experiencing PD, the original HMT program was adapted to include content about the perinatal period and PD specifically. Ultimately, the adapted HMT program marries the HMT program with current research on the perinatal period and PD and its treatment in couples. This one-arm pilot study tested the initial efficacy of the adapted HMT program in a variety of domains and identified characteristics of participants that supported or detracted from success in the adapted HMT program. Additionally, information on participants' experiences with the adapted HMT program was collected to evaluate the acceptability of this novel approach and ascertain future areas of improvement.

Research Questions

The research questions for the first study are as follows:

1. What is the efficacy of the adapted HMT program with couples at risk of or experiencing PD?
 - a. To what degree is the adapted HMT program efficacious in preventing and reducing PD?
 - b. To what degree is the adapted HMT program efficacious in altering attachment patterns?
 - c. To what degree is the adapted HMT program efficacious in increasing couple relationship satisfaction?

- d. To what degree is the adapted HMT program efficacious in increasing sexual satisfaction and functioning?
2. What are participants' experiences of the adapted HMT program?

The research question for the second study was:

1. Do baseline relationship satisfaction and attachment predict change in couples' PD in the adapted HMT program?

CHAPTER 2: LITERATURE REVIEW

To gain a deeper understanding of the quality and rigor of couple interventions for PD, the first section of this chapter will outline the available research on couple interventions for PD. Given the use of remote implementation methods in this study, the subsequent section will delve more deeply into general and couple interventions for PD using a computer or online format. The ensuing section will examine the active ingredients of online interventions to gain a better understanding of the strategies employed in effective online interventions. The final sections will outline the current research on attachment theory, the HMT program, and its predecessors to illuminate the unique features and applicability of the HMT program to couples at risk of or experiencing PD.

Interventions for Perinatal Depression

Couple Interventions for Perinatal Depression

While some individual-focused interventions invite partners to attend one or a limited number of sessions, for the purposes of this analysis, only interventions with continued partner participation and a couple-focus will be examined. Existing couple interventions include Bringing Home Baby (Shapiro & Gottman, 2005), Family Foundations (Feinberg & Kan, 2008), Mindful Transition to Parenthood (Gambrel & Piercy, 2015), Partner-Assisted Interpersonal Psychotherapy (Brandon et al., 2012), Preparation for Parenthood with an empathy session (Matthey et al., 2004), a couple-based cognitive behavioral intervention (Ngai et al., 2020), and a miscarriage grief and depression intervention (Swanson et al., 2009). This section presents broader conclusions about couple interventions for PD, and Table 1 contains detailed information about each of the couple interventions reviewed.

First, couple communication was the most frequently cited focus of the interventions, followed by conflict-resolution skills, emotion regulation, and co-parenting practices (Wang,

2018). Many of the interventions also contain focuses or practices unique to their modality. For example, Mindful Transition to Parenthood (Gambrel & Piercy, 2015) includes experiential activities and information about relational mindfulness. The couple-based cognitive behavioral intervention (Ngai et al., 2020) introduces cognitive behavioral interventions. Preparation for Parenthood with an empathy session (Matthey et al., 2004) addresses physical aspects of pregnancy and birth, and the miscarriage grief and depression intervention addresses depression and grief following the first year of miscarriage (Swanson et al., 2009). Only three interventions, Preparation for Parenthood with an empathy session (Matthey et al., 2004), Partner-Assisted Interpersonal Psychotherapy (Brandon et al., 2012), and the couple-based cognitive behavioral intervention (Ngai et al., 2020), explicitly state that they discuss PD and its symptoms.

The format of the interventions and the type of facilitators are similar across the interventions. All interventions, apart from Partner-Assisted Interpersonal Psychotherapy (Brandon et al., 2012), use a group workshop format to implement their programs. Partner-Assisted Interpersonal Psychotherapy (Brandon et al., 2012) uses a traditional therapy session model. Moreover, some of the interventions, specifically Preparation for Parenthood with an empathy session (Matthey et al., 2004) and the couple-based cognitive behavioral intervention (Ngai et al., 2020), use phone calls or a mail-out component in addition to the group workshop format. Regarding the type of facilitators, intervention facilitators were primarily educators or medical professionals. Only three interventions, Preparation for Parenthood with an empathy session (Matthey et al., 2004), Partner-Assisted Interpersonal Psychotherapy (Brandon et al., 2012), and the miscarriage grief and depression intervention (Swanson et al., 2009), used therapists or mental health professionals, namely psychologists, psychiatrists, social workers, and nurse counselors, to implement the intervention. This is surprising given the shared focus on

couple communication, conflict-resolution skills, emotion regulation, co-parenting practices, and PD symptoms and treatments amongst many of the interventions. Arguably, participants could benefit from the expertise and support of mental health professionals, particularly couple and family therapists specializing in the perinatal period, when discussing these difficult, potentially triggering topics.

When examining the effectiveness of the interventions, some concerns arise. First, some of the interventions appear to be effective for women or men but not both simultaneously. For example, Mindful Transition to Parenthood (Gambrel & Piercy, 2015) was effective in increasing men's relationship satisfaction and mindfulness and reducing men's negative affect but produced no significant treatment effects for women. On the other hand, Preparation for Parenthood with an empathy session (Matthey et al., 2004) was effective in enhancing women's sense of competence and decreasing women's PD symptoms, but these results were not mirrored in their male partners. Second, all interventions proved effective (in some capacity) for a time period, but the treatment effects of many interventions were not maintained at later assessment times. For instance, the treatment effects observed in Preparation for Parenthood with an empathy session (Matthey et al., 2004) and the couple-based cognitive behavioral intervention (Ngai et al., 2020) were not present after 6 months. These isolated and diminishing treatment effects call into question the overall effectiveness of the interventions.

Given the variability in effectiveness, it is also important to examine the dosage, or duration, of the reviewed couple interventions for PD. The duration of the couple interventions for PD ranges from 1 to 16 hours in length. The shortest intervention, the miscarriage grief and depression intervention (Swanson et al., 2009), includes 3 18-minute videos followed by private workbook questions. The longest interventions, Bringing Home Baby (Shapiro & Gottman,

2005) and Family Foundations (Feinberg & Kan, 2008), are divided into (a) two 8-hour days or (b) a series of 2-hour sessions over 8 weeks for a total of 16 hours. Most interventions take place over a span of weeks, and only one intervention, Bringing Home Baby (Shapiro & Gottman, 2005), is completed in a two-day format.

The reviewed couple interventions for PD also differ in their selection of assessments. The only measures used by multiple studies are the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) and the Centre for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). Nonetheless, not all studies used these measures to evaluate PD. Other studies used the Hopkins Symptom Checklist (SCL-90; Derogatis et al., 1977), the Taylor Manifest Anxiety Scale (Taylor, 1953), the Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995), the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), the Profile of Mood States (POMS; McNair et al., 1971), the Hamilton Rating Scale for Depression, 17-Item (HAM-D17; Hamilton, 1960), and the Diagnostic Interview Schedule (DIS; Robins et al., 1981) to measure PD and/or its components. To measure relationship satisfaction and functioning, the studies used both observational methods and formalized assessments. Measures employed consist of the Dyadic Adjustment Scale (DAS; Spanier, 1976), Locke-Wallace Marital Adjustment Test (MAT; Locke & Wallace, 1959), Couple's Problem Inventory (Gottman et al., 1977), Relationships Scale Questionnaire (Griffin & Bartholomew, 1994), Couple Satisfaction Index (CSI; Funk & Rogge, 2007), Significant Others Scale (SOS; Power et al., 1988), and Who does What?/Who will do What? Scale (WDW; Cowan and Cowan, 1990). While some of the relationship satisfaction and functioning measures briefly inquire about participants' sexual health, only articles published on one of the interventions, Family Foundations (Leavitt et al., 2017; Maas et al., 2018), included standalone measures of sexual satisfaction or functioning. It is

important to note that the Family Foundations studies that included standalone measures of sexual satisfaction or functioning (Leavitt et al., 2017; Maas et al., 2018) did not concurrently include PD as a variable.

In addition to measurement inconsistency, the frequency of assessment differs amongst studies, and assessment occurred at different time intervals, as well. The number of assessment periods ranges from two to nine, with most studies completing two or three assessment periods prior to study termination. All studies provided assessments prior to intervention implementation, which often coincided with pregnancy. Apart from one study, Mindful Transition to Parenthood (Gambrel & Piercy, 2015), all subsequent assessment periods occurred postpartum. The intervention focused on depression and grief following the first year of miscarriage (Swanson et al., 2009) is unique in that all assessment periods occurred postpartum. The timing of the last assessment period ranges from four weeks after the intervention, at which time most female participants were still pregnant, to one year postpartum.

Computer or Online Interventions for Perinatal Depression

With the growth of telemedicine, the expanding accessibility of computers and internet access, and the flexibility of remote interventions, computer or online interventions are emerging treatment modalities for PD. While effective in-person treatments for PD are available, women experiencing PD are often hesitant to use these programs due to the stigma associated with PD, reluctance to seek mental health treatment, busyness or lack of time to seek help, associated costs, fear of losing children after receiving a mental health diagnosis, and childcare issues (Ashford et al., 2016; O'Mahen et al., 2013). In place of using more formalized sources of support, women tend to embrace more informal sources of support, such as friends, family, print materials, and internet resources, to seek help for their symptoms (Ashford et al., 2016). While

informal sources of support may assist in reducing symptoms associated with PD, many women would benefit from a higher level of care, making it essential that women with PD have access to effective mental health treatments that are timely, convenient, flexible, affordable, and potentially anonymous (Ashford et al., 2016).

Computer and online interventions for PD may bypass some of the challenges associated with face-to-face delivery systems. First, computer and online interventions offer couples the opportunity to access treatment when and where is most convenient for them, therefore addressing busyness or lack of time to seek help and childcare issues as barriers to treatment (Lee et al., 2016; O'Mahen et al., 2013). Additionally, computer and online interventions can decrease confidentiality concerns as couples can participate in treatment in their homes or other confidential spaces (O'Mahen et al., 2013). Computer and online interventions also tend to be less demanding on mental health resources, therefore enhancing accessibility and decreasing costs associated with treatment (Lee et al., 2016; O'Mahen et al., 2013). Finally, computer and online interventions can support anonymous engagement, which may assist couples in overcoming fears associated with stigma (O'Mahen et al., 2013). For example, perinatal women are more likely to share sensitive mood information over the internet, as compared to in-person assessments, which may result in more accurate evaluations and corresponding treatment approaches (O'Mahen et al., 2013).

Two systematic reviews on computer or online interventions for perinatal mental health concerns were recently conducted (Ashford et al., 2016; Lee et al., 2016). The authors of both reviews indicate that computer or online interventions designed to treat PD have produced encouraging results. According to Ashford et al. (2016), "computer- and web-based mental health interventions may be [a] promising approach to the treatment and reduction of maternal

mental health issues during the perinatal period, particularly depression” (p. 143). While the reviewed interventions aim to prevent or treat a variety of perinatal mental health concerns, the interventions seem to be most effective at reducing depression symptoms (Ashford et al., 2016). In addition to targeting mental health concerns other than depression, Ashford et al. (2016) suggest that the interventions that were less effective at reducing perinatal mental health concerns were intended to prevent symptoms, rather than ease existing symptoms, and they postulate that preventative computer or online interventions may not be as effective as curative interventions in diminishing perinatal mental health concerns.

Despite perinatal couples’ stated preference for partner support and the well-documented effects of PD on couples’ relationship and sexual satisfaction and functioning, the majority of computer or online interventions for PD only include perinatal women, failing to include their partners (Ashford et al., 2016; Pilkington et al., 2015a). Correspondingly, only a small percentage of computer or online interventions include partners of perinatal women (Ashford et al., 2016). Even when perinatal women’s partners are included, researchers often measure and analyze partners’ data individually, not dyadically, and this analytic strategy results in an incomplete picture of client outcomes. In their reviews, Ashford et al. (2016) and Lee et al. (2016) both identify that few computer or online interventions for PD target couples as the focus of intervention, and as a result, they encourage future researchers to examine computer or online interventions for PD that specifically treat couples, analyzing both their individual and dyadic outcomes.

Review of Computer or Online Couple Interventions for Perinatal Depression.

While some computer or online interventions for PD include perinatal women’s partners, most interventions are partner-inclusive, not couple-specific (Alves et al., 2018). Practically, this

means that they only contain a limited number of partner sessions, most of which are intended to support the “identified patient” in treatment. Divergently, the Home-but Not Alone intervention offers a computer or online couple intervention for PD (Shorey et al., 2016, 2017). Home-but Not Alone (Shorey et al., 2016, 2017) addresses many of the physical aspects of pregnancy and birth, the tasks associated with newborn care, and the sources of support available to perinatal women. Home-but Not Alone (Shorey et al., 2016, 2017) also allows participants to engage in asynchronous communication with a midwife. Home-but Not Alone (Shorey et al., 2016, 2017) largely focuses on parental psychoeducation, and as a result, this intervention does not appear to include content about couples’ relationship or sexual satisfaction or functioning.

Home-but Not Alone is implemented using a mobile app, which is shared amongst the couple (Shorey et al., 2016, 2017). The content of the intervention is loaded onto the mobile app, and participants engage with the content through the mobile app (Shorey et al., 2016, 2017). The duration of the intervention is four weeks, and during this time, couples are expected to engage with the mobile app on multiple occasions (Shorey et al., 2016, 2017). Couples are assessed twice: pre-intervention (day of discharge) and post-intervention (4 weeks later), and assessments include the Parenting Efficacy Scale (Leerkes & Crockenberg, 2002), the Perceived Social Support for Parenting scale (Leerkes & Crockenberg, 2002), the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987), and a subscale of the What Being the Parent of a New Baby is Like scale (Pridham & Chang, 1989) (Shorey et al., 2017).

Regarding the effectiveness of the intervention, Shorey et al. (2016, 2017) report that Home-but Not Alone is effective in improving parental self-efficacy, social support, and parenting satisfaction. However, Shorey et al. (2017) indicate that there was no significant improvement in the experimental group’s (mobile app and routine care) postnatal depression

scores when compared to the control group (routine care only). While this section presents broader conclusions about Shorey et al.'s (2016, 2017) intervention, Table 2 contains additional information about the intervention analyzed.

Recommendations for Improving Computer or Online Interventions. Given the dearth of computer or online couple interventions for perinatal depression, it is important to also review computer or online interventions for perinatal depression for women to gain a better understanding of these related interventions. Ashford et al. (2016) and Lee et al. (2016) both conducted reviews of web-based interventions for perinatal mental health and provide some relevant suggestions. First, Ashford et al. (2016) and Lee et al. (2016) both recommend that computer and online intervention developers and researchers focus on designing and implementing interventions that address particular perinatal issues and needs. While both groups of authors reviewed interventions targeting the antenatal period, the postpartum period, and/or pregnancy loss, they note that some of the interventions reviewed were not specifically created to address perinatal issues or needs, highlighting a significant need and an area for improvement.

Second, the authors observed that most perinatal interventions occur during the postpartum period and that few interventions are delivered during the antenatal period (Lee et al., 2016). As a result, Ashford et al. (2016) and Lee et al. (2016) suggest that future researchers use interventions tailored to the antenatal *and* postpartum periods and pregnancy-specific events. Doing so will likely make interventions more relevant and acceptable to perinatal participants, improve outcomes, and decrease attrition rates.

Attachment Theory

Given the large body of research demonstrating the effectiveness of attachment-based couple interventions in addressing relationship satisfaction and depression (Adler et al., 2018;

Denton et al., 2012; Wiebe & Johnson, 2016; Woods et al., 2015), employing an attachment-based couple intervention to treat PD may prove to be effective. Furthermore, research has identified a strong relationship between the presence and severity of PD and attachment patterns (Meuti et al., 2015). For example, Meuti et al. (2015) compared attachment patterns between a sample of perinatal women with and without PD. In this sample, perinatal women with PD exhibited a significantly higher prevalence of the “fearful-avoidant” attachment style than perinatal women without PD (29.2% vs. 1.1%) (Meuti et al., 2015). Correspondingly, higher PD scores are associated with higher attachment disorganization, indicating avoidance or anxiety attachment (Meuti et al., 2015). Meuti et al. (2015) conclude that PD severity increases in direct proportion to attachment disorganization, and as a result, attachment should be considered both an important risk factor and a focus for intervention for PD.

Attachment Formations

Attachment in Children. John Bowlby, a British psychiatrist born in the early 1900s, is credited with the development and propagation of attachment theory. According to Bowlby (1977),

What for convenience I [Bowlby] am terming attachment theory is a way of conceptualizing the propensity of human beings to make strong affectional bonds to particular others and of explaining the many forms of emotional distress and personality disturbance, including anxiety, anger, depression and emotional detachment, to which unwilling separation and loss give rise. (p. 201)

Attachment theory asserts that all human beings require and seek affectional bonds from attachment figures “from the cradle to the grave” (Bowlby, 1977, p. 203). In childhood, primary attachment figures may consist of a child’s parental figures or primary caregivers, and children

strive to form strong affectional bonds with caretakers (Bowlby, 1977). At the core, children seek emotional comfort and support during times of stress from individuals with whom they frequently interact and depend upon for emotional connection (Bowlby, 1977).

Attachment in Adults. Hazen and Shaver (1987) postulate that romantic love is also an attachment process, “a biosocial process by which affectional bonds are formed between adult lovers” (Hazen & Shaver, 1987, p. 511). While children’s attachment figures may consist of their parental figures or primary caregivers, adults’ attachment figures may include their romantic partners, in addition to close friends and family members (Johnson, 2008). As adults, individuals shift their attention towards making strong affectional bonds with their romantic partners whilst maintaining early attachments (Johnson, 2008). Individuals’ affectional bonds in childhood shape their mental models of self and others, which are translated into attachment styles, and the attachment style that an individual develops in childhood is then transferred and often reformulated in subsequent romantic relationships (Dattilio, 2009; Hazen & Shaver, 1987).

Attachment Styles

Attachment theory also offers an explanation for the occurrence of emotional distress and personality disturbance. Attachment theory asserts that emotional distress and personality disturbances transpire when individuals are unable to emotionally access or obtain emotional responsiveness from their attachment figures during times of stress (Johnson, 2008). When emotional access is unattainable and individuals perceive an attachment threat, individuals tend to react in accordance with a sequence of predictable behaviors (Bowlby, 1977). Individuals initially respond by exhibiting protest and anger, followed by clinging and seeking and then depression and despair if attachment security remains threatened (Bowlby, 1977). If individuals are still unable to regain emotional connection and security despite previous attempts,

detachment and separation occur (Bowlby, 1977). As demonstrated by the above sequence of predictable reactions in response to a perceived attachment threat, an attachment threat can trigger automatic fight, flight, or freeze responses that result in constricted information processing and interactions (Johnson et al., 1999). Ultimately, this sequence of reactions to a perceived attachment threat occurs in an attempt to regain emotional connection with an attachment figure and restore a sense of emotional security between individuals in the relationship (Johnson & Zuccarini, 2010).

How attachment figures respond to this sequence of reactions over time influences individuals' mental models of self and others, which then forms their attachment styles (Hazan & Shaver, 1987). There are three fundamental attachment styles based on the social psychology tradition: secure attachment, anxious attachment, and avoidant attachment (Ainsworth et al., 1978). These attachment styles are often further reduced to the categories of secure attachment and insecure attachment, with insecure attachment comprising the anxious and avoidant attachment styles (Johnson & Zuccarini, 2010).

Ainsworth et al. (1978) indicate that individuals who respond to their primary attachment figure's emotional unattainability by exhibiting anger and protesting would be classified within the anxious attachment category. On the other hand, individuals who respond to their primary attachment figure's emotional unattainability by separating themselves and exhibiting detachment would be classified within the avoidant attachment category (Ainsworth et al., 1978). Finally, individuals with membership in the secure attachment category soothe themselves during their primary attachment figure's emotional unattainability and easily reconnect once their primary attachment figure returns (Ainsworth et al., 1978).

Individuals with different attachment styles possess diverse beliefs about romantic love, the accessibility and trustworthiness of romantic partners, and their own worthiness to be loved (Hazen & Shaver, 1987). For example, individuals with an anxious attachment style report that they fall in love easily and that they often feel as if they are falling in love with their partner (Hazen & Shaver, 1987). Conversely, individuals with an avoidant attachment style convey that head-over-heels love does not exist, that love is fleeting, and that real love is a rarity (Hazen & Shaver, 1987). Despite the dissimilarity in their mental models, Hazen and Shaver (1987) note that individuals with anxious and avoidant attachment styles feel as if they rarely engage in relationships where they find “real love,” demonstrating the bidirectional impact that attachment styles have on romantic relationships.

Attachment Styles and Sexual Concerns. Attachment styles also play a significant role in couples’ sexual relationships (Timm & Keiley, 2011). In romantic relationships that boast a secure attachment, partners’ exchanges tend to be more confident and relaxed during sexual interactions (Johnson, 2009). The emotional connection and support within securely attached relationships facilitates more pleasurable and satisfying sexual interactions (Johnson, 2009). In comparison to securely attached partners, insecurely attached partners tend to have more inhibited sexual communication, and individuals who possess an insecure attachment tend to also experience less enjoyment, less positive affect, and more negative affect when engaging sexually with their partners (Davis et al., 2006; Johnson, 2009; Johnson & Zuccarini, 2010). Women who possess an insecure attachment style tend to have a lower rate of orgasm, and both men and women with insecure attachment styles report less sexual satisfaction (Johnson, 2009). More specifically, individuals who are anxiously attached report that emotional security is their primary motivation for engaging sexually with their partners, yet they report that they are

unsatisfied emotionally during sexual interactions with their partners (Johnson, 2009).

Individuals who possess an avoidant attachment style report that physical pleasure is their primary motivation for engaging sexually with their partners, yet they report that they are unsatisfied physically during sexual interactions with their partners (Johnson, 2009).

Adult Attachment-Based Therapeutic Models

In relationships that possess a secure attachment style, individuals maintain a level of emotional homeostasis, indicating that emotional disconnection and distress are fleeting (Johnson & Zuccarini, 2010). In this type of relationship, both individuals can openly express their needs and fears with their partner (Hazen & Shaver, 1987), and once expressed, both individuals are committed to addressing their partner's needs and fears (Johnson & Zuccarini, 2010). In contrast, insecure relationships are plagued by constricted responses to the attachment questions, "Are you there for me, will you respond when I need you?" and "Can I depend on you and do you value me and the connection with me?" (Johnson & Zuccarini, 2010). Individuals with insecure attachment styles are triggered by attachment threats and consequently exhibit the previously described sequence of predictable reactions (Bowlby, 1977; Johnson et al., 1999). Once triggered, the automatic fight, flight, or freeze responses that result constrict information processing and interactions, leaving individuals vulnerable to missing attachment cues from their partners (Johnson et al., 1999).

This automatic response causes individuals to behave in one of two manners: clinging or distancing (Johnson et al., 1999; Johnson & Zuccarini, 2010). Individuals tend to either cling to, which is characteristic of the anxious attachment style, or distance themselves from, which is characteristic of the avoidant attachment style, the attachment figures with whom they perceive an attachment threat (Johnson & Zuccarini, 2010). Anxiously attached individuals worry that

their attachment figures will be unavailable when they need their emotional connection and support, and as a result, anxiously attached individuals attempt to secure their attachment figures' availability (Birnbaum et al., 2006). Individuals with an avoidant attachment style distrust their attachment figures' goodwill and prefer to be independent, and consequently, these individuals emotionally distance themselves in response to an attachment threat (Birnbaum et al., 2006). If the attachment threat continues, these behaviors can become pervasive in relationships with individuals other than the attachment figure, particularly the couple relationship (Johnson, 2013).

Emotionally Focused Therapy

Emotionally Focused Therapy (EFT), an attachment-based therapeutic approach, is one of the few couple therapy modalities evidenced to promote long-term, positive change (Johnson et al., 1999). At its core, EFT aims to address both a couple's negative interaction pattern and negative emotional responses, a cornerstone of attachment theory (Johnson, 2004). As a result, the primary goals of EFT are to (a) alter negative patterned interactional sequences and emotional reactions and (b) enhance the emotional bond between romantic partners (Johnson et al., 1999; Wiebe & Johnson, 2016). To accomplish these aims, EFT is delivered through nine steps that are divided conceptually into three stages (Johnson et al., 1999). Steps one through four comprise stage one, which is termed Cycle De-escalation (Johnson et al., 1999). Within the first stage, the therapist performs an assessment, identifies negative interactional cycles and attachment concerns, monitors underlying attachment reactions, and frames the problem in terms of negative interaction cycles and attachment needs and fears (Johnson et al., 1999). Steps five through seven constitute stage two, which is labeled Changing Interaction Patterns (Johnson et al., 1999). Within the second stage, the therapist accesses the couple's implicit needs, fears, and

models of self, encourages each person to accept their partner, and structures emotional interaction by emboldening each person to express their attachment needs and fears (Johnson et al., 1999). Finally, steps eight and nine form stage three, which is named Consolidation/Integration (Johnson et al., 1999). Within stage three, the therapist focuses on developing new positions, cycles, stories, and solutions to realistic problems (Johnson et al., 1999).

The Hold Me Tight Program

The HMT program, an attachment-based relationship education program, was modeled from EFT and a relationship enhancement book by the same name (Johnson, 2008; Kennedy et al., 2019). The HMT program was developed as a more affordable, less stigmatized, briefer, group-based alternative to EFT, and similar to EFT, the HMT program aims to increase relationship satisfaction, reduce distress levels, and enhance the emotional bond and attachment security of partners (Conradi et al., 2018; Johnson et al., 1999; Kennedy et al., 2019; Wiebe & Johnson, 2016). The HMT program incorporates attachment-based relationship education and skill building through experiential exercises and assignments and is implemented using a group workshop format for couples (Conradi et al., 2018). During the program, facilitators lead couples through a series of conversations divided into eight sessions (Kennedy et al., 2019). These conversations are: 1) “Understanding Love and Attachment, 2) “How Love Goes Wrong - The Demon Dialogues”, 3) “Finding the Raw Spots in the Demon Dialogues”, 4) “Fixing Mistakes and Creating a Secure Base – Revisiting a Rocky Moment”, 5) “Becoming Open and Responsive – The Hold Me Tight Conversation”, 6) “Forgiving Injuries and Trusting Again”, 7) “Tender Touch and Synchrony Sex”, and 8) “Keeping Your Love Alive and Caring for Your Relationship” (Johnson, 2008).

Research on the Hold Me Tight Program. To date, there have been nine studies published on the HMT program. The studies differ in their focus on populations of study and/or study purposes. The populations studied include couples coping with cancer (Lynch, 2015), South African couples (Lesch et al., 2018), college student couples (Stavrianopoulos, 2015), couples becoming first-time parents (Wang, 2018), Chinese Canadian couples (Wong et al., 2018), and couples seeking support with sexual intimacy (Morgis et al., 2019). In the studies conducted thus far, the populations of interest vary greatly. Study purposes also demonstrate considerable range, examining the effectiveness of bibliotherapy using the *Hold Me Tight* book (Johnson, 2008) vs. bibliotherapy and participation in the HMT program (Fisher et al., 2014), the effectiveness of the HMT program with self-referred participants vs. clinician-referred participants (Conradi et al., 2018), and the process of individual growth in relationship satisfaction and trust in the HMT program (Kennedy et al., 2019).

Similar to the couple interventions for PD, the primary format of intervention implementation is group workshops. Most studies took place over the course of eight sessions lasting two hours each. One study, the study on the effectiveness of the HMT program with couples seeking support with sexual intimacy (Morgis et al., 2019), modified the HMT program into a one-day workshop. Four studies, the studies on the effectiveness of the HMT program with couples coping with cancer (Lynch, 2015), South African couples (Lesch et al., 2018), and couples becoming first-time parents (Wang, 2018), and the study on the process of individual growth in relationship satisfaction and trust in the HMT program (Kennedy et al., 2019), either solely used a two-day workshop format or used a two-day workshop format paired with an eight-session format. While not always explicitly stated, the number of couples per workshop group appears to range from two to twenty-three couples. Except for one study, the study on the

effectiveness of the HMT program with Chinese Canadian couples (Wong et al. (2018), all workshop groups contained 15 or fewer couples. This limited group size is consistent with the information collected on the couple interventions for PD.

Unlike the reviewed couple interventions for PD, most HMT program facilitators were trained therapists and mental health professionals. Facilitators' professional credentialing includes clinical and counseling psychologists, marriage and family therapists, masters- and doctoral-level students in marriage and family therapy, registered and clinical social workers, professional counselors, and other mental health professionals. The professional credentials of HMT program facilitators were absent in two studies, the study on the effectiveness of the HMT program with college student couples (Stavrianopoulos, 2015) and the study on the effectiveness of bibliotherapy using the *Hold Me Tight* book (Johnson, 2008) vs. bibliotherapy and participation in the HMT program (Fisher et al., 2014), and one study, the study on the effectiveness of the HMT program with Chinese Canadian couples (Wong et al. (2018), used lay group leaders trained in using the facilitator's guide for the HMT program. Apart from the studies that did not include facilitators' professional credentials or employed lay group leaders, facilitators possessed training in EFT and/or the HMT program.

The studies on the HMT program exhibited some uniformity in selection of assessments, in contrast to the reviewed couple interventions for PD; however, assessment occurred at different time intervals, as well. Almost all studies used a version of the Dyadic Adjustment Scale (DAS; Spanier, 1976), the Experiences in Close Relationships Scale (ECR; Wei et al., 2007), and/or the Brief Accessibility, Responsiveness, and Engagement Scale (BARE; Sandberg, 2012). A smaller number of studies also employed the Beck Depression Inventory (BDI-II; Beck et al., 1996) and the Relationship Trust Scale (RTS; Holmes et al., 1990). The use of additional

assessments occurred in response to study objectives. The number of assessment periods ranges from two to five, with most studies completing two or three assessment periods prior to study termination. All studies provided assessments prior to intervention implementation and at least once following intervention implementation.

Of the nine studies published on the HMT program, the effectiveness of the studies fluctuates significantly. Some studies, particularly the study on the effectiveness of bibliotherapy using the *Hold Me Tight* book (Johnson, 2008) versus bibliotherapy and participation in the HMT program (Fisher et al., 2014), suggest that the HMT program may have a negative effect on less happy couples. Other studies, for example the studies on the effectiveness of the HMT program with couples coping with cancer (Lynch, 2015), college student couples (Stavrianopoulos, 2015), and Chinese Canadian couples (Wong et al., 2018), indicate that the HMT program produces statistically significant changes in couples' relationship satisfaction, experience of a cancer diagnosis, trust, depression, attachment security, and/or family functioning. Yet still, one study, the study on the effectiveness of the HMT program with couples becoming first-time parents (Wang, 2018), reveals that there were no statistically significant treatment effects. Finally, studies comparing the effectiveness of the HMT program between two groups, namely the study on the effectiveness of the HMT intervention in self-referred versus clinician-referred couples (Conradi et al., 2018), suggest that the HMT program is significantly more effective for one group, self-referred couples, than the other group, clinician-referred couples, over time. Given these discrepant findings, the effectiveness of the HMT program demands attention and further investigation. (Table 3 contains detailed information about each of the HMT program studies analyzed.)

Program Adaptations. In a scoping review, Escoffery et al. (2019) distilled the common factors from literature on program adaptations in public health interventions into an overarching adaptation framework. The eight steps of their adaptation framework include: (a) assessing the community or population of interest, (b) understanding the original evidence-based practice(s), (c) selecting an evidence-based practice, (d) deciding what components need to be adapted, (e) adapting the original program, (f) testing the adapted materials in preparation for implementation, (g) implementing the adapted intervention, and (h) evaluating the adapted intervention (Escoffery et al., 2019). This section will focus primarily on steps d and e of Escoffery et al.'s (2019) adaptation framework (i.e., deciding what needs to be adapted and adapting the original program) as the previous sections have focused on steps a through c (i.e., understanding the original evidence-based practice(s), selecting an evidence-based practice, and deciding what components need to be adapted). The following sections will outline my application of steps d and e of Escoffery et al.'s (2019) adaptation framework to the HMT program.

Literature on perinatal couples' documented challenges, couple interventions for PD, and computer and online interventions for perinatal mental health concerns will inform the adaptation identification and application process. The process and core components of the HMT program will remain the same, while some of the content will be adjusted to better meet the needs of perinatal couples with depression. Regarding content, the literature has yielded three primary content areas for inclusion: (a) content about parenting and the adjustment to parenthood, (b) content about perinatal depressive symptoms and experiences, and (c) content tailored to antenatal *and* postpartum couples. As a result, I supplemented the existing HMT material with content from these three areas to develop the adapted HMT program. The supplemental content

was integrated into the existing HMT conversations that were most directly relevant to support a natural assimilation.

Content modifications about parenting and the adjustment to parenthood featured enhanced content on: (a) the similarities and distinctions between parent-child attachment and adult attachment processes during the introductory “Understanding Love and Attachment” conversation, (b) how relationships change during pregnancy and following the birth of a child during the “How Love Goes Wrong – The Demon Dialogues,” (c) normalizing difficulties adjusting to the addition of a new baby during the “Finding the Raw Spots in the Demon Dialogues” conversation, (d) how to navigate arguments during pregnancy and with a new baby during the “Fixing Mistakes and Creating a Secure Base – Revisiting a Rocky Moment” conversation, and (e) ways to prioritize the couple relationship during pregnancy and with a new baby during the “Keeping Your Love Alive and Caring for Your Relationship” conversation. Furthermore, content modifications about perinatal depressive symptoms and experiences will feature enhanced content on: (a) perinatal depression symptoms and their bidirectional association with relationships during the “How Love Goes Wrong – The Demon Dialogues” conversation, (b) on the impact of perinatal depression on raw spots and emotional responses during the “Finding the Raw Spots in the Demon Dialogues” conversation, (c) perinatal sexuality during the “Tender Touch and Synchrony Sex” conversation, and (d) accessing and utilizing support from others during the “Keeping Your Love Alive and Caring for Your Relationship” conversation. (See Table 4 for a visual representation of the adaptations from the first two content areas.) Content from the third area, content tailored to antenatal *and* postpartum couples, was incorporated into the previous two content areas.

To reflect these adaptations, the supporting materials also required content adaptations. The PowerPoint slides and video clips provided in the facilitator's guide (Johnson, 2015) are intended to support the original HMT program, and consequently, they did not meet the needs of the adapted HMT program. I adapted the PowerPoint slides to contain information about parenting and the adjustment to parenthood and perinatal depressive symptoms and experiences during the antenatal and postpartum periods.

In addition to supplementing the content of the conversations and intervention materials, I also adapted the in-class and homework assignments to include content about parenting and the adjustment to parenthood and content about perinatal depression symptoms and experiences during the antenatal and postpartum periods. Most of these adaptations only required a simple addition of language to direct participants' conversation to incorporate perinatal topics. For example, a homework assignment in the original HMT program instructs participants to:

Act as if you are having an A.R.E. conversation about your sex life. Starting with the person who is less likely to initiate sex, look inside and share in a brief, simple way what your main anxiety is around being sexual and your sexual relationship with your partner. The other partner just tries to listen and to be comforting and reassuring here. (Johnson, 2015, p. 93)

The adapted homework assignment in the adapted HMT program encouraged participants to:

Act as if you are having an A.R.E. conversation about your sex life during pregnancy or following pregnancy. Starting with the person who is less likely to initiate sex, look inside and share in a brief, simple way what your main anxiety is around being sexual during pregnancy or following pregnancy and your sexual relationship with your partner

during these periods. The other partner just tries to listen and to be comforting and reassuring here.

Conclusion

Perinatal depression is the most common perinatal psychiatric disorder and significantly impacts couples' relationship and sexual satisfaction and functioning (Duan et al., 2019; Goodman, 2019). Despite the growing awareness of the need for couple-focused interventions for PD, reviews of research on couple interventions for PD resoundingly assert that few studies have approached the prevention and treatment of PD from a dyadic lens (Cohen & Schiller, 2017; Pilkington et al., 2015a; Wang, 2018). While the HMT program, a couple-focused attachment-based intervention, has demonstrated success in reducing couples' symptoms of anxiety and depression and in increasing emotional dialogue between first-time parents (Kennedy et al., 2019; Wang, 2018), there is no prior research on the efficacy of the HMT program with couples at risk for or experiencing PD. As a result, the current one-arm pilot study aimed to test the efficacy of an adapted version of the HMT program in preventing and addressing perinatal depression and some of its relational correlates. Subsequently, I identified predictors of change (baseline participant characteristics) that supported or detracted from success in the adapted HMT program.

CHAPTER 3: METHODOLOGY

I proposed to answer: to what degree was the adapted HMT program efficacious in preventing and reducing PD, in altering attachment patterns, and in increasing couple relationship and sexual satisfaction and functioning? Furthermore, I identified predictors of change (baseline participant characteristics) that supported or detracted from success in the adapted HMT program. To evaluate the acceptability of this novel approach, I also aimed to answer: what were participants' experiences with the adapted HMT program? To address these questions, the research was performed in two steps. First, I adapted the HMT program to meet the specific needs of perinatal couples using the research previously outlined to guide adaptations. Second, I conducted a one-arm pilot study of the adapted HMT program to measure its initial efficacy in preventing and reducing PD, in altering attachment patterns, and in increasing couple relationship and sexual satisfaction and functioning. The adapted HMT program took place online in weekly synchronous Zoom meetings. In the second step, I also elicited feedback from participants about their experiences in the intervention to inform program evaluation.

Research Design

According to Rounsaville et al. (2001) and Onken et al.'s (2014) NIH stage models of behavioral therapies, the first step of this study qualified as Stage IA, or adaptation of an existing intervention, and the second step qualified as Stage IB, or feasibility and pilot testing. Studies in these stages are frequently pilot studies of a new, modified, adapted, or refined treatment, and as a result, they often include smaller samples (Onken et al., 2014; Rounsaville et al., 2001). Stage IB studies benefit from some flexibility in implementation, because they do not require a finalized therapist manual (Rounsaville et al., 2001). Rounsaville et al. (2001) suggest that implementation facilitators in this stage possess the "minimum appropriate level of training and

experience...and exclusion criteria for patients should be limited to those which are absolutely necessary” (p. 138). Minimum training and limited exclusion criteria enhance studies’ applicability to populations beyond their sample (Rounsaville et al., 2001). Rounsaville et al. (2001) highly encourage researchers to exclude participants who have previously experienced the intervention or are currently seeking therapeutic services outside the study (Rounsaville et al., 2001). As a Stage IA and Stage IB study, these characteristics were reflected in my study design and implementation.

Sample

Following screening, 12 couples (24 individuals) met inclusion and exclusion criteria, therefore qualifying them for participation in the study. Prior to the first session, one couple (2 individuals) dropped out of the program due to change in availability, and after the first session, two couples (4 individuals) dropped out without providing a reason. After attrition, the final sample consisted of nine couples (18 individuals). This sample size aligns with Ridenour et al.’s (2011) counsel that idiographic clinical trials are appropriate for preliminary testing of intervention mechanisms. (See Images 1, 2, and 3 for the participant consent form, IRB approval letter, and certificate of confidentiality, respective.)

Despite efforts to recruit a diverse sample, the majority of participants were white (77.8%), heterosexual (88.9%), and cisgender (100%), and resided in the United States and Canada. Participating couples were on average 29.67 years old, ranging from 25 to 39 years old. The majority of participants were married (83.3%), and the average relationship length was 7.2 years with a range of 3 to 17 years. Nearly all participants (88.9%) were employed full-time, and most participants (44.4%) had a combined household income of \$50,001-\$100,000, ranging from \$25,000 to more than \$200,000. In terms of education, most participants pursued higher

education, earning a bachelor's degree (44.4%) and/or master's degree (38.9%). Half the sample (50%) identified as non-religious, with the remaining participants identifying as Christian (38.9%) and Buddhist (11.1%). A little over a third of the sample (38.9%) was first-time parents, with others having one child (22.2%), two to four children (33.3%), and more than four children (5.6%). The majority of participants (55.6%) were pregnant at the beginning of the study, and the remaining participants (44.4%) were postpartum at the study's onset. For those who were pregnant at the beginning of the study, the average gestational period was 23.78 weeks, ranging from 13 to 33 weeks. For those who were postpartum at the beginning of the study, the average postpartum period was 32.13 weeks, ranging from 13 to 48 weeks. The majority of participants did not have a previous (55.6%) or current (83.3%) mental health diagnosis. Of those with a past diagnosis, participants were diagnosed with depression (11.1%), anxiety (11.1%), and multiple diagnoses (22.2%). Of those with a current diagnosis, participants indicated that they experienced anxiety (5.6%) and multiple diagnoses (11.1%). Half of participants (50%) received therapy in the past, and no participants were actively receiving therapy during the workshop.

Inclusion criteria included couples (heterosexual or queer): (a) in a committed, monogamous relationship, (b) in the perinatal period (pregnant or up to one year postpartum), (c) who could commit to a total of 12 hours of workshop sessions (plus four 20-minute assessments), (d) who spoke and understood English, and (e) with access to high-speed internet and a computer. Exclusion criteria consisted of: (a) severe PD, (b) ongoing relationship infidelity, (c) extensive and/or long-standing relationship distress better served by therapy, (d) indication of significant physical or emotional abuse in the relationship, (e) history of significant mental illness and/or untreated addictions that would impede participation, (f) previous participation in the HMT program, and (g) current participation in therapy services. These

inclusion and exclusion criteria are also represented in previous HMT studies (Johnson, 2015; Wang, 2018).

Inclusion and exclusion criteria were assessed individually during an online pre-intervention screening for couples who self-selected to participate in the workshop. To verify inclusion, couples were asked about their level of relationship commitment (commitment to continuing the relationship and improving the relationship), stage in the perinatal period, and English and technology proficiencies. Couples were also asked to comment on their ability to commit to the intervention requirements. To establish exclusion, couples were screened for PD using the EPDS (Cox et al., 1987), and couples where one or both partners scored higher than 19 and/or were experiencing suicidality were excluded and offered other resources (McCabe-Beane et al., 2016). Couples' ongoing relationship fidelity was assessed by directly inquiring whether one or both partners were currently involved in an intimate relationship with anyone outside of their partner. Couples' historical and current mental health diagnoses were gathered by asking couples to share their mental health history and any currently relevant mental health diagnoses, and couples where one or both partners had an active psychotic disorder, namely those on the schizophrenia spectrum, were excluded. Couples' substance use was measured using the Drug Abuse Screening Test (DAST-10; Skinner, 1982) (maximum cut-off score of 3; Bohn et al., 1991). To verify the absence of extensive and/or long-standing relationship distress that would be better served by therapy, couples were assessed using the 32-item Dyadic Adjustment Scale (DAS; minimum score of 97; Spanier, 1976). To assess abuse in the relationship, couples were evaluated using the Danger Assessment-5 (DA-5; Snider et al., 2009), a 5-item intimate partner violence risk assessment (maximum cut-off score of 3; Messing et al., 2017). Finally, couples identified whether they had previously participated in the HMT program or were actively

participating in therapy services. Participants' responses to these questions remained confidential from their partner to protect participants' confidentiality and safety. All couples who were excluded from participation were referred to other mental health and substance abuse services.

Recruitment

For recruitment, I used existing relationships with obstetricians, gynecologists, and nurses to inform them of the study and its benefits. I also used social media (Facebook, Instagram, etc.) to inform a broader audience about the study. A recruitment poster was distributed to medical professionals and on social media to attract interest in the study and provide contact information. (See Image 4 for the social media flyer used during recruitment.)

As was indicated in the recruitment poster, the first 12 participating couples received a copy of the *Hold Me Tight* book (Johnson, 2008) at no cost to them, and all participants were offered the program for free for participation in the study. Furthermore, all participating couples were sent financial incentives for completing assessments. For every survey completed prior to the end of the assessment period, participants received \$5. For example, if only one member of a couple completed the survey prior to the end of the assessment period, the couple received \$5 for that assessment period; however, if both partners completed the survey prior to the end of the assessment period, the couple received \$10 for that assessment period. Couples who completed all assessments received a \$10 bonus incentive, in addition to their previous incentives. The financial incentives were loaded onto Amazon eGift cards and emailed to couples following the assessment periods to promote timely completion of the surveys.

Participant Retention

Many computer or online couple interventions suffer from significant attrition and low attendance, with some programs exhibiting a 45% attrition rate prior to the first session (Busby et

al., 2015). Previous research has identified attractants and barriers that contribute to intervention completion. Attractants include a high valuation of marriage, a strong commitment to the relationship, convenience and flexibility of the intervention, high religiosity, and higher education (Busby et al., 2015). Barriers comprise of the perceived inconvenience of the intervention, concerns about the time demanded by transportation and the intervention, significant financial costs associated with participation, perceptions that couple interventions are religious and socially conservative, and being a member of a step-family (Busby et al., 2015). Methods to enhance participant retention embrace requiring relatively low effort on behalf of participants, using a very short screening assessment to provide couples tailored and immediate feedback about the personal and relational benefits of the program, and providing self-guided and flexible educational methods (Busby et al., 2015). To incorporate these suggestions, I limited the number of hours required by the intervention (12 hours total) and included a brief yet informative screening assessment.

Intervention

Kennedy et al. (2019) suggest using a multi-week format of the HMT program to maximize effectiveness. Furthermore, existing couple interventions for PD frequently use a multi-week format, and existing computer or online interventions for PD use a multi-week or multi-session format, as well. To replicate this extended format, I designed the intervention to be implemented in 8 sessions over 8 consecutive weeks, and each session lasted about 1.5 hours, totaling 12 hours when completed. Sessions comprised of an introduction to the topic, a DVD segment, discussion topics, in-class and homework exercises, and a key points summary (Johnson, 2015). (See Table 5 for a list of the HMT program sessions as outlined in *The Hold Me*

Tight Program: Conversations for Connection: Facilitator's Guide for Small Groups (Johnson, 2015)).

Two co-facilitators, myself and Caitlin Edwards, implemented the intervention. During the program, both co-facilitators were licensed clinicians in a Ph.D. program in couple and family therapy and had received training in EFT and HMT. To best meet the scheduling needs of participants, we conducted two groups, one containing 7 couples and one containing 2 couples.

Additionally, participants received weekly emails from study facilitators. The emails contained links to homework exercises, recurring links to the Zoom meetings, a statement encouraging participants to contact the facilitators in the event they found themselves or their partners experiencing heightened mental health symptoms and/or thoughts of harm, and links to self-report measures when relevant. The purpose of weekly emails was to encourage weekly engagement with study materials and communication with the facilitators.

Adaptation and Fidelity

When adapting an evidence-based practice, it is essential to weigh the importance of maintaining fidelity, or preserving the original model design and delivery, against adapting the model to meet the needs of a new community or context. Escoffery et al. (2019) suggest that fidelity can be largely sustained if adaptations do not threaten the integrity of the core components of a model. Fidelity preservation can be accomplished by consulting model developers or experts and developing a comprehensive understanding of the original model and its implementation (Escoffery et al., 2019). To gain an intellectual and experiential understanding of HMT, I observed and assisted two HMT workshops conducted by experienced HMT facilitators. Furthermore, the adaptations to the HMT program largely consisted of content, not process, adaptations, therefore maintaining integrity of the core components of the model.

Online Intervention Materials

To house all study links and other participant materials, I created a study website (www.p3workshop.com). The website included tabs dedicated to: (a) project introduction, (b) consent documentation and the screening assessment, (c) the adapted HMT program sessions with in-class and homework exercises, (d) additional resources, and (e) contact information for study coordinators. The website was an all-inclusive resource for study participants.

Measures

Screening measures, which were administered prior to intake using the Qualtrics platform (<https://www.qualtrics.com>), ensured that participants met inclusion and exclusion requirements. Subsequently, I evaluated participants' responses to a variety of measures administered using the Qualtrics platform at intake, mid-intervention (prior to the third and sixth sessions), and at the end of the intervention period (within one week post-intervention) (Kennedy et al., 2019), and in total, there were four assessment periods. Assessment measures captured participants' demographic information, symptoms of PD and depression, attachment experiences, relationship satisfaction and functioning, sexual satisfaction and functioning, and program evaluation. (See Image 5 for all survey measures employed using the Qualtrics survey software.)

Screening Measures

Screening occurred online using a survey format. Unlike subsequent assessment measures, potential participants shared their contact information on the screening survey in the event they qualified for the study or needed to be referred to a more rigorous level of care. Participants' answers on the screening measures were not associated with their answers on the outcome measures to maintain confidentiality and control for bias.

Edinburgh Postnatal Depression Scale (EPDS). As demonstrated by its use in the reviewed couple interventions for PD and computer or online interventions for PD, the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) is a widely used measure of depressive symptoms in mothers during the perinatal period. The EPDS consists of 10 self-report items with 8 items assessing depressive symptoms and 2 items evaluating anxiety symptoms (Matthey et al., 2001). Scores range from 0 to 30, with higher scores indicating a greater likelihood of depression (Matthey et al., 2001). For women, a cut-off score of 10 or higher indicates possible depression (Cox et al., 1987), and for men, a two-point lower cut-off of 5/6 suggests possible depression (Matthey et al., 2001). The maximum cut-off score for moderate PD is 19, with scores higher than 19 indicating severe PD (McCabe-Beane et al., 2016). Regarding validity, previous research on the EPDS has demonstrated both its sensitivity and specificity in the 80%–100% range (Matthey et al., 2001). Furthermore, the correlation between men’s self-report responses on the EPDS and the Centre for Epidemiological Studies–Depression scale (CES–D; Radloff, 1977), a depression measure previously validated for men, was $r = 0.62$, signaling that the EPDS is measuring the mood construct similar to the CES–D (Matthey et al., 2001). Matthey et al. (2001) also found a high level of internal consistency for the EPDS for men (Cronbach’s $\alpha = 0.81$), which is similar to that obtained by Cox et al. (1987) for women (Cronbach’s $\alpha = 0.87$).

Commitment. Couples were asked whether they are committed to: (a) remaining in and (b) improving their relationship. Couples where one or both partners indicated a lack of commitment to continuing the relationship and/or improving the relationship were excluded from study participation.

Mental Health History. To assess historical and current mental health diagnoses, potential participants were asked to list any past and/or present mental health diagnoses.

Drug Abuse Screening Test (DAST-10). The Drug Abuse Screening Test (DAST-10; Skinner, 1982; Bohn et al., 1991) is a 10-item face-valid measure of problematic substance use. Scores range from 0 to 10, with higher scores indicating greater drug abuse or dependence (Yudko et al., 2007). Generally, the cut-off score of 3 indicates drug abuse or a dependence problem, and as a result, the maximum cut-off score of 3 will be used for the purposes of this study (Yudko et al., 2007). The DAST-10 has demonstrated test-retest reliability ($r = .71$) and discriminative (sensitivity between 41%-99%), construct (correlated with measures assessing psychiatric disorders), criterion (positively correlated with other substance abuse measures), and concurrent validity ($r = .97$ correlation between DAST-20 and DAST-10) (Yudko et al., 2007).

Dyadic Adjustment Scale (DAS). The Dyadic Adjustment Scale (DAS; Spanier, 1976) measures relationship satisfaction using a 32-item self-report questionnaire (Kennedy et al., 2019). Scores on the measure range from 0 to 151, and higher scores on the DAS signify greater relationship satisfaction (Kennedy et al., 2019). Concerning validity, Spanier (1976) found a statistically significant difference between the mean scores for married ($M = 114$) and divorcing ($M = 70$) couples (cutoff score of 97), indicative of discriminant validity (Kennedy et al., 2019). The measure also possesses a high level of internal consistency reliability (Cronbach's $\alpha = .96$), and test-retest reliability over two weeks was $r = .87$ (Kennedy et al., 2019; Spanier, 1976).

Danger Assessment-5 (DA-5). The Danger Assessment-5 (DA-5; Snider et al., 2009) is a 5-item measure of intimate partner violence risk. Scores range from 0 to 5, with higher scores signaling greater relationship distress (Messing et al., 2017). The DA-5 suggests a cut-off score of 3, and as a result, the maximum cut-off score of 3 will be used for the purposes of this study

(Messing et al., 2017). The DA-5 has demonstrated reliability (tested with different samples) and predictive validity (AUC = .68; Messing et al., 2017).

Participation in the HMT Program and Therapy. To assess previous participation in the HMT program, potential participants were asked whether they had previously participated in the HMT program. Additionally, potential participants were asked if they were actively participating in therapy services. A “yes” response to either question excluded potential participants from receiving the intervention.

Assessment Measures

Demographic Information. The demographic information collected included age, sex, gender identity, sexual orientation, race, ethnicity, income level, education level, marital status, length of relationship, number of children, previous pregnancy loss, gestational or postpartum weeks, due date, whether their infant had been born, history of mental illness, current mental health diagnoses, psychiatric medication, prior or ongoing use of mental health or relationship services, whether they received a positive COVID-19 diagnosis during pregnancy or postpartum, location (city of completion), referral source (social media post, flyer, friend or family member, referral from a medical professional, etc.) for the study, and if they received and/or read the *Hold Me Tight* book (Johnson, 2008). To maintain confidentiality and control for bias, participants did not indicate their name on this or other surveys, and instead, they were provided an identification number assigned to them to allow grouping of assessments. This demographic information was only collected during the first and final assessment periods as it was unlikely to change between assessment periods.

Perinatal Depression. *Edinburgh Postnatal Depression Scale (EPDS)*. In addition to its use to screen for PD prior to study participation (a maximum score of 19), the EPDS (Cox et al., 1987) was also used as an outcome measure of perinatal depression.

Attachment. *Experiences in Close Relationships Scale – Short Form (ECR-S)*. The Experiences in Close Relationships Scale – Short Form (ECR-S; Wei et al., 2007) is a self-report questionnaire with 12 items, and the ECR-S measures the anxiety and avoidance dimensions of adult attachment (Kennedy et al., 2019). Higher scores on the measure indicate higher levels of attachment anxiety or avoidance, respectively (Kennedy et al., 2019). For the purposes of this study, I will adapt the instructions to refer specifically to participants' current relationship, which other researchers have also done in the past (Kennedy et al., 2019). Estimates of internal consistency reliability for the avoidance and anxiety scales are 0.84 and 0.78, respectively, and the measure also exhibits high test-retest reliability after one month (Kennedy et al., 2019).

***Brief Accessibility, Responsiveness, and Engagement (BARE) Scale*.** The Brief Accessibility, Responsiveness, and Engagement Scale (BARE; Sandberg et al., 2012) is a 12-item measure of attachment behaviors in couple relationships. Scores on the BARE range from 12 to 60 with higher scores suggesting higher attachment quality (Morgis et al., 2019). To calculate responses on the measure, all scores are summed and then divided into the low (cutoff of 37), medium (cutoff of 45), or high (cutoff of 52) attachment quality benchmarks (Morgis et al., 2019). According to Sandberg et al. (2012), the BARE exhibits appropriate reliability (all scales except the Accessibility Self subscale exceeded the 1.25 cutoff for separation in Rasch modeling). Furthermore, the BARE demonstrates construct (the chi-square analyzes for the models were non-significant) and concurrent (the Wilk's lambdas for the discriminant analyses

were significant at the $p < .001$ level) validity (Sandberg et al., 2012). Nonetheless, it remains brief to facilitate use by clinicians and researchers.

Relationship Satisfaction and Functioning. *Dyadic Adjustment Scale (DAS)*. In addition to its use to screen for relationship distress prior to study participation (minimum cut-off score of 97), the DAS (Spanier, 1976) was also used as an outcome measure of relationship satisfaction and functioning.

Sexual Satisfaction and Functioning. *Sexual Satisfaction Scale – Short Form (NSSS-S)*. The Sexual Satisfaction Scale – Short Form (NSSS-S; Stulhofer et al., 2010) is a 12-item composite measure of sexual satisfaction. The measure assesses multiple domains of sexual behavior, including sexual sensations, sexual awareness and focus, sexual exchange, emotional closeness, and sexual activity (Stulhofer et al., 2010). The measure is scored additively, and higher scores represent greater sexual satisfaction (Mark et al., 2014). The NSSS-S has demonstrated scale reliability ($k = .90$) and construct validity in multiple samples (Stulhofer et al., 2010). In a review of the psychometric properties of the most widely used measures of sexual satisfaction, Mark et al. (2014) determined that the NSSS-S received the strongest psychometric support for a bidimensional measure of sexual satisfaction.

Program Evaluation. *Hold Me Tight Program Evaluation Form*. The Hold Me Tight Program Evaluation form (<https://iceeft.com/wp-content/uploads/2017/11/Program-Evaluation-Form.pdf>) is a measure developed by the International Centre for Excellence in Emotionally Focused Therapy (ICEEFT) to ascertain participants' assessment of the HMT program and its implementation. The measure contains (a) a Likert scale assessing participants' evaluation of the facilitator, assistant, exercises, video/DVD, homework, handouts, and overall rating and (b) open-ended questions about the most and least useful components of the program, the outcomes

participants achieved or failed to achieve, participants' willingness to recommend the program, and other comments or suggestions. Participants' perspectives and experiences with the program were relevant given that the acceptability and feasibility of this adapted version of the HMT program have yet to be analyzed. This information was only collected during the assessment period following the intervention's conclusion as it is intended to capture participants' evaluation of the HMT program after its completion.

Monitoring Participant Safety

Given the discussion of potentially triggering topics and the vulnerability of couples in the perinatal period, I examined participants' responses to the EPDS after each assessment period. When a participant's total EPDS score exceeded the maximum cutoff (a score greater than 19 or reports experiencing suicidality), I provided resources and referrals to mental health professionals. To ensure participants' safety, it is vital to continuously monitor participants' mental health and safety and act appropriately if either are threatened.

Data Analysis

The data were downloaded from the Qualtrics platform and exported to Microsoft Excel (Microsoft Corporation, 2018) and SPSS (IBM Corporation, 2017) for cleaning and analysis. Employing SPSS, I used a series of dyadic longitudinal multilevel models (MLM), which were repeated measures regressions that accounted for the interdependence of couples' scores and the variation between couples, to test for changes in PD, attachment patterns, relationship satisfaction, and sexual satisfaction in the participating couples at four times during the program (Planalp et al., 2017). Additionally, I employed MLM, because these models can adequately estimate longitudinal data within small samples, which is appropriate for our data given that we assessed 9 participants at four time points (Ledermann & Kenny, 2017).

More specifically, to test the first research question, I nested each partner's PD, attachment patterns, relationship satisfaction, and sexual satisfaction for the four assessments during the program (level 1) within couples (level 2). To execute these steps, I tested separate unconditional models of men's and women's PD, attachment patterns, relationship satisfaction, and sexual satisfaction at four time points during the program. I ran each model separately due to the small sample in this study.

To test the second research question, I added men's and women's scores of one predictor (grand mean centered) to my previous model to predict both partners' rates of change (i.e. slopes). For example, men's and women's avoidant attachment patterns predicting both partners' rates of change in depressive symptoms. I followed the same procedure for each predictor (relationship satisfaction, avoidant attachment patterns, and anxious attachment patterns) and outcome (PD) for a total of three models. Due to small sample sizes and reasons of parsimony, I separately tested each predictor with each outcome. These tests did not allow for comparisons to other predictors and only test whether men's and women's scores for one predictor predicted both partners' rates of change for one outcome. To determine model fit, I used Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), and lower AIC and BIC values signify a more parsimonious model.

It is important to consider how to manage missing data in longitudinal studies. To determine if the data was missing not at random (MNAR), I conducted pattern-mixture models for each final model to evaluate if missing data at time 4 (*observed* = 0, *missing* = 1) impacted my statistical conclusions (Ratitch et al., 2013). When the models suggested that the results were not biased due to missing data and provided adequate support that missing data occurred at random, I used the restricted maximum-likelihood (REML) method and the Kenward-Roger

correction to estimate the missing data. These techniques optimally estimate missing data with small samples and provide less biased estimates for small samples in comparison to other maximum-likelihood estimators (McNeish, 2017; McNeish & Stapleton, 2016).

While the quantitative data is advantageous in helping identify whether the program was initially efficacious, the qualitative program evaluation data provides a richer description of participants' experience of and satisfaction with the program, allowing researchers and clinicians an additional method for evaluating different aspects of the program (Lămătic, 2011). To facilitate the program evaluation, I analyzed the qualitative data gathered from the Hold Me Tight Program Evaluation form (i.e., open-ended questions about the most useful components of the program, the outcomes participants achieved, participants' willingness to recommend the program, and other comments) to understand participants' experiences of the program. More specifically, participants responded to open-ended questions about their experiences or evaluation of the program in an online survey. To familiarize myself with the data, I first read through all the qualitative survey responses to gain a better understanding of participants' overall experiences with the program (Needleman & Needleman, 1996). Subsequently, I used content analytic procedures to further analyze the data (Miles & Huberman, 1994).

To conduct content analysis, participants' responses to the survey questions (phrases and sentences) were selected as the unit of analysis, and after organizing responses based on similar content, each response was allocated a coding category to represent its meaning (e.g., process, content, or outcomes). Some of the responses featured multiple meanings and were therefore given multiple coding categories. An a priori coding scheme of categories was not employed in the analysis. However, the questions featured on the survey did explicitly ask participants about what they found "most useful about this program" and whether they achieved "the outcomes

[they] were looking for.” As a result, the process of category identification was inductive, meaning that categories emerged from the data and were not developed to fit predetermined categories. Furthermore, during the initial coding process, all coding categories were provisional to accommodate the emergence of novel coding categories.

Finally, I used check-coding to support the content analysis (Miles & Huberman, 1994). While I was primarily responsible for analyzing the data, I communicated with Dr. Andrea Wittenborn about the analysis, category emergence, and difficulties that arose when coding the data. Discussions about the categories centered around the relevance and appropriateness of the codes that emerged.

CHAPTER 4: STUDY 1

One-arm Pilot Trial of an Online, Adapted Version of the Hold Me Tight Program for Perinatal Depression

Abstract

Perinatal depression (PD) is prevalent and significantly impacts many facets of a couple's life. Despite the need for more couple-focused interventions for perinatal depression, few interventions address the prevention and treatment of PD from a dyadic lens. Given the growing demand for and use of computer or online interventions, it is vital to examine how computer or online interventions can be employed to deliver couple interventions for PD to a larger audience. In this article, we present findings from a one-arm pilot study testing the initial efficacy of a computer or online couple intervention for PD. The intervention tested was an adapted version of the Hold Me Tight (HMT; Johnson, 2015) program, which was adapted to meet the unique needs of perinatal couples at risk for or experiencing PD. Our findings suggest that participation in the program was associated with a significant decrease in women's PD and avoidant attachment patterns and improvement in women's relationship satisfaction and sexual satisfaction over the course of the program. However, women's participation in the program was not associated with significant changes in their anxious attachment patterns and attachment behaviors, and men's participation in the program was not associated with significant changes in any of the outcomes. In the discussion, we further discuss the findings and their implications.

Introduction

Perinatal depression (PD), which affects 6.5% to 20% of perinatal women, is the most common perinatal psychiatric disorder (Duan et al., 2019; Goodman, 2019). Perinatal depression is defined as the occurrence of at least one major depressive episode during pregnancy and/or during the first year postpartum, and research suggests that PD is distinct from major depression

(Cohen & Schiller, 2017; Duan et al., 2019). The strongest predictor of PD is a personal history of anxiety and/or depression prior to or during pregnancy, followed by inadequate social support, high stress, unintended pregnancy, abuse history, history of interpersonal violence, significant conflict with partners, perceived lack of support from partners, and poor maternal health (Duan et al., 2019; Goodman, 2019; Pilkington et al., 2015a). The impacts of PD are not limited to the mother as many components of the family system are also affected, namely the infant, the father or partner, the romantic relationship between the couple, the sexual relationship between the couple, and the financial stability of the family.

While effective in-person treatments for PD are available, women experiencing PD are often hesitant to use these programs due to the stigma associated with PD, reluctance to seek mental health treatment, lack of time to seek help, associated costs, fear of losing children after receiving a mental health diagnosis, and childcare issues (Ashford et al., 2016; O'Mahen et al., 2013). Furthermore, in place of using more formalized sources of support, women tend to embrace more informal sources of support, such as friends, family, print materials, and internet resources, to seek help for their symptoms (Ashford et al., 2016). While informal sources of support can be helpful, many women require a higher level of care to reduce symptoms associated with PD, making it essential that women with PD have access to effective mental health services that are timely, convenient, flexible, affordable, and potentially anonymous (Ashford et al., 2016).

Additionally, while individual psychotherapy and use of antidepressants have historically been the most commonly prescribed treatments for PD, perinatal women express a preference for receiving support from their partners (Pilkington et al., 2015a). At the same time, dyadic, or couple-focused, interventions for PD are gaining more attention and have demonstrated

effectiveness in reducing negative health outcomes and increasing positive health outcomes for perinatal couples (Cohen & Schiller, 2017). For example, couple interventions for PD have been shown to increase men's relationship satisfaction and mindfulness, reduce men's negative affect (Gambrel & Piercy, 2015), enhance women's sense of competence, and decrease women's PD symptoms (Matthey et al., 2004).

Computer or Online Couple Interventions for Perinatal Depression

With the expanding accessibility of computers and internet access, the growth of telemedicine, the flexibility of remote interventions, and the medical necessity of telemedicine during the COVID-19 pandemic, computer or online interventions are emerging treatment modalities for PD. Moreover, computer and online interventions for PD help to overcome some of the challenges associated with face-to-face delivery systems. First, computer and online interventions offer couples the opportunity to access treatment when and where it is most convenient for them, therefore addressing lack of time to seek help and childcare issues as barriers to treatment (Lee et al., 2016; O'Mahen et al., 2013). Additionally, computer and online interventions can decrease confidentiality concerns as couples can participate in treatment in their homes or other confidential spaces (O'Mahen et al., 2013). Computer and online interventions also tend to be less demanding on mental health resources, therefore enhancing accessibility and decreasing costs associated with treatment (Lee et al., 2016; O'Mahen et al., 2013). Finally, computer and online interventions can support anonymous engagement, which may assist couples in overcoming fears associated with social stigma (O'Mahen et al., 2013). For example, perinatal women are more likely to share sensitive mood information over the internet, as compared to in-person assessments, which may result in more accurate evaluations and corresponding treatment approaches (O'Mahen et al., 2013).

To evaluate the evidence base to determine the level of empirical evidence, two systematic reviews on computer or online interventions for perinatal mental health concerns were recently conducted (Ashford et al., 2016; Lee et al., 2016). In their reviews, Ashford et al. (2016) found 11 eligible studies, and Lee et al. (2016) identified four studies that met inclusion criteria. Following their examinations of the methodological quality of each study, the authors of both reviews indicate that computer or online interventions designed to treat PD have produced encouraging results. According to Ashford et al. (2016), “computer- and web-based mental health interventions may be [a] promising approach to the treatment and reduction of maternal mental health issues during the perinatal period, particularly depression” (p. 143). While the reviewed interventions aim to prevent or treat a variety of perinatal mental health concerns, the interventions seem to be most effective at reducing depressive symptoms (Ashford et al., 2016). In addition to targeting mental health concerns other than depression, Ashford et al. (2016) suggest that the interventions that were less effective at reducing perinatal mental health concerns were intended to prevent symptoms, rather than ease existing symptoms, and they postulate that preventive computer or online interventions may not be as effective as curative interventions in diminishing perinatal mental health concerns. Furthermore, Lee et al. (2016) identify that few interventions include pregnant participants, containing primarily postpartum participants instead, and suggest that future research should examine the impact of computer or online interventions for perinatal mental health administered during pregnancy.

Despite perinatal couples’ stated preference for partner support and the well-documented effects of PD on couples’ relationship and sexual satisfaction and functioning, the majority of computer or online interventions for PD only include perinatal women, failing to include their partners (Ashford et al., 2016; Pilkington et al., 2015a). Even when perinatal women’s partners

are included, researchers often measure and analyze partners' data individually, not dyadically, and this analytic strategy results in an incomplete picture of client outcomes. In their reviews, Ashford et al. (2016) and Lee et al. (2016) both identify that few computer or online interventions for PD target couples as the focus of intervention, and as a result, they encourage future researchers to examine computer or online interventions for PD that specifically treat couples, analyzing both their individual and dyadic outcomes.

While some existing computer or online interventions for PD include perinatal women's partners, most interventions are partner-inclusive, not couple-specific (Alves et al., 2018). Practically, this means that they only contain a limited number of partner sessions, most of which are intended to support the "identified patient" in treatment. Divergently, the Home-but Not Alone intervention offers a computer or online couple intervention for PD (Shorey et al., 2016, 2017). Home-but Not Alone is implemented using a mobile app, which is shared amongst the couple (Shorey et al., 2016; 2017). While Home-but Not Alone is effective in improving parental self-efficacy, social support, and parenting satisfaction (Shorey et al., 2016; 2017), it largely focuses on parental psychoeducation, and as a result, this intervention does not appear to include sufficient content about couples' relationships or sexual satisfaction or functioning.

The Current Study

Perinatal depression is the most common perinatal psychiatric disorder, and it significantly impacts couples' relationships and sexual satisfaction and functioning (Duan et al., 2019; Goodman, 2019). Despite the growing awareness of the need for couple-focused interventions for PD, reviews of research on interventions for PD resoundingly assert that few studies have approached the prevention and treatment of PD from a dyadic lens (Cohen & Schiller, 2017; Pilkington et al., 2015a; Wang, 2018). Given the even greater dearth of computer

or online couple interventions for PD, it is important to examine how this unique implementation method, computer or online, can be used to provide couple interventions for PD to a broader audience, particularly given the unique needs of this population and restrictions associated with COVID-19.

The goal of this article is to present findings from a one-arm pilot study testing the initial efficacy of a computer or online couple intervention for PD. The intervention being tested is an adapted version of the Hold Me Tight (HMT; Johnson, 2015) program. The HMT program, an attachment-based relationship education program, was modeled from Emotionally Focused Therapy (EFT) and a relationship enhancement book by the same name (Johnson, 2008; Kennedy et al., 2019). While the process of the intervention remained intact, adaptations to the HMT program largely consisted of integrating content tailored to antenatal *and* postpartum couples about parenting and the adjustment to parenthood and perinatal depressive symptoms and experiences into the existing HMT conversations that were most directly relevant to support a natural assimilation. Given the large body of research demonstrating the effectiveness of attachment-based couple interventions in addressing relationship satisfaction and depression (Adler et al., 2018; Denton et al., 2012; Wiebe & Johnson, 2016; Woods et al., 2015) and the strong relationship between the presence and severity of PD and attachment patterns (Meuti et al., 2015), employing an attachment-based couple intervention to treat PD may also prove to be efficacious in improving perinatal couples' outcomes. Specifically, this study will examine the following research questions:

RQ1: Did participants improve in perinatal depression, attachment, relationship satisfaction, and sexual satisfaction after receiving the intervention?

RQ2: What were participants' experiences of the intervention?

Methods

Sample

Following screening, 12 couples (24 individuals) met inclusion and exclusion criteria, therefore qualifying them for participation in the study. Prior to the first session, one couple (2 individuals) dropped out of the program due to change in availability, and after the first session, two couples (4 individuals) dropped out without providing a reason. After attrition, the final sample consisted of nine couples (18 individuals).

Despite efforts to recruit a diverse sample, the majority of participants were white (77.8%), heterosexual (88.9%), and cisgender (100%), and resided in the United States and Canada. Participating couples were on average 29.67 years old, ranging from 25 to 39 years old. The majority of participants were married (83.3%), and the average relationship length was 7.2 years with a range of 3 to 17 years. Nearly all participants (88.9%) were employed full-time, and most participants (44.4%) had a combined household income in the \$50,001-\$100,000 bracket, ranging from \$25,000 to more than \$200,000. In terms of education, most participants pursued higher education, earning a bachelor's degree (44.4%) and/or master's degree (38.9%). Half the sample (50%) identified as non-religious, with the remaining participants identifying as Christian (38.9%) and Buddhist (11.1%). A little over a third of the sample (38.9%) was first-time parents, with others having one child (22.2%), two to four children (33.3%), and more than four children (5.6%). The majority of participants (55.6%) were pregnant at the beginning of the study, and the remaining participants (44.4%) were postpartum at the study's onset. For those who were pregnant at the beginning of the study, the average gestational period was 23.78 weeks, ranging from 13 to 33 weeks. For those who were postpartum at the beginning of the study, the average postpartum period was 32.13 weeks, ranging from 13 to 48 weeks. The majority of participants did not have a previous (55.6%) or current (83.3%) mental health diagnosis. Of those with a past

diagnosis, participants were diagnosed with depression (11.1%), anxiety (11.1%), and multiple diagnoses (22.2%). Of those with a current diagnosis, participants indicated that they experienced anxiety (5.6%) and multiple diagnoses (11.1%). Half of participants (50%) received therapy in the past, and no participants were actively receiving therapy during the workshop.

Inclusion and exclusion criteria were assessed individually during an online pre-intervention screening for couples who self-selected to participate in a workshop preventing or reducing PD in couples. Inclusion criteria included couples (heterosexual or queer): (a) in a committed, monogamous relationship, (b) in the perinatal period (pregnant or up to one year postpartum), (c) who could commit to a total of 12 hours of workshop sessions (plus four 20-minute assessments), (d) who spoke and understood English, and (e) with access to high-speed internet and a computer. The inclusion criteria were assessed using “yes” or “no” responses to relevant questions. Exclusion criteria consisted of: (a) severe PD (maximum cutoff score of 19 on the Edinburgh Postnatal Depression Scale [EPDS]; Cox et al., 1987), (b) ongoing relationship infidelity (assessed using “yes” or “no” responses), (c) extensive and/or long-standing relationship distress that would be better served by therapy (minimum cutoff score of 70 on the Dyadic Adjustment Scale [DAS]; Spanier, 1976), (d) indication of significant physical or emotional abuse in the relationship (maximum cutoff score of 3 on the Danger Assessment-5 [DA-5]; Snider et al., 2009), (e) history of significant mental illness (open-ended questions regarding previous and current mental health diagnoses), (f) untreated addictions that would impede participation (maximum cutoff score of 3 on the Drug Abuse Screening Test [DAST-10]; Bohn et al., 1991; Skinner, 1982), (g) previous participation in the HMT program (assessed using “yes” or “no” responses), and (h) current participation in therapy services (assessed using “yes”

or “no” responses). These inclusion and exclusion criteria are also represented in previous studies on the HMT program (Johnson, 2015; Wang, 2018).

Recruitment

We used existing relationships with medical providers and social media to recruit couples to participate in the study. Obstetricians, gynecologists, nurses, and behavioral health providers in the United States shared information about the study with their patients. We also used social media, namely Facebook and Instagram, to inform a broader audience about the study.

The 12 qualifying couples were compensated with a copy of the *Hold Me Tight* book (Johnson, 2008) at no cost to them, and all participants were offered the program for free for participation in the study. Furthermore, all participating couples were offered financial incentives for completing assessments. The financial incentives were loaded onto Amazon eGift cards and emailed to couples following the assessment periods to promote timely completion of surveys.

Participant Retention

Many computer or online interventions suffer from significant attrition and low attendance, with some programs exhibiting a 45% attrition rate prior to the first session (Busby et al., 2015). Methods to enhance participant retention include limiting the time required to participate, using a very short screening assessment to provide couples tailored and immediate feedback about the personal and relational benefits of the program, and providing self-guided and flexible educational methods (Busby et al., 2015). To incorporate these suggestions, we limited the number of hours required by the intervention (12 hours total), included a brief yet informative screening assessment, and communicated with participants at least once a week via email to promote retention and engagement. As previously discussed, despite our efforts, three couples (25%) dropped out of the program prior to or following the first session.

Intervention

Kennedy et al. (2019) suggest using a multi-week format of the HMT program to maximize effectiveness. Furthermore, existing interventions for PD frequently use a multi-week format, and many existing computer or online interventions for PD use a multi-week or multi-session format. To replicate this extended format in our one-arm pilot study testing the initial efficacy of the adapted HMT program, we designed the intervention to be implemented in 8 sessions over 8 consecutive weeks, with each session lasting about 1.5 hours and totaling 12 hours when completed. Each session was facilitated synchronously and was comprised of a key points summary, an introduction to the session topic, a DVD or scripted segment, discussion topics, and in-class and homework exercises (Johnson, 2015). As outlined in *The Hold Me Tight Program: Conversations for Connection: Facilitator's Guide for Small Groups* (Johnson, 2015), session topics included “Understanding Love and Attachment,” “How Love Goes Wrong – The Demon Dialogues,” “Finding the Raw Spots in the Demon Dialogues,” “Fixing Mistakes and Creating a Secure Base – Revisiting a Rocky Moment,” “Becoming Open and Responsive – The Hold Me Tight Conversation,” “Forgiving Injuries and Trusting Again,” “Tender Touch and Synchrony Sex,” and “Keeping Your Love Alive and Caring for Your Relationship.” (Figure 1 presents a conceptual model describing session format, assessment timing, and attrition of participants.)

Two co-facilitators implemented the intervention. During the program, both co-facilitators were licensed clinicians in a Ph.D. program in couple and family therapy and had received training in EFT and HMT. To best meet the scheduling needs of participants, the co-facilitators conducted two groups, one containing 7 couples and one containing 2 couples.

Additionally, participants received weekly emails from study facilitators. The emails contained links to homework exercises, recurring links to the Zoom meetings, a statement encouraging participants to contact the facilitators in the event they found themselves or their partners experiencing heightened mental health symptoms and/or thoughts of harm, and links to self-report measures when relevant. The purpose of weekly emails was to encourage weekly engagement with study materials and communication with the facilitators.

All participant materials were located on a website (www.p3workshop.com). The website included tabs dedicated to: (a) project introduction, (b) consent documentation and the screening assessment, (c) the adapted HMT program sessions with in-class and homework exercises, (d) additional resources, and (e) contact information for study coordinators. Participants were encouraged to refer to the website weekly and to download the exercises for present and future use.

Content Adaptations

To ensure that the HMT intervention met the needs of pregnant and postpartum couples, we made content adaptations to the intervention prior to implementation. When adapting an evidence-based practice, it is essential to weigh the importance of maintaining fidelity, or preserving the original model design and delivery, against adapting the model to meet the needs of a new community or population. Escoffery et al. (2019) suggest that fidelity can be largely sustained if adaptations do not threaten the integrity of the core components of a model. Fidelity preservation can be accomplished by consulting model developers or experts and developing a comprehensive understanding of the original model and its implementation (Escoffery et al., 2019). Furthermore, the adaptations to the HMT program largely consisted of content, not

process, adaptations, therefore maintaining integrity of the core components of the HMT model in which process is more heavily emphasized.

Empirical literature on perinatal couples' documented challenges, couple interventions for PD, and computer and online interventions for perinatal mental health concerns informed the adaptation identification and application process. Regarding content, the literature yielded three primary content areas for inclusion: (a) content about parenting and the adjustment to parenthood, (b) content about perinatal depressive symptoms and experiences, and (c) content tailored to antenatal *and* postpartum couples. We used our reviews of previously published couple interventions for PD and relevance to the existing HMT session topics to inform the specific content presented from the three primary content areas. Content modifications about parenting and the adjustment to parenthood featured enhanced content on: (a) the similarities and distinctions between parent-child attachment and adult attachment processes during the introductory "Understanding Love and Attachment" conversation, (b) how relationships change during pregnancy and following the birth of a child during the "How Love Goes Wrong – The Demon Dialogues," (c) normalizing difficulties adjusting to the addition of a new baby during the "Finding the Raw Spots in the Demon Dialogues" conversation, (d) how to navigate arguments during pregnancy and with a new baby during the "Fixing Mistakes and Creating a Secure Base – Revisiting a Rocky Moment" conversation, and (e) ways to prioritize the couple relationship during pregnancy and with a new baby during the "Keeping Your Love Alive and Caring for Your Relationship" conversation. Furthermore, content modifications about perinatal depressive symptoms and experiences featured enhanced content on: (a) perinatal depressive symptoms and their bidirectional association with relationships during the "How Love Goes Wrong – The Demon Dialogues" conversation, (b) the impact of perinatal depression on raw

spots and emotional responses during the “Finding the Raw Spots in the Demon Dialogues” conversation, (c) perinatal sexuality during the “Tender Touch and Synchrony Sex” conversation, and (d) accessing and utilizing support from others during the “Keeping Your Love Alive and Caring for Your Relationship” conversation. (See Table 4 for a visual representation of the adaptations from the first two content areas.) Content from the third area, content tailored to antenatal *and* postpartum couples, was incorporated into the previous two content areas, content about parenting and the adjustment to parenthood and content about perinatal depressive symptoms and experiences.

To reflect these adaptations, the supporting materials also required content adaptations. The PowerPoint slides and exercises provided in the facilitator’s guide (Johnson, 2015) are intended to support the original HMT program and consequently did not meet all the needs of the adapted HMT program. Based on the previous list of session-specific content modifications, we supplemented the PowerPoint slides for each session with information about parenting and the adjustment to parenthood and perinatal depressive symptoms and experiences during the antenatal and postpartum periods. In addition to supplementing the content of the intervention materials, we also adapted the in-class and homework exercises to include content about parenting and the adjustment to parenthood and content about perinatal depression symptoms and experiences during the antenatal and postpartum periods. Most of these adaptations only required a simple addition of language to direct participants’ conversations to incorporate perinatal topics.

Measures

We evaluated participants using the Qualtrics platform at four assessment periods (i.e., pre-intervention, prior to the third session, prior to the sixth session, and within a week post-

intervention). Assessment measures captured participants' demographic information, symptoms of PD, attachment experiences, relationship satisfaction and functioning, sexual satisfaction and functioning, and program evaluation.

Demographic Information

The demographic information collected included age, gender identity, pronouns, sexual identity, race, religious beliefs, income level, employment status, education level, relationship status, length of relationship, number of children, occurrence of pregnancy loss, gestational or postpartum weeks, due date, whether their infant had been born, history of mental illness, current mental health diagnoses, psychiatric medication, prior or ongoing use of mental health or relationship services, whether they received a positive COVID-19 diagnosis during pregnancy or postpartum, location (city of completion), referral source (social media post, flyer, friend or family member, referral from a medical professional, etc.) for the study, and if they received and/or read the *Hold Me Tight* book (Johnson, 2008). To maintain confidentiality and control for bias, participants did not indicate their names on assessment surveys, and instead, they were provided an identification number assigned to each couple to allow grouping of assessments. Demographic information was only collected during the first and final assessment periods as it was unlikely to change between assessment periods.

Perinatal Depression

Edinburgh Postnatal Depression Scale (EPDS). The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) is a widely used measure of depressive symptoms in mothers during the perinatal period. The EPDS consists of 10 self-report items with 8 items assessing depressive symptoms and 2 items evaluating anxiety symptoms (Matthey et al., 2001). Possible scores range from 0 to 30, with higher scores indicating a greater likelihood of depression

(Matthey et al., 2001). For women, a cut-off score of 10 or higher indicates possible depression (Cox et al., 1987), and for men, a two-point lower cut-off of 5 to 6 suggests possible depression (Matthey et al., 2001). The maximum cut-off score for moderate PD is 19, with scores higher than 19 indicating severe PD (McCabe-Beane et al., 2016). Regarding validity, previous research on the EPDS has demonstrated both its sensitivity and specificity in the 80–100% range (Matthey et al., 2001). Furthermore, the correlation between men’s self-report responses on the EPDS and the Centre for Epidemiological Studies–Depression scale (CES–D; Radloff, 1977), a depression measure previously validated for men, was $r = 0.62$, signaling that the EPDS measures the mood construct similar to the CES–D (Matthey et al., 2001). Matthey et al. (2001) also found a high level of internal consistency for the EPDS for men (Cronbach’s $\alpha = 0.81$), which is similar to that obtained by Cox et al. (1987) for women (Cronbach’s $\alpha = 0.87$). In the current study, the overall reliability for the EPDS in this sample ranged from poor to acceptable at time 1 (Cronbach’s $\alpha = 0.89$), time 2 (Cronbach’s $\alpha = 0.90$), time 3 (Cronbach’s $\alpha = 0.86$), and time 4 (Cronbach’s $\alpha = 0.63$).

Attachment

Experiences in Close Relationships Scale – Short Form (ECR-S). The Experiences in Close Relationships Scale – Short Form (ECR-S; Wei et al., 2007) is a self-report questionnaire with 12 items, and the ECR-S measures the anxiety and avoidance dimensions of adult attachment (Kennedy et al., 2019). Higher scores on the measure indicate higher levels of attachment anxiety or avoidance, respectively (Kennedy et al., 2019). For the purposes of this study, we adapted the instructions to refer specifically to participants’ current relationship, which other researchers have also done in the past (Kennedy et al., 2019). Estimates of internal consistency reliability for the avoidance and anxiety scales are 0.84 and 0.78, respectively, and

the measure also exhibits high test-retest reliability after one month (Kennedy et al., 2019). In the current study, the overall reliability for the avoidance scale in this sample was acceptable at time 1 (Cronbach's $\alpha = 0.73$), time 2 (Cronbach's $\alpha = 0.85$), time 3 (Cronbach's $\alpha = 0.90$), and time 4 (Cronbach's $\alpha = 0.95$), and the overall reliability for the anxiety scale in this sample ranged from poor to acceptable at time 1 (Cronbach's $\alpha = 0.62$), time 2 (Cronbach's $\alpha = 0.75$), time 3 (Cronbach's $\alpha = 0.79$), and time 4 (Cronbach's $\alpha = 0.65$).

Brief Accessibility, Responsiveness, and Engagement (BARE) Scale. The Brief Accessibility, Responsiveness, and Engagement Scale (BARE; Sandberg et al., 2012) is a 12-item measure of attachment behaviors in couple relationships. Scores on the BARE range from 12 to 60 with higher scores suggesting higher attachment quality (Morgis et al., 2019). To calculate responses on the measure, all scores are summed and then divided into the low (less than 37), medium (38-45), or high (46-52) attachment quality benchmarks (Morgis et al., 2019). According to Sandberg et al. (2012), the BARE exhibits appropriate reliability (all scales except the Accessibility Self subscale exceeded the 1.25 cutoff for separation in Rasch modeling). Furthermore, the BARE demonstrates construct (the chi-square analyses for the models were non-significant) and concurrent (the Wilk's lambdas for the discriminant analyses were significant at the $p < .001$ level) validity (Sandberg et al., 2012). Nonetheless, it remains brief to facilitate use by clinicians and researchers. In the current study, the overall reliability for the BARE in this sample was acceptable at time 1 (Cronbach's $\alpha = 0.89$), time 2 (Cronbach's $\alpha = 0.91$), time 3 (Cronbach's $\alpha = 0.87$), and time 4 (Cronbach's $\alpha = 0.84$).

Relationship Satisfaction and Functioning

Dyadic Adjustment Scale (DAS). The Dyadic Adjustment Scale (DAS; Spanier, 1976) measures relationship satisfaction using a 32-item self-report questionnaire (Kennedy et al.,

2019). Scores on the measure range from 0 to 151, and higher scores on the DAS signify greater relationship satisfaction (Kennedy et al., 2019). Concerning validity, Spanier (1976) found a statistically significant difference between the mean scores for married ($M = 114$) and divorcing ($M = 70$) couples (cutoff score of 97), indicative of discriminant validity (Kennedy et al., 2019). The measure also possesses a high level of internal consistency reliability (Cronbach's $\alpha = .96$), and test-retest reliability over two weeks was $r = .87$ (Kennedy et al., 2019; Spanier, 1976). In the current study, the overall reliability for the DAS in this sample was acceptable at time 1 (Cronbach's $\alpha = 0.94$), time 2 (Cronbach's $\alpha = 0.94$), time 3 (Cronbach's $\alpha = 0.90$), and time 4 (Cronbach's $\alpha = 0.88$).

Sexual Satisfaction and Functioning

Sexual Satisfaction Scale – Short Form (NSSS-S). The Sexual Satisfaction Scale – Short Form (NSSS-S; Stulhofer et al., 2010) is a 12-item composite measure of sexual satisfaction. The measure assesses multiple domains of sexual behavior, including sexual sensations, sexual awareness and focus, sexual exchange, emotional closeness, and sexual activity (Stulhofer et al., 2010). The measure is scored additively, and higher scores represent greater sexual satisfaction (Mark et al., 2014). The NSSS-S has demonstrated scale reliability ($k = 20$) and construct validity in multiple samples (Stulhofer et al., 2010). In a review of the psychometric properties of the most widely used measures of sexual satisfaction, Mark et al. (2014) determined that the NSSS-S received the strongest psychometric support for a bidimensional measure of sexual satisfaction. In the current study, the overall reliability for the NSSS-S in this sample was acceptable at time 1 (Cronbach's $\alpha = 0.95$), time 2 (Cronbach's $\alpha = 0.94$), time 3 (Cronbach's $\alpha = 0.94$), and time 4 (Cronbach's $\alpha = 0.95$).

Program Evaluation

Hold Me Tight Program Evaluation Form. The Hold Me Tight Program Evaluation form ([https://iceeft.com/wp-content/uploads/2017/11/Program Evaluation Form.pdf](https://iceeft.com/wp-content/uploads/2017/11/Program-Evaluation-Form.pdf)) is a measure developed by the International Centre for Excellence in Emotionally Focused Therapy (ICEEFT) to ascertain participants' assessment of the HMT program and its implementation. The measure contains (a) a Likert scale assessing participants' evaluation of the facilitators, exercises, video/DVD, homework, handouts, and overall rating and (b) open-ended questions about the most and least useful components of the program, the outcomes participants achieved or failed to achieve, participants' willingness to recommend the program, and other comments or suggestions. Participants' perspectives and experiences with the program are particularly relevant given that the acceptability and feasibility of this adapted version of the HMT program have yet to be analyzed. This information was only collected during the final assessment period as it is intended to capture participants' evaluation of the HMT program after its completion.

Data Analysis

The data were downloaded from the Qualtrics platform and exported to Microsoft Excel (Microsoft Corporation, 2018) and SPSS (IBM Corporation, 2017) for cleaning and analysis. Employing SPSS, we used a series of dyadic longitudinal multilevel models (MLM), which were repeated measures regressions that accounted for the interdependence of couples' scores and the variation between couples, to test for changes in PD, attachment patterns, relationship satisfaction, and sexual satisfaction in the participating couples at four times during the program (Planalp et al., 2017). These models sufficiently estimate longitudinal data collected from small samples, making them suitable for our data that includes nine couples' assessments taken at four time points (Ledermann & Kenny, 2017). More specifically, each partner's PD, attachment

patterns, relationship satisfaction, and sexual satisfaction on four assessments during the program (level 1) were nested within couples (level 2). To execute these steps, we tested separate unconditional models of men's and women's PD, attachment patterns, relationship satisfaction, and sexual satisfaction during the program. Each was modeled separately due to the small sample in this study. We determined model fit using Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), where lower AIC and BIC values denoted a better-fitting model.

While the quantitative data is advantageous in helping identify whether the program was initially efficacious, the qualitative program evaluation data provides a richer description of participants' experience of and satisfaction with the program, allowing researchers and clinicians an additional method for evaluating different aspects of the program (Lămătic, 2011). To facilitate the program evaluation, we analyzed the qualitative data gathered from the Hold Me Tight Program Evaluation form (i.e., open-ended questions about the most useful components of the program, the outcomes participants achieved, participants' willingness to recommend the program, and other comments) to understand participants' experiences of the program. More specifically, participants responded to open-ended questions about their experiences or evaluation of the program in an online survey. To become more familiar with the data, we first read through all the qualitative survey responses to gain a better understanding of participants' overall experiences with the program (Needleman & Needleman, 1996). Subsequently, we used content analytic procedures to further analyze the data (Miles & Huberman, 1994).

To conduct content analysis, participants' responses to the survey questions (phrases and sentences) were selected as the unit of analysis, and after organizing responses based on similar content, each response was allocated a coding category to represent its meaning (e.g., process,

content, or outcomes). Some of the responses featured multiple meanings and were therefore given multiple coding categories. An a priori coding scheme of categories was not employed in the analysis. However, the questions featured on the survey did explicitly ask participants about what they found “most useful about this program” and whether they achieved “the outcomes [they] were looking for.” As a result, the process of category identification was inductive, meaning that categories emerged from the data and were not developed to fit predetermined categories. Furthermore, during the initial coding process, all coding categories were provisional to accommodate the emergence of novel coding categories.

Finally, we used check-coding to support the content analysis (Miles & Huberman, 1994). While one person was primarily responsible for analyzing the data, we communicated about the analysis, category emergence, and difficulties that arose when coding the data. Discussions about the categories centered around the relevance and appropriateness of the codes that emerged.

Missing Data

It is important to consider how to manage missing data in longitudinal studies. In this study, at the end of the intervention (week 8), there was 11.1% missing data. To determine if the data was missing not at random (MNAR), we conducted pattern-mixture models for each final model to evaluate if missing data at time 4 (*observed* = 0, *missing* = 1) impacted our statistical conclusions (Ratitch et al., 2013). When missing data from time 4 was added as a predictor in our models, missing data was not significantly associated with men’s and women’s intercepts and slopes in any of the outcomes. For example, missing data at time 4 for PD was not significantly associated with men’s intercepts and slopes and women’s intercepts and slopes in model 1 ($p = .11$) or model 2 ($p = .11$), suggesting that our results were not biased due to missing

data and providing adequate support that missing data occurred at random. As a result, we used the restricted maximum-likelihood (REML) method and the Kenward-Roger correction to estimate our missing data, because these techniques optimally estimate missing data with small samples and provide less biased estimates for small samples in comparison to other maximum-likelihood estimators (McNeish, 2017; McNeish & Stapleton, 2016).

Results

To gain a better understanding of participants' descriptive statistics, we analyzed the data at the four assessment periods. Regarding PD, men's average PD was 6.75 (SD = 3.01) at the first assessment, 7.43 (SD = 4.65) at the second assessment, 5.86 (SD = 2.55) at the third assessment, and 5.00 (SD = 2.00) at the fourth assessment. Women's average PD was 9.00 (SD = 6.65) at the first assessment, 7.89 (SD = 6.11) at the second assessment, 7.38 (SD = 5.61) at the third assessment, and 5.38 (SD = 5.13) at the fourth assessment. Regarding avoidant attachment patterns, men's average avoidant attachment patterns were 14.25 (SD = 6.04) at the first assessment, 14.71 (SD = 7.39) at the second assessment, 14.00 (SD = 6.73) at the third assessment, and 13.63 (SD = 6.09) at the fourth assessment. Women's average avoidant attachment patterns were 12.56 (SD = 5.13) at the first assessment, 12.44 (SD = 5.64) at the second assessment, 12.38 (SD = 4.98) at the third assessment, and 9.63 (SD = 3.46) at the fourth assessment. Regarding anxious attachment patterns, men's average anxious attachment patterns were 18.75 (SD = 3.88) at the first assessment, 20.14 (SD = 6.77) at the second assessment, 19.14 (SD = 3.81) at the third assessment, and 20.63 (SD = 5.61) at the fourth assessment. Women's average anxious attachment patterns were 18.56 (SD = 6.46) at the first assessment, 19.78 (SD = 7.28) at the second assessment, 19.50 (SD = 8.94) at the third assessment, and 18.38 (SD = 4.75) at the fourth assessment. Regarding attachment behaviors, men's average attachment

behaviors were 49.88 (SD = 5.89) at the first assessment, 47.29 (SD = 7.57) at the second assessment, 48.29 (SD = 4.89) at the third assessment, and 48.25 (SD = 4.68) at the fourth assessment. Women's average attachment behaviors were 48.78 (SD = 7.65) at the first assessment, 48.22 (SD = 7.36) at the second assessment, 47.38 (SD = 5.40) at the third assessment, and 49.50 (SD = 4.75) at the fourth assessment. Regarding relationship satisfaction, men's average relationship satisfaction was 114.63 (SD = 20.96) at the first assessment, 116.14 (SD = 22.24) at the second assessment, 117.57 (SD = 16.57) at the third assessment, and 119.25 (SD = 14.30) at the fourth assessment. Women's average relationship satisfaction was 111.22 (SD = 12.28) at the first assessment, 114.33 (SD = 9.90) at the second assessment, 115.63 (SD = 9.40) at the third assessment, and 120.25 (SD = 9.15) at the fourth assessment. Finally, regarding sexual satisfaction, men's average sexual satisfaction was 45.38 (SD = 11.75) at the first assessment, 47.00 (SD = 10.63) at the second assessment, 48.14 (SD = 10.01) at the third assessment, and 47.38 (SD = 7.69) at the fourth assessment. Women's average sexual satisfaction was 41.00 (SD = 8.35) at the first assessment, 42.89 (SD = 7.29) at the second assessment, 45.25 (SD = 8.38) at the third assessment, and 45.38 (SD = 9.75) at the fourth assessment. (See Table 6 for the full descriptive statistics table.)

Quantitative Results: Participant Outcomes

To assess change across the four assessment points, we tested unconditional models of PD, attachment patterns, relationship satisfaction, and sexual satisfaction. Prior to assessing change during the program, we assessed whether our goal of building dyadic models composed of two distinguished partners was supported by our statistical analyses. Each variable was modeled separately given the small sample size. The unconditional models that distinguished both partners had lower AIC and BIC values than the unconditional models that did not

distinguish both partners. More specifically, the unconditional models that distinguished both partners for PD ($AIC_{\text{difference}} = -87.14$; $BIC_{\text{difference}} = -108.08$), avoidant attachment patterns ($AIC_{\text{difference}} = -116.01$, $BIC_{\text{difference}} = -136.95$), anxious attachment patterns ($AIC_{\text{difference}} = -46.60$, $BIC_{\text{difference}} = -67.54$), attachment behaviors ($AIC_{\text{difference}} = -36.35$, $BIC_{\text{difference}} = -57.29$), relationship satisfaction ($AIC_{\text{difference}} = -70.85$, $BIC_{\text{difference}} = -91.80$), and sexual satisfaction ($AIC_{\text{difference}} = -54.18$, $BIC_{\text{difference}} = -75.12$) had lower AIC and BIC values than their unconditional models that did not distinguish both partners. Lower AIC and BIC values in models that distinguish both partners provide adequate support for testing both partners at the same time within the same model.

The dyadic unconditional model for PD revealed moderate initial levels (i.e., intercept) of PD for both men ($b = 7.94$, $p = .00$) and women ($b = 9.66$, $p = .00$). In addition, women had a significant decrease in rates of change (i.e., slope) in PD ($b = -.81$, $p = .01$). (See Figure 2 for a visual representation of participants' changes in PD during the program.)

The dyadic unconditional model for attachment avoidance as measured by the ECR-S revealed moderate initial levels (i.e., intercept) of avoidant attachment for both men ($b = 14.91$, $p = .00$) and women ($b = 13.64$, $p = .00$). In addition, women had a significant decrease in rates of change (i.e., slope) for avoidant attachment ($b = -.76$, $p = .01$). The dyadic unconditional model for attachment anxiety as measured by the ECR-S revealed moderate initial levels (i.e., intercept) of anxious attachment for both men ($b = 18.29$, $p = .00$) and women ($b = 19.64$, $p = .00$). However, neither men ($b = .46$, $p = .38$) nor women ($b = -.39$, $p = .34$) had a significant increase in rates of change (i.e., slope) in anxious attachment.

The dyadic unconditional model for attachment behaviors as measured by the BARE revealed high initial levels (i.e., intercept) of attachment behaviors for both men ($b = 49.34$, $p =$

.00) and women ($b = 48.13, p = .00$). However, neither men ($b = -.41, p = .41$) nor women ($b = .26, p = .61$) had a significant increase in rates of change (i.e., slope) in attachment behaviors.

The dyadic unconditional model for relationship satisfaction revealed moderate-to-high initial levels (i.e., intercept) of relationship satisfaction for both men ($b = 112.11, p = .00$) and women ($b = 108.62, p = .00$). In addition, women had a significant increase in rates of change (i.e., slope) in relationship satisfaction ($b = 2.72, p = .00$).

The dyadic unconditional model for sexual satisfaction revealed moderate-to-high initial levels (i.e., intercept) of sexual satisfaction for both men ($b = 45.34, p = .00$) and women ($b = 39.94, p = .00$). In addition, women had a significant increase in rates of change (i.e., slope) in sexual satisfaction ($b = 1.47, p = .02$).

Qualitative Results: Participant Experiences

Stemming from the goals of the program evaluation and our desire to identify program enhancements for future research, we analyzed participants' responses with the objective of identifying beneficial aspects of the intervention. When asked about components of the intervention that they found particularly helpful or useful, participants identified various elements, ranging from specific tools to general lessons. First, participants expressed that they found particular components of the intervention helpful, namely the videos of couples demonstrating the different conversations, the in-class and homework exercises, and the PowerPoint presentations. Participants indicated that these components contributed to their experience of the program and their ability to maintain progress throughout the program. For example, one of the male participants noted that "the homework paired with the in-class assignments kept the topic of the session and the conversation practice alive between sessions."

Participants also directly mentioned program information or lessons that positively impacted their relationship. More specifically, participants mentioned that discussions about attachment patterns, demon dialogues, raw spots, and perinatal issues were beneficial. One female participant shared that her and her partner “use language like ‘raw spot’ now in our weekly conversation and it's helped us to better understand each other.”

When asked about what they found most useful about the program, some participants listed positive outcomes that they experienced because of participation in the program. Many of the participants noted that they can navigate conflict better, address problems in a more constructive way, examine themselves more deeply, and express more empathy. One of the male participants depicted his experience as such:

Helped us each articulate the deeper emotions we feel in the midst of “charged” interactions, and has already helped each of us understand one another and offer greater empathy or comfort in these moments; it has helped us stop “the dance” much earlier than we usually would, and as a result we have less often found ourselves each reaching a “withdrawn” state (i.e. able to recover and reconnect a lot quicker!). It has also helped us better articulate our needs in vulnerable moments (although this is still developing for both of us). And, it has helped normalize many of the changes in emotions and relationship dynamics as a result of being pregnant/having a baby.

Discussion

This study examined the efficacy of an adapted version of the HMT program with perinatal couples. Our results from a series of dyadic longitudinal MLM revealed that participation in the program was associated with a significant decrease in women’s PD and avoidant attachment patterns and improvement in women’s relationship satisfaction and sexual

satisfaction during the program. However, women's participation in the program was not associated with significant changes in their anxious attachment patterns and attachment behaviors, and men's participation in the program was not associated with significant changes in any of the outcomes. Thematic analyses of participants' responses to the final program evaluation survey revealed the aspects of the program that participants found most useful and areas for future improvement in the program. These analyses and their implications will be further examined later in this section.

First, women appear to benefit more than men from participation in the program as demonstrated by their statistically significant improvements in four out of the six outcomes. This may be due in part to women's distinctive experiences with the transition to parenthood. Due to biological experiences and social expectations, women typically adopt the "parent" identity earlier and more saliently than men (Kaźmierczaka & Karasiewicz, 2019). This earlier adoption of their "parent" identity may prompt women to seek out and participate in activities that further establish or validate their "mother" identity. As a result, women may experience more identity alignment with this program, which sought to support couples' healthy transition to and experiences of parenthood, therefore producing more beneficial outcomes. Furthermore, even as women push for more egalitarian divisions of labor, women often remain the primary caretakers for children, and men often adhere to the "breadwinner" role, where their primary responsibility is to financially support the family (Höfner et al., 2011). In anticipation of their role as caretakers, women may also initially feel a greater level of investment in their preparation for parenthood, and they may likewise experience a greater level of investment in a program that seeks to help parents prepare for and adjust to the addition of an infant, also resulting in more favorable outcomes.

While women seemed to largely benefit from participation in the program, the program appears to be less impactful for men as indicated by the absence of statistically significant change. In a systematic review of interventions that target paternal mental health during the perinatal period, Rominov et al. (2016) identified that none of the couple interventions reviewed produced statistically significant changes in paternal mental health. While this implies that men's results in our study do not differ significantly from other couple interventions for perinatal mental health, it also suggests that men may not be receiving the care or support necessary to produce more positive outcomes. As also suggested by Rominov et al. (2016), future research should examine processes and content that enhance the effectiveness of perinatal couple interventions for men.

However, these results do conflict with Johnson and Talitman's (1997) and subsequent findings that EFT, the couple therapy intervention that HMT was modeled from, produced statistically significant improvements in men's outcomes. Johnson and Talitman's (1997) findings, which were derived from a couple therapy intervention primarily focused on marital distress, may differ, because pregnancy and postpartum issues were not a significant focus of their intervention unlike the adapted HMT intervention. This difference in focus between the two interventions may be the catalyst that ultimately produced such different results. For example, men in our study may have viewed themselves in more of a supportive role given the significant emphasis on pregnancy and postpartum, and as a result, they may have focused more on their partners' experiences and outcomes instead of their own. Whereas in Johnson and Talitman's (1997) study, men may have been more invested as an equal participant, because the central focus of the intervention was couple distress.

Furthermore, Johnson and Talitman (1997) identified that older male participants benefited more from participation in their intervention than younger male participants. Given the relatively young average age of the men in the current study (29.25 years old), the intervention may have been less beneficial to the male participants due to their age and its impact on their therapeutic preferences. In their article, Johnson and Talitman (1997) suggest that men may become more attentive to the significance of emotional connection and intimacy as they become older. Moreover, the authors propose that younger men may prefer therapeutic approaches that are more skill- and exchange-oriented and less demanding of emotional expression. As a result, the young men in the current study may have preferred more skill- and exchange-oriented approaches, as opposed to the high emotional expressiveness required in the HMT program, and this discrepancy between the intervention used and their preferences may have contributed to men's non-significant changes in the outcomes.

Regarding their experiences with the intervention, participants shared aspects that they found the most beneficial. More specifically, participants indicated that they benefited from the videos of couples demonstrating the seven conversations, the in-class and homework exercises, and the PowerPoint presentations and information about the attachment patterns, demon dialogues, raw spots, and perinatal issues. It appears that participants benefited from the more experiential, hands-on components of the program and the foundational information about attachment theory and patterns and enhanced perinatal content. Regarding their positive outcomes, participants described that the program supported them in navigating conflict more appropriately, addressing problems in a more constructive way, examining themselves more deeply, and expressing more empathy to their partners' experiences. These outcomes align with

the goals of the HMT program and qualitatively illustrate the positive impact of the program (Johnson, 2015).

Despite not observing statistically significant changes in men's rates of change during the program, many men shared the positive impacts they experienced from program participation during the final program evaluation. In the sample quote in the results, one of the male participants indicated that the program helped him and his wife "articulate [their] deeper emotions," "understand one another and offer greater empathy," "stop 'the dance' much earlier," "recover and reconnect a lot quicker," "articulate [their] needs in vulnerable moments" and "normalize many of the changes in emotions and relationship dynamics as a result of being pregnant/having a baby." This lengthy list of benefits suggests that men may have experienced clinically significant changes, even when statistically significant outcomes were absent, and can help support improvement of the program in the future (Lămătic, 2011). An additional consideration is that the measures employed may not fully capture the outcomes experienced by male participants. For example, partners' physical health is important to consider when evaluating depressive symptoms (National Institute of Mental Health, 2019), and while we assessed some aspects of physical health, for example substance abuse, in the screening survey, we did not continue to monitor these physical health markers after the screening survey. As a result, future research may profit from the use of additional outcome measures to gain a more holistic perspective.

Limitations

This study has several limitations. First, our sample size was smaller than anticipated (9 couples, 18 participants). While we recruited almost twice as many couples to complete the screening survey, about half of those participants were in therapy at the time, limiting their

participation in the program. Additionally, despite our efforts to recruit widely and market our intervention to diverse communities, our sample was largely white, heterosexual, cisgender, educated, and middle-to-upper class. Future research on this intervention would benefit from a larger and more diverse sample. Another notable limitation is the one-arm design employed by this study. We did not include a control group, which prevents us from discounting time as a potential confounding variable. Future research on this intervention could include a randomized controlled design to compare outcomes among participants in the experimental and control groups. Furthermore, due to participants' schedules, our two workshop groups did not contain the same number of participants (7 couples vs 2 couples), and this could have impacted participants' experiences in the intervention. Finally, like many clinical studies, data were missing in this study (11.1%). While missing data is often unavoidable, it certainly can impact statistical conclusions and broader conclusions as a result.

Conclusions

Perinatal depression is prevalent and significantly impacts many facets of a couple's life. Despite the need for more couple-focused interventions for PD, few interventions address the prevention and treatment of PD from a dyadic lens. Given the growing demand for and use of computer or online interventions, it is vital to examine how computer or online interventions can be employed to deliver couple interventions for PD to a larger audience. This paper presented the quantitative outcome findings and qualitative findings on participants' experiences for an adapted version of the HMT program facilitated as an online or computer intervention, demonstrating that this intervention and modality show promise in helping couples prevent and overcome the negative impacts of perinatal depression.

CHAPTER 5: STUDY 2

Exploring Baseline Characteristics that Predict Outcomes in an Online, Adapted Version of the Hold Me Tight Program for Perinatal Depression

Abstract

Given the initial efficacy of the adapted HMT program in addressing women's perinatal depression (PD), avoidant attachment patterns, relationship satisfaction, and sexual satisfaction (Chapter 4: Study 1), it is important to identify participant characteristics that predict participants' outcomes in the intervention to better understand who benefits from the intervention (Johnson & Talitman, 1997). In this article, we examined whether participant characteristics, namely baseline relationship satisfaction and attachment, predicted participants' PD outcomes in the intervention. To do so, we ran a sequence of dyadic longitudinal multilevel models, which took into consideration the relationship inherent in couples' scores and the relationship between couples' scores (Planalp et al., 2017). From the results, we identified baseline participant characteristics that predict whether men and women experienced positive or negative outcomes in PD from participation in the adapted HMT intervention. In doing so, we assisted clinicians and researchers in identifying participant characteristics that are associated with positive and negative outcomes when employing this intervention, allowing them to better serve their clients and communities in the future.

Introduction

Perinatal depression (PD) is the most common perinatal psychiatric disorder, affecting approximately 6.5% to 20% of perinatal women (Duan et al., 2019; Goodman, 2019). Briefly, PD is characterized by the incidence of at least one major depressive episode during pregnancy and/or during the first year postpartum, and as indicated by previous research, PD is a distinct

experience and diagnosis from major depression outside of the perinatal period (Cohen & Schiller, 2017; Duan et al., 2019). A history of anxiety and/or depression prior to or during pregnancy is the strongest predictor of PD, and other predictors of PD include insufficient social support, elevated stress, unintended pregnancy, history of abuse and/or interpersonal violence, high levels of couple conflict, low partner support, and reduced maternal health (Duan et al., 2019; Goodman, 2019; Pilkington et al., 2015a). While the effects of PD significantly impact mothers, PD also affects infants and children, fathers or partners, relationship and sexual satisfaction within couples, and the overall economic stability of families.

Couple Interventions for Perinatal Depression

Previous research has demonstrated that partner support is a protective factor against PD, and analogously, perinatal couples indicate that they would prefer to receive support from their partners to prevent or reduce symptoms of PD (Pilkington et al., 2015a). Existing couple interventions for PD have been effective at promoting positive health outcomes and diminishing negative health outcomes (Cohen & Schiller, 2017). More specifically, couple interventions for PD have been successful in increasing men's relationship satisfaction, decreasing men's negative mood (Gambrel & Piercy, 2015), improving women's sense of competency, and diminishing women's symptoms of PD (Matthey et al., 2004). Despite the evidence demonstrating the effectiveness of couple interventions for PD, reviews of research on interventions for PD resoundingly assert that few studies have approached the prevention and treatment of PD from a dyadic lens, calling for more research on couple interventions for PD to support this vulnerable population (Cohen & Schiller, 2017; Pilkington et al., 2015a; Wang, 2018). This is problematic given perinatal couples' stated predilection for partner support and the systemic, bidirectional effects of PD on couples' relationship and sexual satisfaction and functioning.

Given the accessibility, timeliness, convenience, flexibility, and affordability of computer and online interventions and the need for telemedicine interventions due to the coronavirus disease 2019 (COVID-19), some researchers and clinicians are beginning to employ computer or online interventions to reach their populations (Ashford et al., 2016). Furthermore, research indicates that computer or online interventions designed to treat PD have produced encouraging results (Ashford et al., 2016; Lee et al., 2016). Despite the unique attributes of computer or online interventions and the encouraging results, only a limited number of studies have been conducted using computer or online interventions for couples experiencing PD, and of those studied, most interventions are partner-inclusive, not couple-specific (Alves et al., 2018). This means that these interventions only include limited sessions with both partners present, and in many of these sessions, the intent is for the “identified patient’s” partner to support them in treatment. The accessibility of computer or online interventions and the limited research available on their use and effectiveness with couples experiencing PD presents researchers with a distinctive opportunity to contribute to the literature and body of clinical knowledge.

Hoping to address this gap in the literature, we previously conducted a one-arm pilot study to test the initial efficacy of an adapted version of the Hold Me Tight (HMT) program using a computer or online modality (Chapter 4: Study 1). The HMT program, an attachment-based relationship education program, was modeled from Emotionally Focused Therapy (EFT) and a relationship enhancement book by the same name (Johnson, 2008; Kennedy et al., 2019), and adaptations to the program address the unique needs and experiences of perinatal couples at risk for or experiencing PD. Our results indicate that participation in the adapted HMT program is associated with significant reductions in women’s PD, decreases in women’s avoidant

attachment patterns, increases in women's relationship satisfaction, and improvements in women's sexual satisfaction during the program (Chapter 4: Study 1).

The Current Study

Given the initial efficacy of the one-arm pilot study of the adapted HMT program in addressing women's PD, avoidant attachment patterns, relationship satisfaction, and sexual satisfaction, it is important to identify whether participant characteristics improve or worsen participants' PD outcomes in the intervention to better understand who benefits from the intervention (Johnson & Talitman, 1997). Previous research on PD has examined whether baseline relationship satisfaction and attachment moderate the impact of interventions (Pilkington et al., 2015b). Not only is there evidence that these variables moderate the success of interventions for PD, but there is also evidence that partners' baseline levels of relationship satisfaction and attachment can substantially impact one another's PD outcomes (Pilkington et al., 2015b). In this article, we will examine whether these participant characteristics, namely baseline relationship satisfaction and attachment, predict participants' PD outcomes in a computer or online couple intervention for PD. Specifically, we sought to answer:

RQ1: To what extent do both partners' baseline characteristics (relationship satisfaction and attachment) predict their PD outcomes following a computer or online couple intervention for perinatal depression?

Methods

Sample

After some initial attrition, study participants, who were located across the United States and Canada, comprised of 9 couples (18 individuals). (Three qualifying couples (6 individuals) were lost to attrition prior to or after the first session.) Despite the authors' efforts to recruit a

diverse, inclusive sample, most participants identified as white (77.8%), heterosexual (88.9%), and cisgender (100%). On average, participating couples were 29.7 years old, with participants' ages ranging from 25 to 39 years old. Couples' average relationship length was approximately 7 years, ranging in relationship length from 3 to 17 years. Almost all participants (88.9%) indicated that they were employed full-time, and roughly half of participants (44.4%) cited a combined annual household income in the \$50,001-\$100,000 bracket. About half of participating couples (55.6%) were pregnant at the study's onset, with the remaining participants (44.4%) indicating that they were postpartum at the beginning of the study. The average gestational weeks for pregnant couples was 23.8 weeks with a range of 13 to 33 weeks, and the average postpartum weeks for postpartum couples was 32.1 weeks with a range of 13 to 48 weeks. (See Table 7 for additional demographic information.)

To verify that inclusion and exclusion criteria were met, each participant completed an online screening survey prior to acceptance into the study. Couples (heterosexual or queer) were included in the study if they: (a) were in a committed, monogamous relationship, (b) were in the perinatal period (pregnant or up to one year postpartum), (c) could commit to 12 hours of workshop sessions (plus four assessments), (d) spoke and understood English, and (e) had ongoing access to high-speed internet and a computer. Couples were excluded from participation in the study if they were actively experiencing: (a) severe PD (maximum cutoff score of 19 on the Edinburgh Postnatal Depression Scale [EPDS]; Cox et al., 1987), (b) extramarital affairs (assessed using "yes" or "no" responses), (c) extensive and/or long-term relationship distress better served by therapy (minimum cutoff score of 70 on the Dyadic Adjustment Scale [DAS]; Spanier, 1976), and (d) significant abuse in the relationship (maximum cutoff score of 3 on the Danger Assessment-5 [DA-5]; Snider et al., 2009). Other exclusion criteria consisted of: (a) a

history of significant mental illness that would negatively impact participation (open-ended questions inquiring about prior and ongoing mental health diagnoses), (b) enduring addictions that would hinder participation (maximum cutoff score of 3 on the Drug Abuse Screening Test [DAST-10]; Bohn et al., 1991; Skinner, 1982), and (c) previous experiences in the HMT program and/or current involvement in therapy services (both assessed using “yes” or “no” responses). Previous studies on the HMT program employed similar inclusion and exclusion criteria (Johnson, 2015; Wang, 2018).

Recruitment

To recruit couples, we drew upon established relationships with medical providers and used preexisting and newly created relationships on social media. We contacted obstetricians, gynecologists, nurses, and behavioral health providers across the United States, and we informed them about our study and the qualifications for participation. To recruit couples from a larger audience, we also employed social media, more specifically Facebook and Instagram.

All qualifying couples (12 couples) were offered a free copy of the *Hold Me Tight* book (Johnson, 2008) and free participation in the program. Additionally, participating couples could obtain financial incentives for assessment completion, which comprised of Amazon eGift cards that were emailed separately to partners following the assessment periods.

Intervention

As suggested by Kennedy et al. (2019) to maximize effectiveness, we employed a multi-week format of the HMT program in our one-arm pilot study. The intervention was implemented in 8 sessions over 8 consecutive weeks. Each session was approximately 1.5 hours, and in total, couples received about 12 hours of instruction, in addition to the time allocated to the completion of homework exercises. The format of each session consisted of a key points summary of the

previous session, an introduction and explanation of the session topic, a DVD or scripted segment for illustrative purposes, discussion topics to support participants' comprehension of the material, and in-class and homework exercises to support experiential learning (Johnson, 2015). In addition, participants were sent weekly emails with links to homework exercises, Zoom meetings, and surveys when applicable and encouragement to contact the facilitators if one or both partners began experiencing an increase in mental health symptoms and/or thoughts of harm to self or others.

Session titles, as delineated in *The Hold Me Tight Program: Conversations for Connection: Facilitator's Guide for Small Groups* (Johnson, 2015), included "Understanding Love and Attachment," "How Love Goes Wrong – The Demon Dialogues," "Finding the Raw Spots in the Demon Dialogues," "Fixing Mistakes and Creating a Secure Base – Revisiting a Rocky Moment," "Becoming Open and Responsive – The Hold Me Tight Conversation," "Forgiving Injuries and Trusting Again," "Tender Touch and Synchrony Sex," and "Keeping Your Love Alive and Caring for Your Relationship." To inform adaptation identification and implementation processes, we examined relevant literature on perinatal couples' unique experiences and challenges, couple interventions addressing PD, and computer or online interventions that specifically targeted perinatal mental health. The literature generated three principle content areas that were then woven into the existing HMT sessions: (a) content on parenting and couples' transitions to parenthood, (b) content on PD and the associated symptoms and experiences, and (c) content modified to address the needs of antenatal *and* postpartum couples.

The intervention was led by two facilitators. At the time of the study, the co-facilitators were licensed therapists in a Ph.D. program in couple and family therapy, and both co-facilitators

had previous training in EFT and HMT. To accommodate participants' schedules, the co-facilitators led two groups. One group comprised of 7 couples, while the other group included 2 couples. (For a more detailed description of intervention adaptations and procedures, refer to Chapter 4: Study 1).

Measures

Employing the Qualtrics platform, we assessed participants' responses to various measures distributed at four assessment points: intake, prior to the third and sixth sessions, and within a week following the intervention (Kennedy et al., 2019). Assessment measures inquired about participants' symptoms of PD, relationship satisfaction, and attachment experiences. Additionally, assessment measures captured participants' demographic information.

Demographic Information

To obtain demographic information, survey questions inquired about each participant's age, sex, gender identity, sexual orientation, race, ethnicity, religious beliefs, income level, education level, relationship status, length of relationship, number of children, experience of pregnancy loss, gestational or postpartum weeks, due date, whether their infant had been born, history of and current mental health diagnoses, psychiatric medication, previous and ongoing use of mental health services, COVID-19 exposure during pregnancy or postpartum, city of program completion, referral source for the study, and whether they received and/or read the *Hold Me Tight* book (Johnson, 2008). The aforementioned information was only gathered within the first and last surveys given the relative constancy of this information. Throughout the four assessment periods, participants did not write their names or other identifying information on surveys to their maintain confidentiality and control for bias. To allow grouping of individual and couple

assessments, participants provided an identification number assigned to them during intake procedures.

Perinatal Depression

Edinburgh Postnatal Depression Scale (EPDS). The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) measures the occurrence and severity of depressive symptoms during the perinatal period. Summing to 10 self-report items, the EPDS contains 8 items that evaluate depressive symptoms and 2 items that assess anxiety symptoms (Matthey et al., 2001). Scores on the EPDS range from 0 to 30, and higher scores are indicative of a greater likelihood of depression (Matthey et al., 2001). Cut-off scores of 10 or higher for women and 5-6 or higher for men indicate possible depression (Cox et al., 1987; Matthey et al., 2001). Scores higher than 19 indicate a greater likelihood of severe PD, making 19 the maximum cut-off score for moderate PD (McCabe-Beane et al., 2016). The EPDS has demonstrated sensitivity and specificity in the 80–100% range, and the EPDS measures the depressive mood construct similar to the CES–D, indicating that its use with men is also appropriate (Matthey et al., 2001). Similarly, the EPDS exhibits a high level of internal consistency for men (Cronbach’s $\alpha = 0.81$), akin to that for women (Cronbach’s $\alpha = 0.87$) (Cox et al., 1987; Matthey et al., 2001). In the present study, the overall reliability for the EPDS ranged from poor to acceptable at time 1 (Cronbach’s $\alpha = 0.89$), time 2 (Cronbach’s $\alpha = 0.90$), time 3 (Cronbach’s $\alpha = 0.86$), and time 4 (Cronbach’s $\alpha = 0.63$).

Relationship Satisfaction and Functioning

Dyadic Adjustment Scale (DAS). The Dyadic Adjustment Scale (DAS; Spanier, 1976) is 32-item self-report measure of relationship satisfaction (Kennedy et al., 2019). Scores on the DAS range from 0 to 151, with higher scores suggesting greater relationship satisfaction

(Kennedy et al., 2019). Suggestive of discriminant validity, researchers identified a statistically significant mean score difference between married ($M = 114$) and divorcing ($M = 70$) couples (Kennedy et al., 2019). The DAS also demonstrates a high level of internal consistency reliability (Cronbach's $\alpha = .96$) and test-retest reliability over two weeks ($r = .87$) (Kennedy et al., 2019; Spanier, 1976). In the present study, the overall reliability for the DAS was acceptable at time 1 (Cronbach's $\alpha = 0.94$), time 2 (Cronbach's $\alpha = 0.94$), time 3 (Cronbach's $\alpha = 0.90$), and time 4 (Cronbach's $\alpha = 0.88$).

Attachment

Experiences in Close Relationships Scale – Short Form (ECR-S). The Experiences in Close Relationships Scale – Short Form (ECR-S; Wei et al., 2007) is a 12-item self-report questionnaire and measures the anxiety and avoidance dimensions of adult attachment (Kennedy et al., 2019). Higher scores on the attachment anxiety or attachment avoidance subscales suggest higher levels of attachment anxiety or attachment avoidance, respectively (Kennedy et al., 2019). We also modified the instructions to encourage participants to consider their current relationship when responding to the prompts, and this minor adjustment has also been made by other researchers (Kennedy et al., 2019). The ECR-S demonstrates high test-retest reliability after one month, and internal consistency reliability estimates for the attachment anxiety and avoidance subscales are 0.84 and 0.78, respectively (Kennedy et al., 2019). In the present study, the overall reliability for the avoidance scale was acceptable at time 1 (Cronbach's $\alpha = 0.73$), time 2 (Cronbach's $\alpha = 0.85$), time 3 (Cronbach's $\alpha = 0.90$), and time 4 (Cronbach's $\alpha = 0.95$), and the overall reliability for the anxiety scale ranged from poor to acceptable at time 1 (Cronbach's $\alpha = 0.62$), time 2 (Cronbach's $\alpha = 0.75$), time 3 (Cronbach's $\alpha = 0.79$), and time 4 (Cronbach's $\alpha = 0.65$).

Data Analysis

Surveys were conducted using the Qualtrics platform and were subsequently downloaded to Microsoft Excel (Microsoft Corporation, 2018) from the platform to facilitate cleaning. After download and cleaning, data were exported to SPSS (IBM Corporation, 2017) for analysis. Using SPSS, we ran a sequence of dyadic longitudinal multilevel models (MLM), which take into consideration the relationship inherent in couples' scores and the relationship between couples' scores, to examine whether baseline participant characteristics (relationship satisfaction, avoidant attachment patterns, and anxious attachment patterns) predict participants' PD outcomes in the adapted HMT program (Planalp et al., 2017). Additionally, we employed MLM, because these models can adequately estimate longitudinal data within small samples, which is appropriate for our data given that we assessed participants at four time points (Ledermann & Kenny, 2017). (See Figure 3 for a conceptual diagram of our analytic process using relationship satisfaction as the predictor and PD as the outcome, and see Figures 4 and 5 for conceptual diagrams of our analytic process using avoidant and anxious attachment patterns as the predictors and PD as the outcome, respective.)

First, we developed a two-level unconditional model with each partner's composite PD score (level 1) nested within couples (level 2). As further described in study one, we designed a two-intercept model that tested separate unconditional models of men's and women's PD during the program. Due to our small sample, we conducted each model separately.

Second, we added men's and women's scores of one predictor (grand mean centered) to predict both partners' rates of change (i.e. slopes). For example, men's and women's avoidance attachment patterns predicting both partners' rates of change in depressive symptoms. The same procedure was followed for each predictor for a total of three models. Due to small sample sizes

and reasons of parsimony, we separately tested each predictor. These tests will not allow for comparisons to other predictors and only test whether men's and women's scores for one predictor predict both partners' rates of change for PD. To determine model fit, we used Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), and lower AIC and BIC values signify a more parsimonious model.

Missing Data

It is common to uncover the presence of missing data in longitudinal data, and by the end of our intervention (week 8), 11.1% of our data were classified as missing data. As further outlined in Chapter 4: Study 1, we conducted pattern-mixture models to evaluate if missing data was missing not at random (MNAR) (Ratitch et al., 2013). Our analyses indicated that our results were not significantly impacted by missing data and provided sufficient evidence to conclude that missing data happened at random. Correspondingly, we employed the restricted maximum-likelihood (REML) method and the Kenward-Roger correction to approximate our missing data given their optimal missing data estimates with small samples (McNeish, 2017; McNeish & Stapleton, 2016).

Results

First, we analyzed participants' descriptive statistics at the four assessment periods. Regarding PD, men's average PD was 6.75 (SD = 3.01) at the first assessment, 7.43 (SD = 4.65) at the second assessment, 5.86 (SD = 2.55) at the third assessment, and 5.00 (SD = 2.00) at the fourth assessment. Women's average PD was 9.00 (SD = 6.65) at the first assessment, 7.89 (SD = 6.11) at the second assessment, 7.38 (SD = 5.61) at the third assessment, and 5.38 (SD = 5.13) at the fourth assessment. Regarding avoidant attachment patterns, men's average avoidant attachment patterns were 14.25 (SD = 6.04) at the first assessment, 14.71 (SD = 7.39) at the

second assessment, 14.00 (SD = 6.73) at the third assessment, and 13.63 (SD = 6.09) at the fourth assessment. Women's average avoidant attachment patterns were 12.56 (SD = 5.13) at the first assessment, 12.44 (SD = 5.64) at the second assessment, 12.38 (SD = 4.98) at the third assessment, and 9.63 (SD = 3.46) at the fourth assessment. Regarding anxious attachment patterns, men's average anxious attachment patterns were 18.75 (SD = 3.88) at the first assessment, 20.14 (SD = 6.77) at the second assessment, 19.14 (SD = 3.81) at the third assessment, and 20.63 (SD = 5.61) at the fourth assessment. Women's average anxious attachment patterns were 18.56 (SD = 6.46) at the first assessment, 19.78 (SD = 7.28) at the second assessment, 19.50 (SD = 8.94) at the third assessment, and 18.38 (SD = 4.75) at the fourth assessment. Regarding attachment behaviors, men's average attachment behaviors were 49.88 (SD = 5.89) at the first assessment, 47.29 (SD = 7.57) at the second assessment, 48.29 (SD = 4.89) at the third assessment, and 48.25 (SD = 4.68) at the fourth assessment. Women's average attachment behaviors were 48.78 (SD = 7.65) at the first assessment, 48.22 (SD = 7.36) at the second assessment, 47.38 (SD = 5.40) at the third assessment, and 49.50 (SD = 4.75) at the fourth assessment. Regarding relationship satisfaction, men's average relationship satisfaction was 114.63 (SD = 20.96) at the first assessment, 116.14 (SD = 22.24) at the second assessment, 117.57 (SD = 16.57) at the third assessment, and 119.25 (SD = 14.30) at the fourth assessment. Women's average relationship satisfaction was 111.22 (SD = 12.28) at the first assessment, 114.33 (SD = 9.90) at the second assessment, 115.63 (SD = 9.40) at the third assessment, and 120.25 (SD = 9.15) at the fourth assessment. Finally, regarding sexual satisfaction, men's average sexual satisfaction was 45.38 (SD = 11.75) at the first assessment, 47.00 (SD = 10.63) at the second assessment, 48.14 (SD = 10.01) at the third assessment, and 47.38 (SD = 7.69) at the fourth assessment. Women's average sexual satisfaction was 41.00 (SD = 8.35) at the first

assessment, 42.89 (SD = 7.29) at the second assessment, 45.25 (SD = 8.38) at the third assessment, and 45.38 (SD = 9.75) at the fourth assessment. (See Table 6 for the full descriptive statistics table.)

Next, we added our men's and women's predictors (relationship satisfaction, avoidant attachment patterns, and anxious attachment patterns) separately into the unconditional model to predict men's and women's rates of change for our outcome (PD). In examining the three models, our models all had lower AIC and BIC values than our unconditional models, except for the model of avoidant attachment patterns predicting PD. This suggests that including the predictors in the unconditional model resulted in more parsimonious models (see Table 8). One of our models, avoidant attachment patterns predicting PD, did not measure random effects. This model did not converge with the inclusion of random effects and consequently did not account for the variation between couples. However, the random effects were non-significant in the other two models, meaning that the variances around women's and men's initial levels did not vary significantly across couples.

Concerning rates of changes in men's and women's PD, the results showed that men's baseline avoidant attachment patterns significantly predicted their own rates of change in PD ($b = 0.07, p = .05$). Furthermore, the results revealed that women's baseline anxious attachment patterns significantly predicted their own rates of change in PD ($b = -0.13, p = .05$) and that women's baseline anxious attachment patterns significantly predicted men's rates of change in PD ($b = 0.23, p = .05$). No other predictor variables significantly predicted men's or women's rates of change in PD. (To see the full list of outcomes and predictor variables, refer to Table 8 for PD and the remaining variables).

Discussion

Given the results indicating that the one-arm pilot study of the adapted HMT program was initially efficacious in addressing women's PD, avoidant attachment patterns, relationship satisfaction, and sexual satisfaction (Chapter 4: Study 1), it was critical to ascertain whether participant characteristics were associated with better or worse outcomes in PD. As a result, we examined whether participants' baseline characteristics, namely their baseline relationship satisfaction and attachment, predicted participants' PD outcomes in a computer or online couple intervention for PD using the adapted HMT program. In doing so, we hoped to gain a deeper insight into who benefits from this intervention and who may be better served by an alternative intervention.

Relationship Satisfaction

Our results did not reveal an association between baseline relationship satisfaction and rates of change in PD during the program. More specifically, participants' relationship satisfaction prior to participation in the program did not predict how participants' PD changed over the course of the program. This means that participants' baseline relationship satisfaction did not significantly impact how their PD changed over time. This contradicts with Whisman's (2001) findings that baseline relationship satisfaction was associated with depressive symptoms at the end of treatment for married individuals. While this study focused on major depression and included married individuals instead of couples, it reveals that other researchers found that baseline relationship satisfaction is associated with depression outcomes following treatment over time. In addition to the therapeutic differences previously mentioned, one potential reason for the discrepancy in findings is the stark differences in sample sizes. Whisman's (2001) research featured 250 participants (238 entered treatment and 162 completed treatment), while

the current study only included data from 18 participants. Faber and Fonseca (2014) suggest that small samples may lack sufficient power to extrapolate the statistical findings to a larger population, and given our small sample, it is possible that we lacked enough power to detect statistically significant associations.

Attachment

Our results also revealed that men's rates of change in PD were significantly predicted by men's baseline avoidant attachment patterns and women's baseline anxious attachment patterns. More specifically, men's higher baseline avoidant attachment patterns significantly predicted an increase in their own PD during the program, and women's higher baseline anxious attachment patterns significantly predicted an increase in men's PD during the program. One explanation for these findings may be that men with higher baseline avoidant attachment patterns and women with higher baseline anxious attachment patterns may have been engaged in an entrenched negative interactional cycle prior to the onset of the intervention, and the impact of this firmly engrained negative interactional cycle may have contributed to hopelessness and consequently to men's higher PD following the program (Novak et al., 2016; Wittenborn et al., 2012).

Additionally, our results denoted that there was an association between women's baseline anxious attachment patterns and their own rates of change in PD such that women's higher baseline anxious attachment patterns significantly predicted a decrease in their PD during the program. One justification for this finding could be that individuals with more anxious attachment patterns tend to be more engaged with mental healthcare services (Adams et al., 2018). Correspondingly, women with more anxious attachment patterns may have experienced higher engagement and participation in the adapted HMT program, therefore producing a greater decrease in their PD.

Furthermore, while this finding provides valuable information about the association between women's baseline anxious attachment patterns and men's rates of change in PD, it also further cements the importance of treating perinatal men and women using a systemic lens. This finding speaks to the interconnectedness of partners' experiences and outcomes and demonstrates the significant impact that partners have on one another. Moreover, this finding illustrates the importance of employing couple interventions with this population and adds additional evidence to support previous authors' calls for more couple-specific interventions to improve perinatal couples' outcomes (Cohen & Schiller, 2017; Pilkington et al., 2015a; Wang, 2018).

Limitations

There are several limitations to take into consideration. First, our study features a small sample (9 couples, 18 participants). Furthermore, our participants primarily have hegemonic social identities, namely white, heterosexual, cisgender, educated, and middle-to-upper class, despite our efforts to recruit diverse participants. Future researchers should employ a larger, more diverse sample when examining the relationship between predictors and outcomes for this intervention. Furthermore, unequal workshop group sizes (7 couples vs 2 couples), which was largely a consequence of participants' schedules, could have affected participants' experiences during the intervention, and future studies may benefit from equal workshop group sizes to eliminate this as a potential confounding variable. Finally, 11.1% of data were missing in this study, and while missing data is common in clinical research, it can alter statistical and broader conclusions.

Conclusions

To identify participant characteristics that predicted participant outcomes, we examined whether participants' baseline relationship satisfaction and attachment influenced their outcomes

in a computer or online couple intervention for PD using the adapted HMT program. By doing so, we identified whether baseline participant characteristics, namely relationship satisfaction and attachment, predicted whether men and women experienced positive or negative outcomes in PD from participation in the adapted HMT intervention. While the findings about the predictors that contributed to positive outcomes provide us information about who may benefit from the intervention in the future, equally important are the findings about the predictors that contributed to worsening outcomes, because they can help us identify individuals and couples who may be better served by an alternate intervention (Pilkington et al., 2015b). In doing so, we have assisted future clinicians and researchers in identifying participant characteristics that are associated with positive and negative outcomes when employing this intervention, allowing them to better serve their clients and communities.

APPENDICES

TABLES

APPENDIX A: Table 1. Couple Interventions for Perinatal Depression

Intervention Name (Authors)	Curriculum Focus	Format	Duration	Type of Facilitator	Assessments	Assessment Frequency	Effectiveness
Bringing Home Baby (Shapiro & Gottman, 2005)	Couple communication, conflict-resolution skills, individual emotional regulation, emotional attunement, co-parenting	Group workshop but individual group numbers are unknown	16-hours over two days (16 hours total)	Family Life Educators	Demographic information, Locke-Wallace Marital Adjustment Test (MAT), Hopkins Symptom Checklist (SCL-90), Couple's Problem Inventory, observation of marital interaction	3 times: pre-intervention time point, 3-month time point (when babies were 3 months old), and 1-year time point (when babies were 1 year old)	Effective (compared to control group) in: increasing women and men's marital quality, decreasing women and men's postpartum depression symptoms, reducing women and men's observed hostile affect
Family Foundations (Feinberg & Kan, 2008)	Couple communication, conflict-resolution skills, individual emotional regulation, partner support strategies that foster positive co-parenting	Group workshop with 6–10 couples	8 2-hour sessions (16 hours total)	Male-female teams of childbirth educators, nurses, and/or family workers	Demographic information, co-parenting measure developed for this study, Center for Epidemiological Studies Depression Scale (CES-D), Taylor Manifest Anxiety Scale, Dysfunctional Interaction scale from the Parental Stress Index, Infant Behavior Questionnaire, Social Desirability scale, Relationships Scale Questionnaire	2 times: pre-intervention and 6-months postpartum	Effective (compared to control group) in: increasing co-parental support, decreasing maternal depression and anxiety, reducing distress in the parent-child relationship, improvement in several indicators of infant regulation

Table 1 (cont'd)

Mindful Transition to Parenthood (Gambrel & Piercy, 2015)	Couple experiences in transitioning to parenthood, relational mindfulness	Group workshop with 3-5 couples	4 2-hour sessions (8 hours total)	Health educator	Demographic information, Couple Satisfaction Index (CSI), Five Facet Mindfulness Questionnaire (FFMQ), Interpersonal Reactivity Index (IRI), Self-Dyadic Perspective-Taking Scale (SDPTS), Other-Dyadic Perspective-Taking Scale (ODPTS), Depression Anxiety Stress Scale—21 (DASS-21), Positive and Negative Affect Schedule (PANAS)	2 times: pre-intervention and post-intervention (4-weeks later)	Effective (compared to control group) in: increasing men's relationship satisfaction, enhancing men's mindfulness, decreasing men's negative affect (no significant treatment effects for women)
Partner-Assisted Interpersonal Psychotherapy (Brandon et al., 2012)	Couple communication, conflict-resolution skills, individual emotional regulation, emotional attunement	Couple sessions	8 1-hour sessions over 12 weeks	Psychiatrist (first author)	Demographic information, Structured Clinical Interview for DSM-IV Axis I Disorders (SCID), the Hamilton Rating Scale for Depression, 17-Item (HAM-D17), Edinburgh Postnatal Depression Scale (EPDS), Dyadic Adjustment Scale (DAS), focus group meeting	9 times: at each session and a follow-up assessment	Effective in: decreasing women's perinatal depressive symptoms (as demonstrated by meeting criteria for clinical response and symptomatic recovery); positive treatment satisfaction

Table 1 (cont'd)

Preparation for Parenthood with empathy session (Matthey et al., 2004)	Physical parts of pregnancy and birth, delivery procedures, breastfeeding, perinatal depression and available treatments, postpartum social issues	Mixed format: group workshop but individual group numbers are unknown, mail-out component with additional information and tips	7 2-hour sessions (14 hours total)	Hospital parent educators, physiotherapists, psychologists, social workers, and/or occupational therapists	Demographic information, Coopersmith Self-Esteem Inventory (CSEI), Edinburgh Postnatal Depression Scale (EPDS), Profile of Mood States (POMS), Centre for Epidemiological Studies-Depression Scale (CES-D), Diagnostic Interview Schedule (DIS), Significant Others Scale (SOS), Who does What?/Who will do What? (WDW), Parenting Sense of Competence scale (PSOC), partner awareness measure developed for this study, six-month experiences questionnaire developed for this study	3 times: pre-intervention (during pregnancy), 6-weeks postpartum, and 6-months postpartum	Effective (compared to control groups) in: decreasing women's perinatal depressive symptoms (only for women with low self-esteem), increasing women's sense of competence (only for women with low self-esteem) (treatment effect not maintained at 6-months postpartum)
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Table 1 (cont'd)

Not specified (Ngai et al., 2020)	Couple communication, stressors in perinatal period, perinatal depression, cognitive restructuring and other CBT techniques, problem-solving, goal-setting, and decision-making skills	Mixed format: group workshop with 10 couples, phone calls with each parent separately	1 3-hour group session and 2 30-minute phone calls (per parent) at 2 and 4 weeks postpartum (5 hours total)	Midwives	Demographic information, Edinburgh Postnatal Depression Scale (EPDS)	4 times: pre-intervention (during pregnancy), 6-weeks postpartum, 6-months postpartum, and 1-year postpartum	Effective (compared to control group) in: decreasing depressive symptoms (treatment effect not maintained at 6 and 12-months)
Not specified (Swanson et al., 2009)	Depression and grief following first year of miscarriage	Multiple formats: nurse caring (NC) (three counseling sessions), self-caring (SC) (three video and workbook modules), combined caring (CC) (one counseling session plus three SC modules), or control (no treatment)	3 sessions: 1, 5, and 11 weeks after enrollment	Nurse counselors	Demographic information, Center for Epidemiological Studies Depression Scale (CES-D), two subscales from the Miscarriage Grief Inventory (MGI)	4 times: pre-intervention, 3, 5, and 13 months after miscarriage	NC had the most positive impact on couples' resolutions of grief and depression, grief resolution was accelerated by SC for women and CC for men

APPENDIX B: Table 2. Computer or Online Couple Interventions for Perinatal Depression

Intervention Name (Authors)	Curriculum Focus	Format	Duration	Type of Facilitator	Assessments	Assessment Frequency	Effectiveness
Home-but Not Alone (Shorey et al., 2016; Shorey et al., 2017)	Newborn, maternal, and paternal care, various newborn care tasks (baby bathing and breastfeeding), sources of support, asynchronous communication with a midwife	Mobile app for couples and routine care vs. control group (routine care only)	4 weeks	Mobile app	Parenting Efficacy Scale, Perceived Social Support for Parenting scale, Edinburgh Postnatal Depression Scale (EPDS), subscale of the What Being the Parent of a New Baby is Like scale	2 times: pre-intervention (day of discharge) and post-intervention (4 weeks later)	Effective in improving parental self-efficacy, social support, and parenting satisfaction, no significant improvement in postnatal depression scores compared to control group

APPENDIX C: Table 3. Research on the Hold Me Tight Program

Authors (Year)	Population of Interest	Format	Duration	Type of Facilitator	Assessments	Assessment Frequency	Data Analysis	Effectiveness
Fisher et al. (2014)	Bibliotherapy vs. participation in the HMT program	Group workshop with 10 couples	8 2-hour sessions over 10 weeks or reading the <i>Hold Me Tight</i> book	Unknown	Demographic information, Dyadic Adjustment Scale (DAS), Trust Scale	2 times: pre-intervention and post-intervention	2×2 repeated measures ANOVAs	Just reading the <i>Hold Me Tight</i> book may lead to positive change; participating in the program and reading the book may result in less change; participating in the program may have a negative effect on less happy couples

Table 3 (cont'd)

Conradi et al. (2018)	Self-referred vs. clinician-referred	Group workshop with on average 5.86 couples per group (range 4–8 couples)	8 2-hour sessions	9 licensed therapists with at least 1 ICEEFT certified EFT therapist	Demographic information, Dyadic Adjustment Scale (DAS), Brief Accessibility, Responsiveness, and Engagement Scale (BARE), Tendency to Forgive scale (TTF), Daily Coordination scale (DC), Maintenance Behavior scale (MB), General Health Questionnaire (GHQ), Experiences in Close Relationships questionnaire (ECR), measure of treatment motivation by investigative team	5 times: prior to waiting period, pre-intervention, post-intervention, 2-3-weeks after intervention completion, and 14-weeks after intervention completion	Repeated measures ANOVA, multilevel modeling in Linear Mixed Models (LMM), LMM post-hoc comparisons	Self-referred couples significantly improved during the HMT program on all measures with a moderate-to-large mean effect size ($d = .63$) that was maintained ($d = .57$) during the 3.5 month follow-up; for clinician-referred couples, improvement during the HMT program was moderate ($d = .42$) but decreased during the 3.5-month follow-up ($d = .22$)
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Table 3 (cont'd)

Lynch (2018)	Couples coping with cancer	Group workshop with 7 couples	6 2-hour sessions occurring every other Saturday morning (group 1), 5 2-hour sessions over 10 weeks (groups 2 and 3)	2 senior EFT trained therapists and 1 junior EFT-in-training therapist	Demographic information, attendance record, Hold Me Tight Treatment Fidelity Checklist, Hold Me Tight Conversations Rating Scale (HMTCRS), Couple Consumer Satisfaction Questionnaire (CSQ), Experiences in Close Relationships Scale – Short (ECR-S), Brief Accessibility, Responsiveness, and Engagement Scale (BARE), Revised Dyadic Adjustment Scale (RDAS), Beck Depression Inventory (BDI-II), FACT-G (Version 4.0), IES	2 times: pre-intervention and post-intervention	Descriptive statistics, paired samples t-tests, and repeated measure ANOVAs	Significant medium to large effects for improved relationship satisfaction and decreased traumatic impact of cancer diagnosis
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Table 3 (cont'd)

Lesch et al. (2018)	South African couples	Group workshop with 10 couples	2-days on the weekend	Certified EFT trainer assisted by 2 co-facilitators (both certified EFT therapists) and a team of EFT trainee local relationship practitioners (registered social workers, psychological counsellors, clinical and/or counseling psychologists)	Demographic information, semi-structured, dyadic interviews	2 times: 2-weeks before the intervention and immediately post-intervention	Braun and Clarke's (2006; 2013) data analysis process	Couples related well to the program and indicated that it substantially deepened their relationships
Stavrianopoulos (2015)	College student couples	Group workshop with 14 couples	8 2-hour sessions	Unknown	Demographic information, Dyadic Adjustment Scale (DAS), Relationship Trust Scale (RTS), Beck Depression Inventory (BDI-II)	2 times: pre-intervention and post-intervention	Descriptive statistics and frequencies, correlational analyses, repeated-measures multivariate analysis of variance (MANOVA), and Reliable Change Index (RCI) scores	Statistically significant change over time on all measures; DAS showed a greater degree of change for women; positive feedback regarding group content and structure

Table 3 (cont'd)

Wang (2018)	Couples becoming first-time parents	Group workshop with 6 couples in each group	2-days (two consecutive Saturdays for each workshop) (occurred twice)	Male and female co-facilitators with graduate degrees and training in EFT and HMT, also possessed knowledge in transitions to parenthood	Demographic information, Experiences in Close Relationships Scale – Short (ECR-S), Brief Accessibility, Responsiveness, and Engagement Scale (BARE), Edinburgh Postnatal Depression Scale (EPDS), qualitative interviews	3 times: pre-intervention, end of Day 1, and end of day 2 (no measure of longitudinal effects)	Descriptive statistics and thematic analysis	No statistically significant outcomes; qualitative results suggest that intervention was more effective for men than women
Wong et al. (2018)	Chinese Canadian couples	Group workshop with 23 couples	30 sessions	Lay group leaders trained in using the facilitator's guide for the HMT program	Demographic information, Chinese Version of the Dyadic Adjustment Scale (C-DAS), Relationship Satisfaction Questionnaire (RSAT), Experiences in Close Relationships Scale-Short Form (ECR-S), Family Assessment Instrument: Chinese (C-FAI)	2 times: pre-intervention and post-intervention	Descriptive statistics and t-tests	Statistically significant improvements in satisfaction with attachment relationships, attachment security, and family functioning

Table 3 (cont'd)

Kennedy et al. (2019)	Individual growth in relationship satisfaction and trust	Group workshop ranging from 2 to 12 couples	Both 8-week and 2-days on the weekend	Average of 6.7-years of experience in providing EFT for couples; included Psychologists, Licensed Marriage and Family Therapists, Registered Social Workers, Masters in Marriage and Family Therapy, Licensed Clinical Social Workers, and Licensed Professional Counselors	Demographic information, Dyadic Adjustment Scale (DAS), Relationship Trust Scale (RTS), Experiences in Close Relationships Scale – Short (ECR-S)	4 times: baseline, pre-intervention, post-intervention, and at either 3 or 6-months	Individual-growth modeling approach using the HLM (Hierarchical Linear Modeling) statistical package	Relationship satisfaction and trust increased during intervention but declined during follow-up
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Table 3 (cont'd)

Morgis et al. (2019)	Couples seeking support with sexual intimacy	Group workshop with 11 and 4 couples	1-day workshop (occurred twice)	2 Masters-level family therapists and 1 doctoral student in couple and family therapy who completed introductory and advanced EFT courses with a certified EFT trainer	Demographic information, fidelity checklist by investigative team, treatment feasibility (attrition rates and qualitative data), treatment acceptability (structured questions), Credibility and Expectancy Questionnaire, perceived and actual learned knowledge of HMT concepts by investigative team, Brief Accessibility, Responsiveness, and Engagement Scale (BARE), Patient Reported Outcomes Measurement Information System (PROMIS 2.0), Dyadic Sexual Communication Scale (DCS), Revised Dyadic Adjustment Scale (R-DAS)	3 times: pre-intervention, post-intervention, and at 6-weeks	One-way repeated measures ANOVAs and post-hoc tests, content analysis of the qualitative data	Increased perceived knowledge acquisition and actual knowledge acquisition about concepts related to attachment and sexual intimacy
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APPENDIX D: Table 4. Content Modifications to the Hold Me Tight Program

Content Area	Content	Session
Parenting and the adjustment to parenthood	Similarities and distinctions between parent-child attachment and adult attachment processes	“Understanding Love and Attachment”
	How relationships change during pregnancy and following the birth of a child	“How Love Goes Wrong – The Demon Dialogues”
	Normalizing difficulties adjusting to the addition of a new baby	“Finding the Raw Spots in the Demon Dialogues”
	How to navigate arguments during pregnancy and with a new baby	“Fixing Mistakes and Creating a Secure Base – Revisiting a Rocky Moment”
	Ways to prioritize the couple relationship during pregnancy and with a new baby	“Keeping Your Love Alive and Caring for Your Relationship”
Perinatal depressive symptoms and experiences	Perinatal depressive symptoms and their bidirectional association with relationships	“How Love Goes Wrong – The Demon Dialogues”
	Impact of perinatal depression on raw spots and emotional responses	“Finding the Raw Spots in the Demon Dialogues”
	Perinatal sexuality	“Tender Touch and Synchrony Sex”
	Accessing and utilizing support from others	“Keeping Your Love Alive and Caring for Your Relationship”

APPENDIX E: Table 5. Program Modules

Session Number	Session Title
Session 1	Understanding Love and Attachment
Session 2	How Love Goes Wrong – The Demon Dialogues
Session 3	Finding the Raw Spots in the Demon Dialogues
Session 4	Fixing Mistakes and Creating a Secure Base – Revisiting a Rocky Moment
Session 5	Becoming Open and Responsive – The Hold Me Tight Conversation
Session 6	Forgiving Injuries and Trusting Again
Session 7	Tender Touch and Synchrony Sex
Session 8	Keeping Your Love Alive and Caring for Your Relationship

APPENDIX F: Table 6. Descriptive Statistics for Study Variables

	Men		Women	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Perinatal depression				
Time 1	6.75	3.01	9.00	6.65
Time 2	7.43	4.65	7.89	6.11
Time 3	5.86	2.55	7.38	5.61
Time 4	5.00	2.00	5.38	5.13
Avoidant patterns				
Time 1	14.25	6.04	12.56	5.13
Time 2	14.71	7.39	12.44	5.64
Time 3	14.00	6.73	12.38	4.98
Time 4	13.63	6.09	9.63	3.46
Anxious patterns				
Time 1	18.75	3.88	18.56	6.46
Time 2	20.14	6.77	19.78	7.28
Time 3	19.14	3.81	19.50	8.94
Time 4	20.63	5.61	18.38	4.75
Attachment behaviors				
Time 1	49.88	5.89	48.78	7.65
Time 2	47.29	7.57	48.22	7.36
Time 3	48.29	4.89	47.38	5.40
Time 4	48.25	4.68	49.50	4.75
Relationship satisfaction				
Time 1	114.63	20.96	111.22	12.28
Time 2	116.14	22.24	114.33	9.90
Time 3	117.57	16.57	115.63	9.40
Time 4	119.25	14.30	120.25	9.15
Sexual satisfaction				
Time 1	45.38	11.75	41.00	8.35
Time 2	47.00	10.63	42.89	7.29
Time 3	48.14	10.01	45.25	8.38
Time 4	47.38	7.69	45.38	9.75

APPENDIX G: Table 7. Demographic Variables

Baseline characteristics	<i>N</i>	%
Gender		
Male	10	50.0
Female	10	50.0
Race		
White	14	77.8
Asian	3	16.7
Prefer not to answer	1	5.6
Sexual identity		
Heterosexual	16	88.9
Bisexual	2	11.1
Marital status		
Married	15	83.3
Living together	1	5.6
Dating	1	5.6
Other	1	5.6
Children		
0	7	38.9
1	4	22.2
2-4	6	33.3
More than 4	1	5.6
Pregnancy loss		
Yes	4	22.2
No	13	72.2
Prefer not to answer	1	5.6
Religious identity		
Christian	7	38.9
Buddhist	2	11.1
Non-religious	9	50.0
Income		
\$25,000-\$50,000	2	11.1
\$50,001-\$100,000	8	44.4
\$100,001-\$200,000	6	33.3
More than \$200,000	2	11.1
Education		
High school	2	11.1
Bachelor's degree	8	44.4
Master's degree	7	38.9
Ph.D. Or higher	1	5.6
Employment		
Full-time	16	88.9

Table 7 (cont'd)

Part-time	2	11.1
Past mental health		
None	10	55.6
Depression	2	11.1
Anxiety	2	11.1
Multiple diagnoses	4	22.2
Current mental health		
None	15	83.3
Anxiety	1	5.6
Multiple diagnoses	2	11.1
Medication		
Yes	1	5.6
No	17	94.4
Previous therapy		
Yes	11	61.1
No	7	38.9
Previously read HMT book		
Yes	3	16.7
No	15	83.3

Note. Percentages sum to 100% irrespective of missing data.

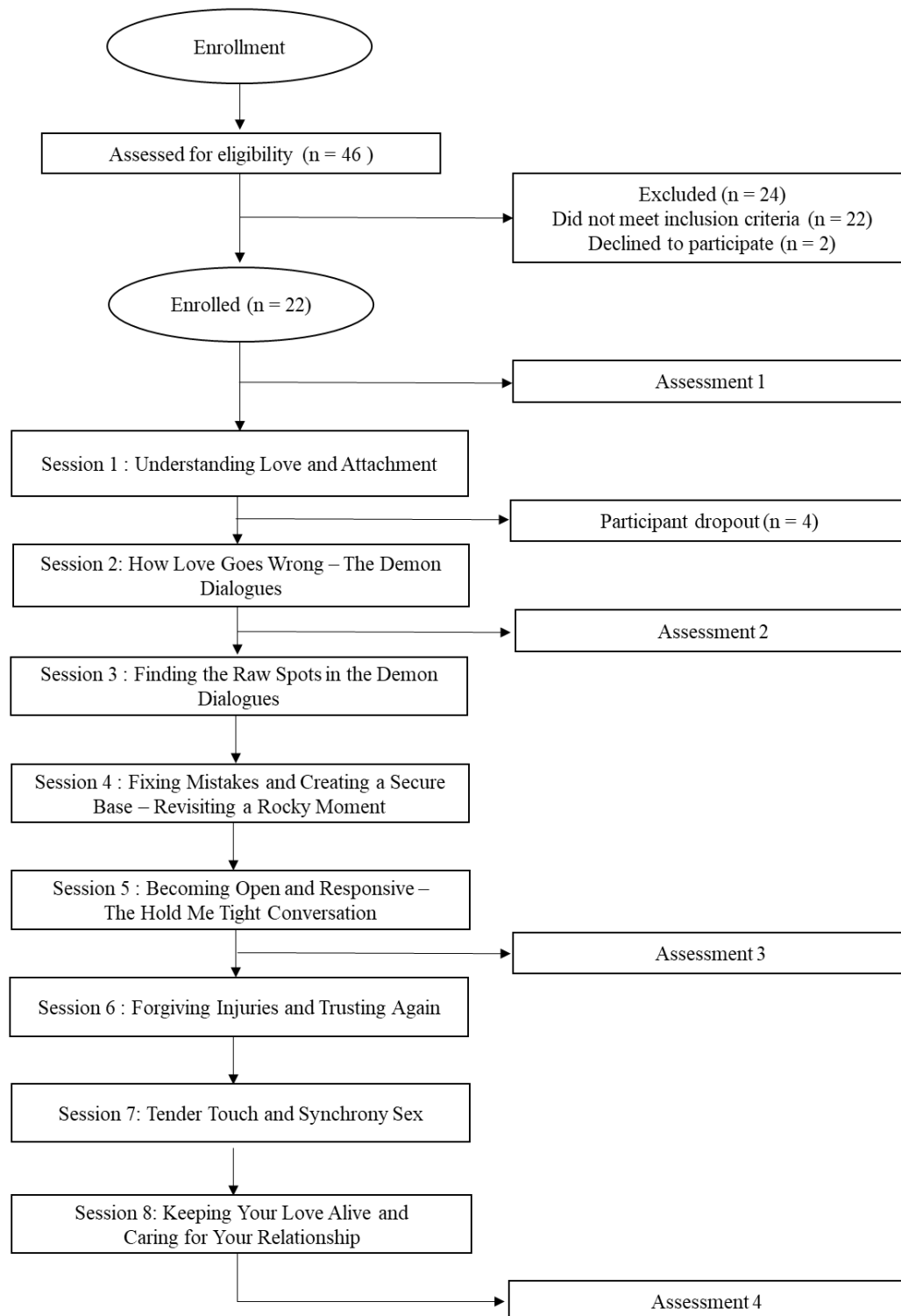
APPENDIX H: Table 8. Outcome and Predictor Variables

Outcome Predictor	AIC	BIC	Actor Effects		Partner Effects	
			Men's Slope (Standard Error)	Women's Slope (Standard Error)	Men's Slope (Standard Error)	Women's Slope (Standard Error)
Perinatal depression						
Relationship satisfaction	319.19	330.89	-0.03 (0.02)	-0.05 (0.04)	0.03 (0.02)	0.03 (0.03)
Avoidant patterns	340.48^	346.33^	0.07* (0.04)	0.13 (0.08)	0.07 (0.07)	-0.05 (0.04)
Anxious patterns	310.01	321.72	0.02 (0.09)	-0.13* (0.06)	0.23* (0.11)	0.05 (0.05)

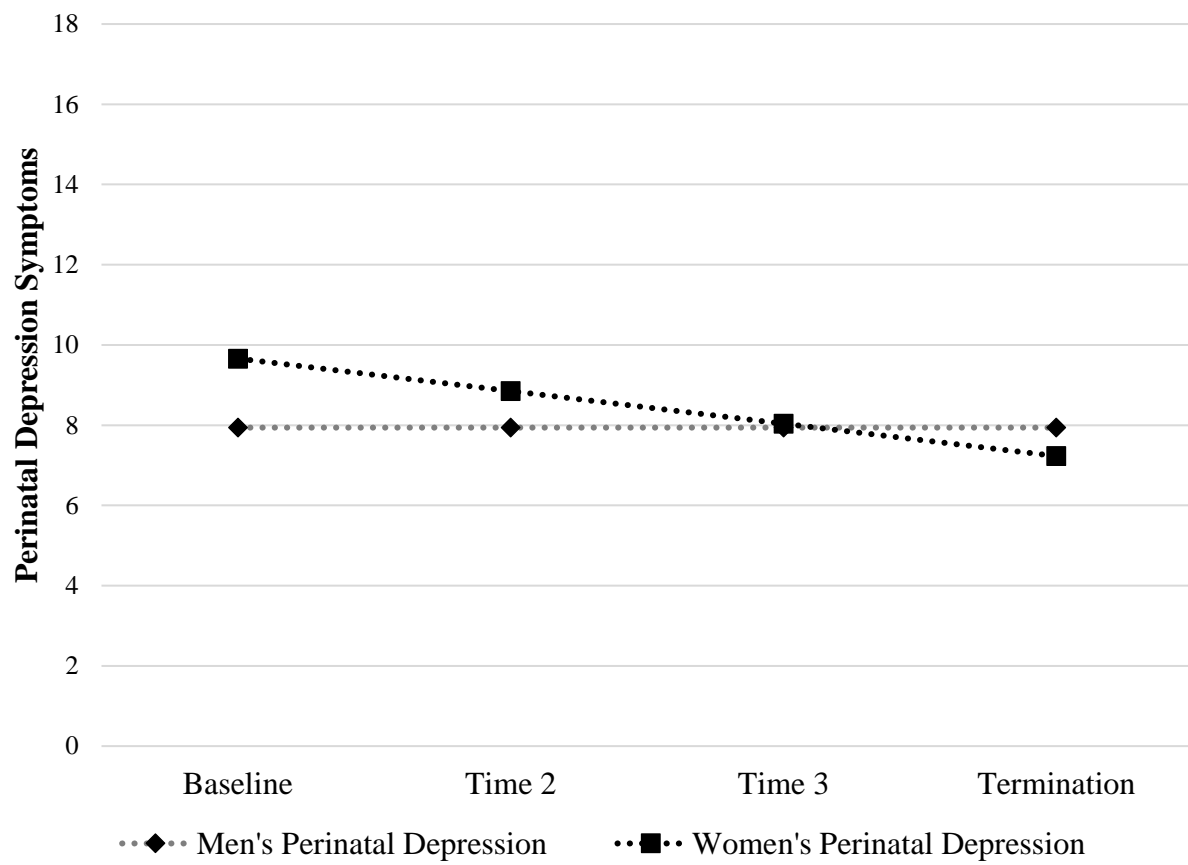
Note. * indicates $p < 0.05$. ^ indicates AIC or BIC higher than the original model.

FIGURES

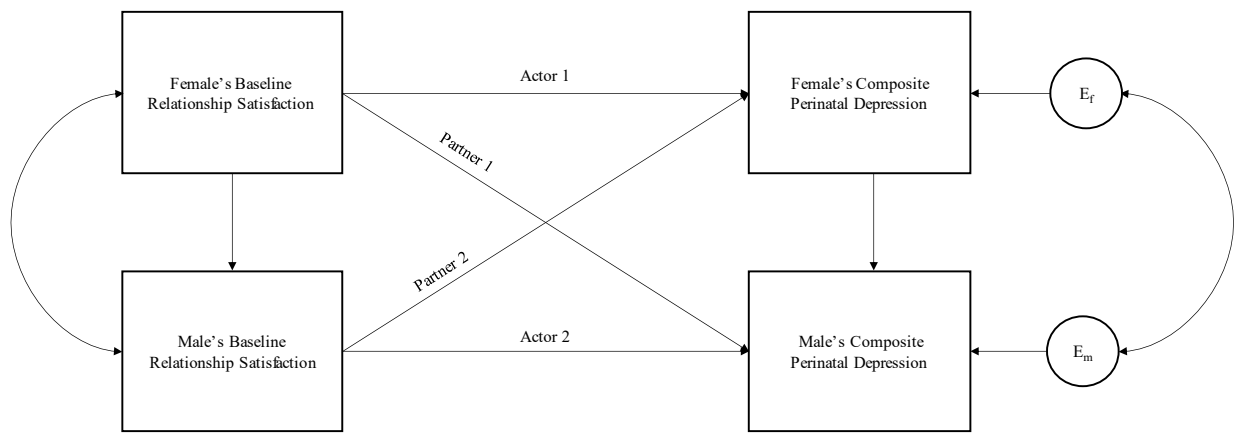
APPENDIX I: Figure 1. Conceptual Model of the Study



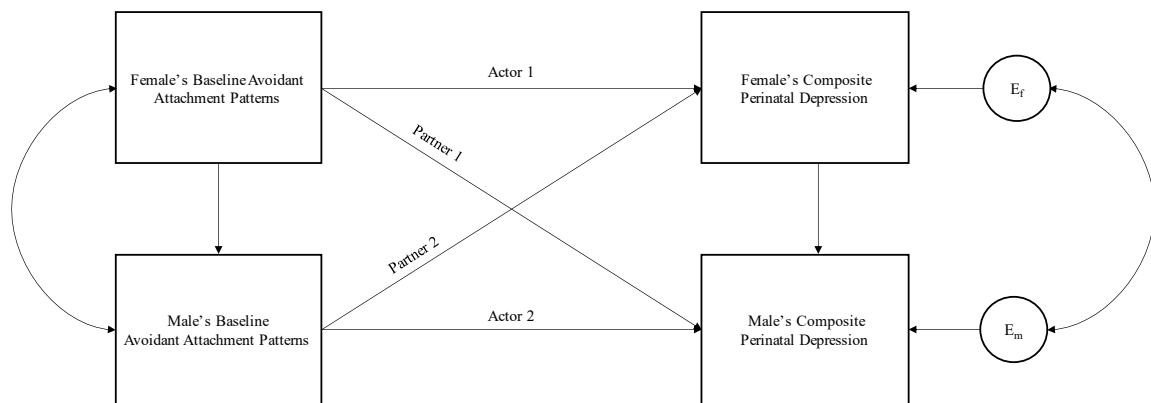
APPENDIX J: Figure 2. Trajectory of Perinatal Depression Scores During the Program



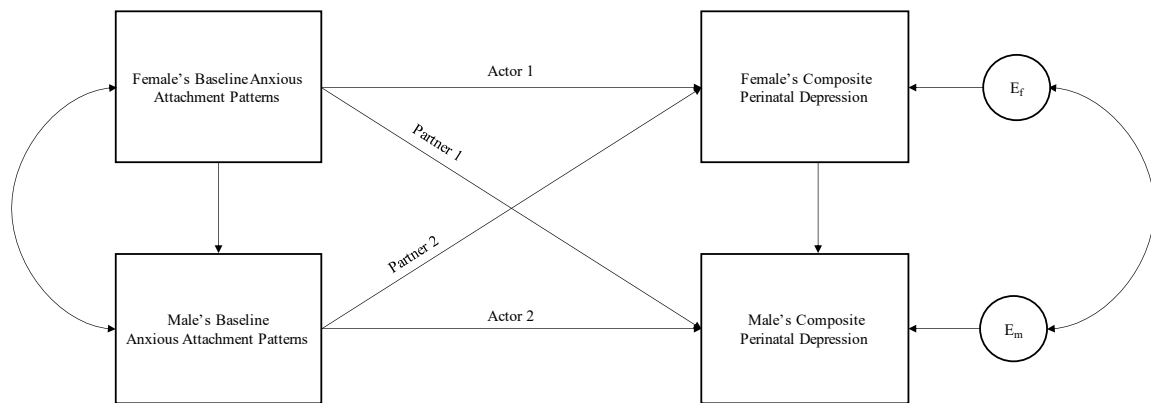
APPENDIX K: Figure 3. Conceptual Diagram for the Analytic Process for Relationship Satisfaction and Perinatal Depression



APPENDIX L: Figure 4. Conceptual Diagram for the Analytic Process for Avoidant Attachment Patterns and Perinatal Depression



APPENDIX M: Figure 5. Conceptual Diagram for the Analytic Process for Anxious Attachment Patterns and Perinatal Depression



IMAGES

APPENDIX N: Image 1. Participant Consent Form

Research Participant Information and Consent Form

Study Title: The Efficacy of Hold Me Tight with Couples at Risk for or Experiencing Perinatal Depression

Researcher and Title: Patricia Huerta, MS, LMFT, Andrea Wittenborn, PhD, LMFT

Department and Institution: Human Diversity and Family Studies (HDFS) at Michigan State University (MSU)

Contact Information: huertap1@msu.edu, andreaw@msu.edu

BRIEF SUMMARY

You are being asked to participate in a research study. Researchers are required to provide a consent form to inform you about the research study, to convey that participation is voluntary, to explain risks and benefits of participation including why you might or might not want to participate, and to empower you to make an informed decision. You should feel free to discuss and ask the researchers any questions you may have.

You are being asked to participate in a research study on the efficacy of an adapted version of the Hold Me Tight workshop for couples at risk for or experiencing perinatal depression. Your participation in this study will take place over the course of 8 weeks. You will be asked to engage with online workshop material in 8 sessions, and each session will last for about 1.5 hours, totaling 12 hours when completed. The sessions will occur weekly. You will also be asked to complete assessments about your experiences and mental and relational health prior to, during, and following the workshop.

The most likely risk of participating in this study includes discussion of potentially triggering topics, such as depressive symptoms, stressors during pregnancy, relational conflict, and sexual health concerns. If your scores on the assessments exceed the maximum cutoff and/or it becomes clear that you need additional support, we will provide resources and referrals to local mental health professionals to ensure that you receive the support you need.

The potential benefits to you for taking part in this study include decreased depressive symptoms, improved communication with your partner, higher relationship and sexual satisfaction, and a better understanding of some of the challenges and joys of parenthood.

PURPOSE OF RESEARCH

From this study, the researchers hope to learn to what degree an adapted version of the Hold Me Tight program is efficacious in preventing or reducing perinatal depression in couples. We also want to determine to what degree the intervention is efficacious in altering attachment patterns and in increasing couple relationship and sexual satisfaction and functioning. Additionally, we want to identify predictors of change that support or detract from success in the workshop. Finally, we want to elicit feedback from

participants about the content and process of the intervention to inform future adaptations and implementation efforts.

You have been selected as a possible participant in this study, because you are (a) 18 years or older, (b) in a monogamous relationship, (c) currently pregnant or up to one year postpartum, (d) speak and understand English, and (e) have access to high-speed internet and a computer. Reasons for exclusion from the study include (a) severe perinatal depression, (b) ongoing relationship infidelity, (c) extensive and/or long-standing relationship distress that would be better served by therapy, (d) indication of significant physical or emotional abuse in the relationship, (e) history of significant mental illness and/or untreated addictions that would impede participation, (f) previous participation in the Hold Me Tight program, and (g) current participation in therapy services. In the entire study, at least 15 couples are being asked to participate.

WHAT YOU WILL BE ASKED TO DO

As previously mentioned, the workshop will be divided into 8 sessions, lasting approximately 1.5 hours each, over the course of 8 weeks. Sessions, which will all occur online in synchronous format (occurring at the same time), will include an introduction to the topic, a DVD segment, discussion topics, in-class and homework exercises, and a key points summary. All study links and other participant materials will be housed on the study website. The website will include tabs dedicated to: (a) consent documentation, (b) project introduction, (c) program sessions and assessments, (d) homework assignments, (e) additional resources, and (f) contact information for study coordinators. The website will be an all-inclusive resource for study participants. Participants are asked to complete weekly lessons and assessments using the materials provided on the study website.

In total, there will be 1 screening period and 4 assessment periods. Participants will be asked to provide responses to a variety of measures at screening, intake, mid-intervention (before 3rd and 6th sessions), and at the end of the intervention period. Screening measures will ask about your demographic information, perinatal depression, commitment to the relationship, mental health history, drug use, relationship satisfaction, intimate partner violence, previous participation in the Hold Me Tight workshop, and current participation in therapy. Assessment measures will ask about your demographic information, perinatal depression, attachment experiences and behaviors, relationship and sexual satisfaction, and experiences with the workshop.

In addition to the more formal screening and assessment periods, participants will receive weekly email or text messages (based on their preference) to promote engagement and allow researchers to monitor mental health symptoms. To fulfill the purposes of engagement and symptom monitoring, weekly email and text messages will inquire about participants' engagement with study materials, ability to complete study requirements, and mental health using scaling questions. The researchers will monitor participants' open rate, click-through rate, and number of replies for emails and their number of replies for text messages.

POTENTIAL BENEFITS

The potential benefits to you for taking part in this study include decreased depressive symptoms, improved communication with your partner, higher relationship and sexual satisfaction, and a better understanding of some of the challenges and joys of parenthood.

POTENTIAL RISKS

The most likely risk of participating in this study includes discussion of potentially triggering topics, such as depressive symptoms, stressors during pregnancy, relational conflict, and sexual health concerns. These discussions could elevate your mental health symptoms. If your scores on the assessments exceed the maximum cutoff and/or it becomes clear that you need additional support, we will provide resources and referrals to local mental health professionals to ensure that you receive the support you need.

Additionally, although we will make every effort to keep your data confidential, there are certain times, such as suspicion of child abuse or neglect, elder abuse or neglect, abuse or neglect of a dependent adult, suicidal or homicidal ideation, and harm to yourself or others, where we may have to disclose your data. A research record can also be requested by the court and/or law enforcement. In these circumstances, we may have to disclose your information to members of the justice system, protection services, and/or medical professionals to ensure your safety and the safety of others.

PRIVACY AND CONFIDENTIALITY

The data for this project will be kept confidential. Each participant will be assigned an identification number to allow grouping of assessments yet maintain confidentiality, and identification numbers and identifiable information (name and contact information) will be kept separately. In accordance with federal regulations, data will be stored for a minimum of 3 years after the close of the research study.

Data will be collected online and downloaded onto a private computer. Only the researchers and research staff and the Michigan State University's Human Research Protection Program will have access to the data. Although we will make every effort to keep your data confidential, there are certain times, such as a court order and suspicion of child abuse or neglect, elder abuse or neglect, abuse or neglect of a dependent adult, suicidal or homicidal ideation, and harm to yourself or others, where we may have to disclose your data.

CERTIFICATE OF CONFIDENTIALITY

This research is covered by a Certificate of Confidentiality from the National Institutes of Health. This means that the researchers cannot release or use information, documents, or samples that may identify you in any action or suit unless you say it is okay. They also cannot provide them as evidence unless you have agreed. This protection includes federal, state, or local civil, criminal, administrative, legislative, or other proceedings. An example would be a court subpoena.

There are some important things that you need to know. The Certificate DOES NOT stop reporting that federal, state, or local laws require. Some examples are laws that require reporting of child or elder abuse, some communicable diseases, and threats to harm yourself or others. The Certificate CANNOT BE USED to stop a sponsoring United States federal or state government agency from checking records or evaluating programs. The Certificate DOES NOT stop disclosures required by the federal Food and Drug Administration (FDA). The Certificate also DOES NOT prevent your information from being used for other research if allowed by federal regulations.

Researchers may release information about you when you say it is okay. For example, you may give them permission to release information to insurers, medical providers or any other persons not connected with the research. The Certificate of Confidentiality does not stop you from willingly releasing information about your involvement in this research. It also does not prevent you from having access to your own information.

YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

Participation is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. You have the right to say no. You may change your mind at any time and withdraw. You may choose not to answer specific questions or to stop participating at any time. Choosing not to participate or withdrawing from this study will not make any difference in the quality of any services you may receive. You will be told of any significant findings that develop during the course of the study that may influence your willingness to continue to participate in the research.

COSTS AND COMPENSATION FOR BEING IN THE STUDY

The first 15 participating couples will receive a copy of the Hold Me Tight book (Johnson, 2008) at no cost to them, and all participants will be offered the program for free for participation in the study. Furthermore, all participating couples will be offered financial incentives for completing assessments. For every survey completed prior to the end of the assessment period, participants will receive \$5. For example, if only one member of a couple completes the survey prior to the end of the assessment period, the couple will receive \$5 for that assessment period; however, if both partners complete the survey prior to the end of the assessment period, the couple will receive \$10 for that assessment period. Participants who complete all assessments will be eligible for a \$10 bonus incentive, in addition to their previous incentives. The financial incentives will be loaded onto Amazon eGift cards and emailed to couples following the assessment periods.

ALTERNATIVE OPTIONS

If you do not meet inclusion and exclusion criteria, you will be informed that you were not selected for the study. You will be sent information about other Hold Me Tight

programs, and if requested, we are happy to provide referrals to therapists in your area using Psychology Today.

FUTURE RESEARCH

Information that identifies you might be removed from the data collected during screening or assessments. After such removal, the screening and assessment data could be used for future research studies, publication, oral presentations, or distributed to another investigator for future research studies without additional informed consent from you.

CONTACT INFORMATION

If you have concerns or questions about this study, such as scientific issues, how to do any part of it, or to report an injury, please contact the researcher (Patricia Huerta, huertap1@msu.edu).

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 4000 Collins Rd, Suite 136, Lansing, MI 48910.

DOCUMENTATION OF INFORMED CONSENT

Your signature below means that you voluntarily agree to participate in this research study.

Signature

Date

Signature

Date

You will be given a copy of this form to keep.

APPENDIX O: Image 2. IRB Approval Letter

MICHIGAN STATE UNIVERSITY

Initial Study APPROVAL Revised Common Rule

April 16, 2021

To: Andrea Kay Wittenborn

Re: **MSU Study ID:** STUDY00005724
IRB: Biomedical and Health Institutional Review Board
Principal Investigator: Andrea Kay Wittenborn
Category: Expedited 7
Submission: Initial Study STUDY00005724
Submission Approval Date: 4/15/2021
Effective Date: 4/15/2021
Study Expiration Date: 4/14/2022

Title: The Efficacy of Hold Me Tight with Couples at Risk for or Experiencing Perinatal Depression

This submission has been approved by the Michigan State University (MSU) Biomedical and Health Institutional Review Board. The submission was reviewed by the Institutional Review Board (IRB) through the Non-Committee Review procedure. The IRB has found that this study protects the rights and welfare of human subjects and meets the requirements of MSU's Federal Wide Assurance (FWA00004556) and the federal regulations for the protection of human subjects in research (e.g., 2018 45 CFR 46, 21 CFR 50, 56, other applicable regulations).



**Office of
Regulatory
Affairs
Human Research
Protection Program**

4000 Collins Road
Suite 138
Lansing, MI 48910

517-355-2180
Fax: 517-432-4503
Email: irb@msu.edu
www.hrpp.msu.edu

Institutional restrictions to in-person human subject research activities conducted by MSU employees, MSU students, or agents of MSU are in place, but MSU is phasing in human research that has the potential for in-person interactions with participants, using a Tier approach. Restrictions to in-person interactions with human research participants by MSU employees, MSU students, or agents of MSU are in place until the activity is permitted under a Tier and a Human Research Plan for a Safe Return is approved. Visit <http://hrpp.msu.edu/COVID-19/index.html> for the restrictions, Tiers, forms, and the process.

How to Access Final Documents

To access the study's final materials, including those approved by the IRB such as consent forms, recruitment materials, and the approved protocol, if applicable, please log into the Click™ Research Compliance System, open the study's workspace, and view the "Documents" tab. To obtain consent form(s) stamped with the IRB watermark, select the "Final" PDF version of your consent form(s) as applicable in the "Documents" tab. Please note that the consent form(s) stamped with the IRB watermark must typically be used.

MSU is an affirmative-action,
equal-opportunity employer.

Continuing Review: IRB approval is valid until the expiration date listed above. If the research continues to involve human subjects, you must submit a Continuing Review request at least one month before expiration.

Modifications: Any proposed change or modification with certain limited exceptions discussed below must be reviewed and approved by the IRB prior to implementation of the change. Please submit a Modification request to have the changes reviewed. If changes are made at the time of continuing review, please submit a Modification and Continuing Review request.

New Funding: If new external funding is obtained to support this study, a Modification request must be submitted for IRB review and approval before new funds can be spent on human research activities, as the new funding source may have additional or different requirements.

Immediate Change to Eliminate a Hazard: When an immediate change in a research protocol is necessary to eliminate a hazard to subjects, the proposed change need not be reviewed by the IRB prior to its implementation. In such situations, however, investigators must report the change in protocol to the IRB immediately thereafter.

Reportable Events: Certain events require reporting to the IRB. These include:

- Potential unanticipated problems that may involve risks to subjects or others
- Potential noncompliance
- Subject complaints
- Protocol deviations or violations
- Unapproved change in protocol to eliminate a hazard to subjects
- Premature suspension or termination of research
- Audit or inspection by a federal or state agency
- New potential conflict of interest of a study team member
- Written reports of study monitors
- Emergency use of investigational drugs or devices
- Any activities or circumstances that affect the rights and welfare of research subjects
- Any information that could increase the risk to subjects

Please report new information through the study's workspace and contact the IRB office with any urgent events. Please visit the Human Research Protection Program (HRPP) website to obtain more information, including reporting timelines.

Personnel Changes: Key study personnel must be listed on the MSU IRB application for expedited and full board studies and any changes to key study personnel must be submitted as modifications. Although only key study personnel need to be listed on a non-exempt application, all other individuals engaged in human subject research activities must receive and maintain current human subject training, must disclose conflict of interest, and are subject to MSU HRPP requirements. It is the responsibility of the Principal Investigator (PI) to maintain oversight over all study personnel and to assure and to maintain

appropriate tracking that these requirements are met (e.g. documentation of training completion, conflict of interest). When non-MSU personnel are engaged in human research, there are additional requirements. See HRPP Manual Section 4-10, Designation as Key Project Personnel on Non-Exempt IRB Projects for more information.

Prisoner Research: If a human subject involved in ongoing research becomes a prisoner during the course of the study and the relevant research proposal was not reviewed and approved by the IRB in accordance with the requirements for research involving prisoners under subpart C of 45 CFR part 46, the investigator must promptly notify the IRB.

Site Visits: The MSU HRPP Compliance office conducts post approval site visits for certain IRB approved studies. If the study is selected for a site visit, you will be contacted by the HRPP Compliance office to schedule the site visit.

For Studies that Involve Consent, Parental Permission, or Assent Form(s):

Use of IRB Approved Form: Investigators must use the form(s) approved by the IRB and must typically use the form with the IRB watermark.

Copy Provided to Subjects: A copy of the form(s) must be provided to the individual signing the form. In some instances, that individual must be provided with a copy of the signed form (e.g. studies following ICH-GCP E6 requirements). Assent forms should be provided as required by the IRB.

Record Retention: All records relating to the research must be appropriately managed and retained. This includes records under the investigator's control, such as the informed consent document. Investigators must retain copies of signed forms or oral consent records (e.g., logs). Investigators must retain all pages of the form, not just the signature page. Investigators may not attempt to de-identify the form; it must be retained with all original information. The PI must maintain these records for a minimum of three years after the IRB has closed the research and a longer retention period may be required by law, contract, funding agency, university requirement or other requirements for certain studies, such as those that are sponsored or FDA regulated research. See HRPP Manual Section 4-7-A, Recordkeeping for Investigators, for more information.

Closure: If the research activities no longer involve human subjects, please submit a Continuing Review request, through which study closure may be requested. Closure indicates that research activities with human subjects are no longer ongoing, have stopped, and are complete. Human research activities are complete when investigators are no longer obtaining information or biospecimens about a living person through interaction or intervention with the individual, obtaining identifiable private information or identifiable biospecimens about a living person, and/or using, studying, analyzing, or generating identifiable private information or identifiable biospecimens about a living person.

For More Information: See the HRPP Manual (available at hrpp.msu.edu).

Contact Information: If we can be of further assistance or if you have questions, please contact us at 517-355-2180 or via email at IRB@msu.edu. Please visit hrpp.msu.edu to access the HRPP Manual, templates, etc.

Expedited Category. Please see the appropriate research category below for the full regulatory text.

Expedited 1. Clinical studies of drugs and medical devices only when condition (a) or (b) is met.

(a) Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required. (Note: Research on marketed drugs that significantly increases the risks or decreases the acceptability of the risks associated with the use of the product is not eligible for expedited review.)

(b) Research on medical devices for which (i) an investigational device exemption application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling.

Expedited 2. Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows:

(a) from healthy, nonpregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550 ml in an 8 week period and collection may not occur more frequently than 2 times per week; or

(b) from other adults and children, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 3 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

Expedited 3. Prospective collection of biological specimens for research purposes by noninvasive means.

Examples: (a) hair and nail clippings in a nondisfiguring manner; (b) deciduous teeth at time of exfoliation or if routine patient care indicates a need for extraction; (c) permanent teeth if routine patient care indicates a need for extraction; (d) excreta and external secretions (including sweat); (e) uncannulated saliva collected either in an unstimulated fashion or stimulated by chewing gumbase or wax or by applying a dilute citric solution to the tongue; (f) placenta removed at delivery; (g) amniotic fluid obtained at the time of rupture of the membrane prior to or during labor; (h) supra- and subgingival dental plaque and calculus, provided the collection procedure is not more invasive than routine prophylactic scaling of the teeth and the process is accomplished in accordance with accepted prophylactic techniques; (i) mucosal and skin cells collected by buccal scraping or swab, skin swab, or mouth washings; (j) sputum collected after saline mist nebulization.

Expedited 4. Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the

safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications.) Examples: (a) physical sensors that are applied either to the surface of the body or at a distance and do not involve input of significant amounts of energy into the subject or an invasion of the subject's privacy; (b) weighing or testing sensory acuity; (c) magnetic resonance imaging; (d) electrocardiography, electroencephalography, thermography, detection of naturally occurring radioactivity, electroretinography, ultrasound, diagnostic infrared imaging, doppler blood flow, and echocardiography; (e) moderate exercise, muscular strength testing, body composition assessment, and flexibility testing where appropriate given the age, weight, and health of the individual.

Expedited 5. Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis). (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(4). This listing refers only to research that is not exempt.)

Expedited 6. Collection of data from voice, video, digital, or image recordings made for research purposes.

Expedited 7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)

Expedited 8. Continuing review of research previously approved by the convened IRB as follows:

- (a) where (i) the research is permanently closed to the enrollment of new subjects; (ii) all subjects have completed all research-related interventions; and (iii) the research remains active only for long-term follow-up of subjects; or
- (b) where no subjects have been enrolled and no additional risks have been identified; or
- (c) where the remaining research activities are limited to data analysis.

Expedited 9. Continuing review of research, not conducted under an investigational new drug application or investigational device exemption where categories two (2) through eight (8) do not apply but the IRB has determined and documented at a convened meeting that the research involves no greater than minimal risk and no additional risks have been identified.

APPENDIX P: Image 3. Certificate of Confidentiality

	DEPARTMENT OF HEALTH & HUMAN SERVICES	Public Health Service
		National Institutes of Health Bethesda, Maryland 20892 www.nih.gov

CERTIFICATE OF CONFIDENTIALITY

Number:
CC-OD-21-1640

Issued To
Michigan State University

conducting research known as
The Efficacy of Hold Me Tight with Couples at Risk for or Experiencing Perinatal Depression

In accordance with the provisions of section 301(d) of the Public Health Service Act, 42 U.S.C. 241(d), this Certificate is issued to *Michigan State University* to protect the privacy of subjects in the above named research study, which is collecting or using identifiable, sensitive information. *Andrea Wittenborn* will serve as principal investigator. If there is a discrepancy between the terms used in this Certificate and section 301(d), the statutory language will control.

Research data and biospecimens containing identifiable, sensitive information collected or used during this study are covered by the Certificate beginning on the later of the approval date of this Certificate or the commencement of the project, until the collection or use of identifiable, sensitive information concludes. Identifiable, sensitive information protected by the Certificate and all copies thereof are protected for perpetuity.

The recipient of this Certificate shall comply with all requirements of subsection 301(d) of the Public Health Service Act. This Certificate does not represent an endorsement of the research project by the Department of Health and Human Services.

04/09/2021	ANGELA Chambers
Approval Date	NIH Certificates of Confidentiality Coordinator Office of Extramural Research National Institutes of Health



PARTICIPANTS NEEDED FOR A RESEARCH STUDY

The purpose of this study is to learn how efficacious an adapted version of the Hold Me Tight (HMT) program is at preventing or reducing perinatal depression in couples.

You may be eligible to participate if you and/or your partner:

- Are currently pregnant or up to one year postpartum
- Are in a monogamous, committed relationship
- Have access to high-speed internet and a computer
- Speak and understand English

What will be asked of you:

- You will be asked to engage weekly with online workshop material in 8 sessions over 8 weeks. You will also be asked to complete assessments about your experiences and mental and relational health prior to, during, and following the workshop.

What you will receive:

- Free online couple workshop valued at over \$700
- Financial incentives for assessment completion
- First 15 participants receive a free *Hold Me Tight* (Johnson, 2008) book

CONTACT US | Patricia Huerta
(919) 525-1419
huertap1@msu.edu

APPENDIX R: Image 5. Survey Measures on the Qualtrics Survey Software

8/3/2021

Qualtrics Survey Software

Default Question Block

To promote confidentiality, we are not asking for your name on this survey. Instead, we will ask a couple questions so that we can connect your survey to your partner's survey and send your gift card to the correct email address. We will only use information from this survey to identify who you are in the event of an emergency.

What is your couple code? (You can find this number in your email!)

Who is pregnant or up to one year postpartum in your relationship?

- ☐ Me
- ☐ My partner
- ☐ We are both pregnant and/or postpartum

Demographics

The next questions are about your demographic information.

What is your current age in years (e.g., 18, 24, or 40 years)?

What is your gender identify?

- ☐ Male
- ☐ Female

- ☐ Non-binary
- ☐ Trans male
- ☐ Trans female
- ☐ Other
- ☐ Prefer not to answer

What are your pronouns?

- ☐ She/her/hers
- ☐ He/him/his
- ☐ They/them/theirs
- ☐ Other

What is your sexual identity?

- ☐ Heterosexual or straight
- ☐ Gay
- ☐ Lesbian
- ☐ Bisexual
- ☐ Pansexual
- ☐ Asexual
- ☐ Queer
- ☐ Other
- ☐ Prefer not to answer

Please indicate your race/ethnicity. Select all that apply.

- ☐ Caucasian or White
- ☐ African American or Black
- ☐ Hispanic or Latinx
- ☐ American Indian

- ☐ Asian
- ☐ Native Hawaiian or Pacific Islander
- ☐ Multiracial
- ☐ Other
- ☐ Prefer not to answer

If applicable, please specify your religion.

- ☐ Catholicism/Christianity
- ☐ Judaism
- ☐ Islam
- ☐ Buddhism
- ☐ Hinduism
- ☐ Non-religious
- ☐ Other
- ☐ Prefer not to answer

What is your current employment status?

- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Not employed but looking for work
- ☐ Not employed and not looking for work
- ☐ Disabled and unable to work
- ☐ Retired
- ☐ Prefer not to answer

What is your combined annual household income?

- ☐ Less than \$25,000
- ☐ \$25,000-\$50,000

- ☐ \$50,001-\$100,000
- ☐ \$100,001-\$200,000
- ☐ More than \$200,000
- ☐ Prefer not to answer

What is the highest degree or level of education you have completed?

- ☐ Some high school
- ☐ High school
- ☐ Trade school
- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ PhD or higher
- ☐ Prefer not to answer

What is your current marital status?

- ☐ Married
- ☐ Engaged
- ☐ Living together
- ☐ Dating
- ☐ Other
- ☐ Prefer not to answer

How long have you been in your current relationship?

How many children do you have?

- ☐ 0
- ☐ 1

- ☐ 2-4
- ☐ More than 4
- ☐ Prefer not to answer

Have you experienced pregnancy loss?

- ☐ Yes
- ☐ No
- ☐ Prefer not to answer

Has your infant been born?

- ☐ Yes
- ☐ No
- ☐ Prefer not to answer

How many gestational weeks are you currently? Enter N/A if you are currently postpartum.

How many postpartum weeks are you currently? Enter N/A if you are currently pregnant.

When is/was your due date?

Please list your *past* mental health diagnoses. For example, depression or anxiety.

Please list your *current* mental health diagnoses. For example, depression or anxiety.

Please list any psychiatric medication you are currently taking.

Have you used therapy services in the past?

- ☐ Yes
☐ No
☐ Prefer not to say

Are you currently using therapy services?

- ☐ Yes
☐ No
☐ Prefer not to answer

Did you receive the *Hold Me Tight* book (Johnson, 2008) from the study team?

- ☐ Yes
☐ No
☐ Prefer not to answer

Have you previously read the *Hold Me Tight* book (Johnson, 2008)?

- ☐ Yes

- ☐ No
- ☐ Prefer not to answer

Are you currently reading the *Hold Me Tight* book (Johnson, 2008)?

- ☐ Yes
- ☐ No
- ☐ Prefer not to answer

Have you received a positive COVID-19 diagnosis during your or your partner's pregnancy or postpartum?

- ☐ Yes
- ☐ No
- ☐ Prefer not to say

What state (or country if outside the United States) are you currently located in?

EPDS

Please select the answers which come closest to how you have felt in the **past 7 days** - not just how you feel today.

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

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 to

I have blamed myself unnecessarily when things went wrong.

- ☐ Yes, most of the time
- ☐ Yes, some of the time
- ☐ Not very often
- ☐ No, never

I have been anxious or worried for no good reason.

- ☐ No, not at all
- ☐ Hardly ever
- ☐ Yes, sometimes
- ☐ Yes, very often

I have felt scared or panicky for no very good reason.

- ☐ Yes, quite a lot
- ☐ Yes, sometimes
- ☐ No, not much
- ☐ No, not at all

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

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

I have felt sad or miserable.

- ☐ Yes, most of the time
- ☐ Yes, quite often
- ☐ Not very often
- ☐ No, not at all

I have been so unhappy that I have been crying.

- ☐ Yes, most of the time
- ☐ Yes, quite often
- ☐ Only occasionally
- ☐ No, never

The thought of harming myself has occurred to me.

- ☐ Yes, quite often
- ☐ Sometimes
- ☐ Hardly ever
- ☐ Never

Block 6

The following statements concern how you feel in romantic relationships. Please respond to each statement by indicating how much you agree or disagree.

It helps to turn to my romantic partner in times of need.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I need a lot of reassurance that I am loved by my partner.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I want to get close to my partner, but I keep pulling back.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral

- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I find that my partner doesn't want to get as close as I would like.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I turn to my partner for many things, including comfort and reassurance.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

My desire to be very close sometimes scares people away.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree

☐ Strongly agree

I try to avoid getting too close to my partner.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I don't worry about being abandoned.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I usually discuss my problems and concerns with my partner.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I get frustrated if my romantic partner is not available when I need them.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I am nervous when my partner gets too close to me.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

I worry that a romantic partner won't care about me as much as I care about them.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neutral
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

Block 5

Please select the answer that best represents your experiences in your current relationship with your partner.

I am rarely available to my partner.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

It is hard for my partner to get my attention.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

I listen when my partner shares her/his/their deepest feelings.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

I am confident I reach out to my partner.

- ☐ Never true
- ☐ Rarely true

- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

It is hard for me to confide in my partner.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

I struggle to feel close and engaged in our relationship.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

My partner is rarely available to me.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

It is hard for me to get my partner's attention.

- ☐ Never true

- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

My partner listens when I share my deepest feelings.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

I am confident my partner reaches out to me.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

It is hard for my partner to confide in me.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

My partner struggles to feel close and engaged in our relationship.

- ☐ Never true
- ☐ Rarely true
- ☐ Sometimes true
- ☐ Usually true
- ☐ Always true

DAS

Most persons 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.

Handling family finances

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Matters of recreation

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Religious matters

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Demonstrations of affection

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Friends

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Sex relations

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree

- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Conventionality (correct or proper behavior)

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Philosophy of life

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Ways of dealing with parents or in-laws

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Aims, goals, and things believed important

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Amount of time spent together

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Making major decisions

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Household tasks

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree

- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Leisure time, interests, and activities

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

Career decisions

- ☐ Always agree
- ☐ Almost always agree
- ☐ Occasionally disagree
- ☐ Frequently disagree
- ☐ Almost always disagree
- ☐ Always disagree

How often do you discuss or have you considered divorce, separation, or terminating your relationship?

- ☐ All the time
- ☐ Most of the time
- ☐ More often than not
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

How often do you or your mate leave the house after a fight?

- ☐ All the time
- ☐ Most of the time
- ☐ More often than not
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

In general, how often do you think that things between you and your partner are going well?

- ☐ All the time
- ☐ Most of the time
- ☐ More often than not
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

Do you confide in your mate?

- ☐ All the time
- ☐ Most of the time
- ☐ More often than not
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

Do you ever regret that you married? (*or lived together*)

- ☐ All the time

- ☐ Most of the time
- ☐ More often than not
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

How often do you and your partner quarrel?

- ☐ All the time
- ☐ Most of the time
- ☐ More often than not
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

How often do you and your mate "get on each other's nerves?"

- ☐ All the time
- ☐ Most of the time
- ☐ More often than not
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

Do you kiss your mate?

- ☐ Every day
- ☐ Almost every day
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

Do you and your mate engage in outside interests together?

- ☐ All of them
- ☐ Most of them
- ☐ Some of them
- ☐ Very few of them
- ☐ None of them

How often would you say the following events occur between you and your mate?

Have a stimulating exchange of ideas

- ☐ Never
- ☐ Less than once a month
- ☐ Once or twice a month
- ☐ Once or twice a week
- ☐ Once a day
- ☐ More often

Laugh together

- ☐ Never
- ☐ Less than once a month
- ☐ Once or twice a month
- ☐ Once or twice a week
- ☐ Once a day
- ☐ More often

Calmly discuss something

- ☐ Never

- ☐ Less than once a month
- ☐ Once or twice a month
- ☐ Once or twice a week
- ☐ Once a day
- ☐ More often

Work together on a project

- ☐ Never
- ☐ Less than once a month
- ☐ Once or twice a month
- ☐ Once or twice a week
- ☐ Once a day
- ☐ More often

These are some things about which couples sometimes agree and sometimes disagree. Indicate if either item below caused differences of opinions or were problems in your relationship during the past few weeks.

Being too tired for sex

- ☐ Yes
- ☐ No

Not showing love

- ☐ Yes
- ☐ No

This question represents different degrees of happiness in your relationship. The middle point, "happy," represents the degree of happiness of most relationships. Please select the answer which best describes the degree of happiness, all things considered, of your relationship.

- ☐ Extremely unhappy
- ☐ Fairly unhappy
- ☐ A little unhappy
- ☐ Happy
- ☐ Very Happy
- ☐ Extremely happy
- ☐ Perfect

Which of the following statements best describes how you feel about the future of your relationship?

- ☐ I want desperately for my relationship to succeed and would go to almost any length to see that it does.
- ☐ I want very much for my relationship to succeed and will do all I can to see that it does,
- ☐ I want very much for my relationship to succeed and will do my fair share to see that it does.
- ☐ It would be nice if my relationship succeeded, but I can't do much more than I am doing now to help it succeed.
- ☐ It would be nice if my relationship succeeded, but I refuse to do any more than I am doing now to keep the relationship going.
- ☐ My relationship can never succeed, and there is no more that I can do to keep the relationship going.

Block 6

Thinking about your sex life during the last six months, please rate your satisfaction with the following aspects:

The quality of my orgasms

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

My "letting go" and surrender to sexual pleasure during sex

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

The way I sexually react to my partner

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

My body's sexual functioning

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

My mood after sexual activity

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

The pleasure I provide to my partner

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

The balance between what I give and receive in sex

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

My partner's emotional opening up during sex

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

My partner's ability to orgasm

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

My partner's sexual creativity

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

The variety of my sexual activities

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

The frequency of my sexual activity

- ☐ Not at all satisfied
- ☐ A little satisfied
- ☐ Moderately satisfied
- ☐ Very satisfied
- ☐ Extremely satisfied

Block 7

Please answer the following questions about your overall experience with the program.

Please rate the program on the following dimensions, where 1 is poor and 5 is excellent.

	1	2	3	4	5
Facilitator (Patricia)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assistant (Caitlin)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PowerPoint	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In-Class Exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video/DVD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Homework Exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Handouts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall Rating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What did you find most useful about this program?

What do you wish could have been added or done differently in this program?

Overall, did you get the outcomes you were looking for?

Would you recommend this program to others?

Any other comments/suggestions?

Block 8

Finally, would you like to receive a copy of any papers that are published using the data collected during this intervention? If so, please provide your email below!

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