EMOTION REGULATION AND SEXUAL WELL-BEING AMONG LONG-TERM COUPLES

by

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This thesis is dedicated to my parents, Theresa and Pierre, and to my love, Sarah. Thank you for teaching me to explore, your patience, and believing in me.

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ABSTRACT

Sexual well-being (e.g., sexual desire, satisfaction, and function) is a key contributor to overall well-being and relationship quality. Unfortunately, sexual problems and declines in sexual well-being are common for couples over time. Couples also have challenges navigating these declines, with partners reporting greater negative emotion in response to sexual versus nonsexual conflicts in their relationship. Although negative emotion interferes with sexual well-being and couples' communication during conflict, knowledge of how emotion regulation relates to sexual well-being is limited. Building on theoretical models of emotion and its regulation, my dissertation examined how emotion regulation was associated with sexual well-being among separate samples of long-term couples. For the first manuscript of my dissertation, I conducted a critical evaluation and review of research at the intersection of emotion regulation and sexual well-being. This narrative review article indicated that the experience of negative emotion undermines sexual adjustment, particularly for women. In addition, review of the empirical data indicated that greater difficulties regulating negative emotion were related to lower sexual well-being and that the explanatory power of the literature was limited by a lack of dyadic research and studies that examined the correlates of strategies to regulate emotions about sex. Study 1 of my dissertation was a cross-sectional dyadic study that assessed associations between emotion regulation (abilities and strategies to regulate emotion in sexual situations) and the psychological, relational, and sexual adjustment of mixed-gender couples (n = 87) in which one member was diagnosed with female sexual interest/arousal disorder (FSIAD). I found that greater difficulty regulating negative emotion was related to higher psychological distress (depression and anxiety) for both women with FSIAD and their partners, and men's greater sexual distress. Women's and men's greater use of suppression to manage emotion in sexual situations was linked to their own lower relationship satisfaction and own greater symptoms of depression. In contrast, greater use of emotional reappraisal by both women and men was associated with their own lower depression, lower anxiety, and lower perceived conflict; men's greater use of emotional reappraisal was related to their own higher sexual desire and to women's higher relationship satisfaction. Study 2 was a multi-method study that examined concurrent and prospective associations between couples' (n = 150) emotion regulation during an in-lab discussion about a conflict in their sexual relationship and their sexual well-being. I found that slower downregulation of negative emotional experience during the sexual conflict discussion was related to one's own higher sexual distress and lower sexual desire, to their partner's lower sexual satisfaction, and to one's own lower sexual satisfaction 12-months later. Surprisingly, slower downregulation of both emotional experience and externally coded emotional behavior was associated with higher sexual desire for both members of the couple 12-months later. Gender did not moderate the strength of associations. Broadly, the findings from my dissertation are consistent with interpersonal models of emotion and its regulation and suggest that an individual's emotion regulation is associated with their own and their romantic partner's sexual well-being. Emotion regulation may therefore be a relevant target for psychological treatments of sexual dysfunction and therapies that aim to improve couples' sexual relationship.

LIST OF ABBREVIATIONS AND SYMBOLS USED

%	Percent
APIM	Actor-partner interdependence model
ANX	Trait scale of the State-Trait Anxiety Inventory
b	Unstandardized beta coefficient
β	Standardized beta coefficient
BDI	Beck Depression Inventory
BKY	Benjamini, Krieger, and Yekutieli procedure
CAD	Canadian dollar
CI	Confidence interval
CFI	Confirmatory fit index
CSI	Couples Satisfaction Index
COVID-19	Coronavirus disease 2019
DAS	Dyadic Adjustment Scale
DARMA	Dual axis rating and media annotation software
DERS	Difficulties in Emotion Regulation Scale
df	Degrees of freedom
Downreg Beh	Downregulation of negative emotional behavior, in seconds
Downreg Exp	Downregulation of negative emotional experience, in seconds
DSM–5	Diagnostic and Statistical Manual of Mental Disorders
ERGT	Emotion regulation group therapy
ERQ	Emotion Regulation Questionnaire
e	Error term (unexplained variance)
F	F-test from MANOVA
FDR	False discovery rate
FSAD	Female sexual arousal disorder
FSIAD	Female sexual interest/arousal disorder
FSDS-R	Female Sexual Distress Scale – Revised
GMSEX	Global Measure of Sexual Satisfaction
GPPPD	Genito-pelvic pain/penetration disorder
HSDD	Hypoactive sexual desire disorder
ICC	Intraclass correlation coefficient
k	Number of data values per group
M	Mean
MBT	Mindfulness based-therapy
MLR	Maximum likelihood estimation with robust standard errors
N	Population sample size
n	Sample size
OSF	Open Science Framework
p	P-value for significance testing
Ph.D.	Doctor of Philosophy
RAP	Reappraisal subscale of the adapted Emotion Regulation Questionnaire
r	Pearson product-moment correlation coefficient
RMSEA	Root mean square approximation of error
Sex Sat	Global Measure of Sexual Satisfaction

SPSS	Statistical Package for the Social Sciences
SPQ	Sexual Problems Questionnaire
STAI	State-Trait Anxiety Inventory
SE	Standard error
SD	Standard deviation
SDI-D	Partner-focused dyadic sexual desire subscale of the Sexual Desire Inventory
SRMR	Standardized Root Mean Square Residual
SUPP	Suppression subscale of the adapted Emotion Regulation Questionnaire
t	t-value for t-tests
T	Timepoint
U.S.	United States
USB	Universal serial bus
z	Z-score; standard score
$\chi 2$	Chi-square value
=	Equals
<	Less than
≤	Less than or equal to
-	Negative

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I've considered a few ways for how to structure this section. I had hoped to find a format that would ensure I expressed my appreciation for each person who has supported me and contributed to this work. And while I've accepted that the scope of this task cannot be solved by the perfect outline, three categories of time have helped me summarize the people to whom I am grateful: before, during, and always.

Before

Before I started this research, I was a professional musician and music teacher. Casey Shea, Brendan Soares, James Young, Alex Mattias, and Brooks Reynolds: you were my first collaborators and are my lifelong friends. I learned the rewards of hard work, persistence, and sacrifice with each of you. Kirk Ellard (1971 – 2009) was my first creative mentor and I am grateful that he taught me to foster "shoshin" (beginners mind) while striving for excellence. I am ever grateful for the support I received from my music students and their families. Notably, my path to graduate school was paved with the generosity, encouragement, and wisdom of Katharine Lake-Berz, Killian Berz, Amanda Young, Robert Steiner, Bernard Morrow, and Lisa Bernstein.

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CHAPTER 1: INTRODUCTION

Sex is a core component of romantic relationships. Satisfying sex promotes partner bonding, positive mood, and relationship satisfaction (Kashdan et al., 2018; McNulty et al., 2015; Meltzer et al., 2017). Yet, as Metz and colleagues (2017) note, sexual problems can place a disproportionate burden on couples: "When sex is a vital energy, it contributes 15–20% to relationship satisfaction. When it is dysfunctional, it contributes 50–75% to the distress."

Moreover, sexual problems, which refer to irregularities or difficulties with aspects of sexual functioning (e.g., sexual pain/penetration disorder, orgasm dysfunctions, low sexual desire; Briken et al., 2020) as well as declines in sexual well-being are quite common. Approximately 46% of women and 33% of men experience at least one sexual problem over the course of a year (Briken et al., 2020). In addition, many long-term couples report diminished sexual desire, sexual satisfaction, and sexual frequency as the duration of their partnership increases (Impett et al., 2008; Johnson et al., 1994; Klusmann, 2002). Couples also tend to report difficulty navigating these declines, with conversations about sexual problems provoking stronger negative emotion relative to other topics of disagreement (Rehman et al., 2017). Although theories suggest emotional experiences influence sexual well-being (Basson, 2000; Metz & McCarthy, 2011), it is unclear how emotion regulation—the abilities and strategies that people use to influence the experience and expression of emotion (Naragon-Gainey et al., 2017)—relates to couples' sexual lives.

The goal of my dissertation was to examine the associations between sexual well-being and emotion regulation, which is related to social functioning but poorly

understood in the context of sexual relationships. In completing this work, I aimed to shed light on a novel treatment target for couples coping with sexual problems and identify a modifiable factor to promote the sexual well-being of couples over time. The following section begins with an overview of sexual well-being, its key correlates, and women's clinically low sexual desire. I then discuss models of emotion and emotion regulation, and the relevance of emotion regulation to couples' conflict and sexual well-being. This chapter concludes with a summary and overview of my dissertation manuscripts.

1.1 Sexual Well-Being

Sexual well-being is a multifaceted construct that refers to a person's subjective evaluations of their sexual life (Byers & Rehman, 2014). It includes cognitive and emotional responses to aspects of sexuality, such as one's satisfaction with their sexual relationship, levels of sexual desire and sexual distress, frequency of sex, and sexual function (Byers & Rehman, 2014; Laumann, 2006). Across cultures, people who report greater sexual well-being endorse higher levels of life satisfaction, overall subjective well-being, and happiness (Contreras et al., 2016; Hooghe, 2012; Laumann, 2006; Stephenson & Meston, 2015).

Sexual well-being also has a major influence on relationship quality. Several studies show higher sexual satisfaction predicts increases in relationship satisfaction over time (see Maxwell & McNulty, 2019, for a review). Yet, many individuals in long-term relationships struggle to maintain sexual well-being (Impett et al., 2014). Clarifying the correlates of sexual well-being is therefore important because doing so may uncover new

targets for interventions to help couples maintain satisfying sexual relationships and, in turn, promote their overall well-being.

Given its multidimensional nature, there are many factors with unique contributions to each aspect of sexual well-being. I will use a biopsychosocial–cultural framework (e.g., Mitchell et al., 2021; Nimbi et al., 2020) to summarize correlates and predictors of sexual well-being in the section that follows, focusing on common etiological and maintenance factors in lieu of an exhaustive review.

Biologically, several medical conditions and medications are implicated in the pathogenesis of sexual dysfunction (see Basson & Weijmar Schultz, 2007, for a review). Diseases characterized by chronic inflammation, such as type 1 diabetes and metabolic syndrome, predict problems with sexual function, regardless of gender/sex (e.g., erectile dysfunction and anorgasmia; Enzlin et al., 2009; Maiorino et al., 2018). Endocrine disorders in women (e.g., hyperprolactinemia, diabetes) and men (e.g., hypogonadism) also interfere with sexual function and sexual desire (Carosa et al., 2020; Rastrelli et al., 2019). There is also robust evidence that individuals treated with selective serotonin reuptake inhibitor medications are prone to sexual dysfunction (Montejo et al., 2001), above and beyond the interference of psychiatric concerns on sexual adjustment (Lorenz et al., 2016).

Mood is one of the most well-documented psychological correlates of sexual well-being and particularly relevant to my dissertation (see Chapter 2). Among non-clinical samples, people who score higher in trait-level neuroticism (i.e., individuals prone to experiencing negative mood states) report lower sexual satisfaction concurrently and over time (Byers & Rehman, 2014). In a systematic review and meta-analysis of

prospective cohort studies, Atlantis and Sullivan (2012) found clinically significant depression was both a cause and a consequence of sexual dysfunction: meeting clinical cut-offs for depression increased the risk of developing a sexual dysfunction by 50% to 70%; being affecting by a sexual dysfunction increased the risk of clinical depression by 130% to 210%. Indeed, diminished interest in sex is a hallmark of psychiatric disorders (e.g., major depressive disorder; American Psychiatric Association, 2013). Anxiety disorders also frequently co-occur with sexual dysfunction (Laurent & Simons, 2009) and higher anxiety is associated with lower sexual well-being among both women and men (e.g., sexual dissatisfaction, presence of erectile dysfunction and vulvar discomfort; Ljungman et al., 2020). In contrast, greater levels of positive mood are correlated with better sexual function (Nimbi et al., 2018; Oliveira & Nobre, 2013; Peixoto & Nobre, 2017) and more favourable sexual well-being (see Chapter 2).

Although a comprehensive discussion of additional psychological factors associated with sexual well-being is beyond the scope of this overview, key psychological processes that contribute to the development and maintenance of sexual problems include causal attributions, efficacy expectations, and cognitive distraction (Brotto et al., 2016). For example, in addition to mood and anxiety, Brotto et al. (2016) identified the following robust psychological predictors of poor sexual well-being: internal attributions of sexual problems are linked to orgasmic disorders; distraction interferes with sexual response for men and women, particularly genital arousal; people experience sexual arousal inline with their (experimentally manipulated) expectations.

Several social and interpersonal factors shape sexual well-being across a variety of domains (for reviews see; Brotto et al., 2016; Mark & Lasslo, 2018; Rosen &

Bergeron, 2019). In the context of human development, a history of adverse childhood experiences (e.g., neglect, abuse, serious family dysfunction) is related to poorer sexual well-being for women and men (Vaillancourt-Morel et al., 2021) and an increased risk of developing a sexual dysfunction (Corsini-Munt et al., 2017; Gewirtz-Meydan & Opuda, 2022). Social factors operating at the structural level are also linked with sexual well-being, with individuals in less favourable socioeconomic conditions (e.g., lower income, less education) reporting lower sexual functioning and sexual satisfaction relative to those with better conditions (Higgins et al., 2022).

Interpersonal factors play an important role in sexual well-being, particularly the frequency and quality of conversations about sexual preferences (i.e., sexual communication; Metts & Cupach, 1989). A meta-analysis of forty-eight studies found that better sexual communication was related to greater sexual well-being for women and men, including higher sexual desire, arousal, and overall functioning (Mallory et al., 2019). Similarly, better sexual communication is linked to greater sexual satisfaction and lower sexual distress in both clinical and community samples (Byers, 2011; Hayes et al., 2008; Montesi et al., 2010; Rancourt et al., 2017). Accordingly, I focus on associations between emotion dynamics during couples' sexual communication about a sexual conflict in their relationships and sexual well-being in Study 2 of my dissertation.

Notable cultural factors related to sexual well-being include age, societal beauty ideals, and gender. For instance, a population-based study found people age 65 or older were less satisfied with their sex lives than younger cohorts; however, the association between being in a relationship and satisfaction with one's sex life became more positive with increased age (Hooghe, 2012). Cultural values of beauty and sexual desirability are

related to higher body image concerns and poorer sexual well-being for many North American women (Byers & Rehman, 2014; Rehman et al., 2013).

Consequently, gender, which refers to "the attitudes, feelings, and behaviors that a given culture associates with a person's biological sex" (e.g., woman, man, agender; American Psychological Association, 2012), is an important predictor of sexual well-being. Women, for example, tend to report lower sexual desire and orgasm frequency compared to men (Eplov et al., 2007; Mahar et al., 2020; Mark & Murray, 2012). Women are also more likely to experience sexual dysfunction than men (Briken et al., 2020; Lewis et al., 2010). Other gender differences that have been noted in the literature include men's versus women's higher frequencies of pornography use, masturbation, lifetime sexual partners, and sexual initiation with a romantic partner (Else-Quest, 2014; Mitchell et al., 2019; Petersen & Hyde, 2010; Vannier & O'Sullivan, 2011). Theory and research indicate that many gender differences in aspects of sexual well-being are a consequence of cultural norms related to gender/sex[1]. An emphasis on penile–vaginal intercourse, abstinence-only sex education, and sexual double standards are examples of cultural norms which appear particularly detrimental to women's versus men's sexual well-being (for reviews, see Conley & Klein, 2022; Katz-Wise & Hyde, 2014). Thus, culture is an important correlate of sexual well-being and social norms related to gender/sex tend to be associated with poorer sexual well-being for women.

In sum, sexual well-being encompasses one's emotional and cognitive evaluations of their sexuality (Byers & Rehman, 2014; Laumann, 2006). When these evaluations are positive, people report high satisfaction in multiple domains, including overall

[1] Gender/sex denotes the mutual influence of biological and sociocultural factors on the experience and expression gender and sex (van Anders, 2015).

satisfaction with life and romantic relationships (Laumann, 2006; Maxwell & McNulty, 2019). Unfortunately, sex-related distress—negative evaluations of one's sexual life and function—is highly prevalent (Briken et al., 2020; Lewis et al., 2010) and places a significant burden on romantic relationships (Metz et al., 2017). Factors operating across biological, psychological, social, and cultural domains are associated with disruptions to facets of sexual well-being, yet research on sexual dysfunction (i.e., significant and persistent distress related to sexual problems) has historically focused on biological factors and problems among men. This focus is despite epidemiolocal data showing that women experience sexual dysfunction at twice the rate of men (Lewis et al., 2010) and evidence that psychosocial factors are key to the development and maintenance of sexual dysfunction, regardless of gender/sex (Brotto et al., 2016; Corona, 2022). Thus, one goal of my dissertation was to increase knowledge of interpersonal and psychological factors that co-occur with women's clinically low sexual desire, which is one of the most common sexual dysfunctions (see Chapter 3). The following section describes the construct of sexual desire and provides an overview of female sexual interest/arousal disorder.

1.2 Sexual Desire and Female Sexual Interest/Arousal Disorder

1.2.1 Sexual Desire

Sexual desire is an aspect of sexual well-being that refers to one's level of interest in sexual activity (Birnbaum, 2018). Although it can include desire for solitary sexual behavior (e.g., masturbation; Moyano et al., 2017), most often and for the purposes of this dissertation, sexual desire is conceptualized as one's experience of interest to engage in sexual activity with another person (Birnbaum, 2018). Researchers have also described

the experience of sexual desire as an emotional state of "wanting" that arises from an interplay of the subjective, behavioral, and physiological systems that sub serve the experience of emotion (Brotto et al., 2010).

The experience of sexual desire is critically influenced by relationship factors (Dawson & Chivers, 2014; Sims & Meana, 2010). Indeed, dyadic sexual desire is one of the most well-documented aspects of sexual well-being that is inversely related to relationship length: an individual's sexual desire for their partner decreases by approximately one standard deviation per year (Impett et al., 2008; Klusmann, 2002). Further, having a romantic partner significantly increases the likelihood of distress related to low sexual desire (Rosen et al., 2009), highlighting the need for studies of sexual desire that include both members of long-term romantic couples.

Low sexual desire is also common. A Canadian population-based study found 40% of women aged 40-59 reported low sexual desire in the last six months (Quinn-Nilas et al., 2018). Women who experience persistent and significant distress related to absent or reduced sexual desire and arousal (e.g., in response to erotic cues) may meet criteria for female sexual interest/arousal disorder (American Psychiatric Association, 2013).

1.2.2 Female Sexual Interest/Arousal Disorder

Female sexual interest/arousal disorder (FSIAD) is a highly prevalent sexual dysfunction that is estimated to affect between 7% and 23% of women (Shifren et al., 2008; Witting et al., 2008; but see also Mitchell et al., 2016). FSIAD is associated with impairments to women's sexual, psychological, and relationship health: women with clinically low sexual desire report higher sexual distress, increased depression, and lower relationship and sexual satisfaction compared to unaffected women (Laumann et al.,

1999; Rosen et al., 2009). When the current dissertation was being designed, research on the impact of FSIAD on partners was scarce. However, there is now evidence to suggest that partners of women with FSIAD also experience negative consequences, reporting more erectile difficulties, higher sexual distress, and lower sexual and relationship satisfaction, compared to controls (Rosen et al., 2019).

Consistent with biopsychosocial models of sexual dysfunction (Basson, 2003), multiple biological, psychological, and socio-cultural factors influence the development and maintenance of FSIAD (Brotto & Laan, 2015). These include endocrine dysfunction (e.g., androgen insufficiency/Testosterone), unwanted sexual experiences, a history of depression, and inadequate sex education (Abdo et al., 2010; Brotto et al., 2010). Not only are women more likely to experience low sexual desire when they are involved in a relationship (Zheng et al., 2020), partnered women are also more likely to report sex-related distress relative to unpartnered women (Rosen et al., 2009). Thus, interpersonal factors are relevant to the onset and course of FSIAD, but few studies have included both members of couples coping with this condition.

Despite recognition of FSIAD's multifactorial etiology, treatment of desire and arousal difficulties has been dominated by pharmacotherapy research; however, candidate drugs have shown weak efficacy in clinical trials compared to placebos (Levine et al., 2016), and have failed to ameliorate subjective sexual arousal or desire (Brotto et al., 2008). Psychological interventions, although less studied than pharmacotherapies (Heiman, 2008), have provided encouraging results in relieving the symptoms FSIAD. A meta-analysis found that cognitive-behavioral therapy significantly increased desire and sexual satisfaction in affected women compared to waitlist controls (Frühauf et al., 2013).

These results underscore the importance of identifying novel psychological factors which may promote the sexual and relational well-being of couples affected by FSIAD. One promising factor is emotion regulation.

Emotion regulation, broadly speaking, refers to the abilities and strategies that influence the experience and expression of emotion (Gross, 1998). As outlined below and in Chapter 2 of this dissertation, differences in emotion regulation are associated with divergent adjustment to several conditions, including sexual problems. Compared to controls, women with clinically low desire and/or arousal endorse higher levels of negative emotion and more difficulties with emotion regulation compared to controls (Sarin et al., 2016). Accordingly, mindfulness-based interventions, which target processes associated with effective regulation of negative emotion, predict improvements in sexual desire, arousal, lubrication, and sexual satisfaction (Brotto et al., 2008; Mize, 2015, for a review). Although prior to this dissertation, no study had explored associations between emotion regulation and couples' adjustment in the context of FSIAD, research suggests that emotion regulation abilities and strategies among couples affected by sexual dysfunction may be associated with their relationship satisfaction and sexual well-being (reviewed in Chapter 2). Moreover, given that conversations about sex tend to be among the most difficult to negotiate and often provoke feelings of vulnerability (Rehman et al., 2017; Sanford, 2003), couples' emotion regulation in the context of navigating sexual problems may be particularly important for their sexual relationship.

1.3 Emotion Regulation and Couples' Conflict Conversations

How couples manage emotion during conflict has implications for their well-being. Quicker downregulation of negative emotion during couples' nonsexual conflict is

associated with greater relationship satisfaction (Bloch et al., 2014), adaptive communication (Holley et al., 2018), and marital stability (Gottman et al., 1998). Although relatively few studies have focused specifically on the consequences of emotion regulation during couples' conflict, related research suggests couples' regulation of negative emotion is associated with relationship outcomes. Gottman and colleagues (2017), for example, summarize more than four decades of laboratory research to show that the presence of negative emotional states during couples' conflict is a robust predictor of relational distress: during conflict discussions, individuals in unhappy marriages (and/or couples that eventually divorce) demonstrate a higher ratio of negative to positive emotion, enter into negative emotional states more quickly, and become more absorbed in negative emotion relative to happily married individuals. Conversely, the ability to efficiently shift out of negative emotional states promotes the use of more adaptive emotion regulation strategies (Tull & Aldao, 2015), such as cognitive reappraisal, which is associated with less distress about relational conflict and, in turn, guards against declines in marital quality (Finkel et al., 2013).

Yet, the consequences of emotion regulation during sexual conflict (i.e., discussions about divergent sexual needs and/or problems with a sexual relationship) have been given limited research attention. It is clear, though, that couples' sexual communication differs from nonsexual communication in several ways. Relative to other topics, romantic partners are more reluctant to talk about sex (Byers & Demmons, 1999), experience greater negative emotion in response to sexual conflict discussions (Rehman et al., 2019; Rehman et al., 2017), and are more concerned about each other's feelings when talking about sex (Rehman et al., 2019). In the only study to date that examined the

correlates of emotion during sexual conflict, men's greater frequency of negative emotion behaviours (e.g., contempt and belligerence) was related to lower relationship satisfaction for both members of the couple (Roels et al., 2022). The focus of this study, however, was to compare communication behaviors between sexual and nonsexual conflict discussions. Although Roels and colleagues (2022) showed that (a) couples display more positive emotional behaviors (e.g., affection) during sexual versus nonsexual conflict, and (b) negative emotion displayed during sexual conflict is relevant for relationship well-being, these authors did not investigate whether and how emotion regulation during conflict was associated with sexual outcomes. Because the quality of couples' relationship and sexual communication are closely linked with sexual well-being (Mallory et al., 2019; Sanchez-Fuentes et al., 2014), it is likely that couples' emotion regulation during sexual conflict discussions influences their sexual adjustment. Still, a specific examination of this hypothesis is warranted because the correlates and consequences of emotion regulation depend on context, which I outline in the following section.

1.4 Emotion and its Regulation

Emotion is difficult to define. Indeed, authors posit that a unified theory and definition of emotion is unattainable, in part, because emotional phenomena are too diverse to describe within a single framework (Gross, 2014; Niedenthal & Brauer, 2012). Some scholars have even questioned the existence of emotion (e.g., Frijda, 2016). As Niedenthal and Brauer (2012) observe, researchers' conceptualizations of emotion depend on the goals of their research program. My conceptualization of emotion is therefore influenced by theories of its regulation and emergence in interpersonal contexts.

Gross (2014) describes emotion as a phenomenon that involves "loosely coupled changes in the domains of subjective experience, behavior, and central and peripheral physiology". Gross's theory of emotion regulation is based on a modal model of emotion: situations (external or internal) capture one's attention, which prompt appraisals and responding across experiential, behavioral, and neurobiological systems. This view is compatible with dimensional models of emotion (Rubin & Talarico, 2009, for a review), wherein emotions are defined as sensations arising from neurophysiological systems that determine the quality of one's experience and behavior (Posner et al., 2009). Constructionist theories of emotion (e.g., Barrett, 2016; Barrett et al., 2007) refer to these sensations, which range continuously from unpleasant to pleasant, as "core affect". From this perspective, emotions are the consequence of dividing core affect into specific instances of emotion based on one's "emotion concepts" (i.e., cognitive schemas that are developed based on culture and experience).

Emotions are also defined as temporal interpersonal systems (Butler, 2011; Butler, 2017). This is because mounting evidence suggests that emotions (a) emerge from an interaction of systems within and between individuals, (b) often occur in social situations, (c) unfold over time, and (d) serve social functions (e.g., communication and coordination; Butler, 2011; Butler, 2017; Linehan, 1993). Thus, broadly speaking, emotion refers to a collection of intra and interpersonal systems that influence one's relationship with their internal, social, and physical environments over time (Butler, 2017; Frijda, 2016). Pragmatically and empirically, pleasure and displeasure—valence—appear central to how humans experience and represent emotion (Barrett et al., 2007).

It follows that emotion regulation encompasses any process that changes the valence, intensity, and/or duration of an emotion system (Gross, 2015; Koole, 2009; Naragon-Gainey et al., 2017). Of note, there are times when I use emotion regulation in this dissertation as an umbrella term to refer to moments when people change how they feel. These include instances of implicit emotion regulation (i.e., regulation without conscious intention; Braunstein et al., 2017; Koole & Rothermund, 2011) as well as times when, according to constructionists, people were regulating core-affect versus emotion (i.e., because they did not consciously label or construct an instance of discrete emotion). I take this approach because it is consistent with my operationalization of emotion, theoretical models of emotion regulation, and approaches taken in prior research of emotion regulation (c.f., Bloch et al., 2014; Gross, 2014; Nook et al., 2021). Still, to balance this inclusive definition of emotion regulation with conceptual specificity, I outline the relevant working definitions of emotion regulation within each chapter of this dissertation (e.g., emotion regulation abilities and strategies in Chapter 2; difficulties regulating negative emotion and strategies to manage negative emotions about sex in Chapter 3; and downregulation of negative emotion during sexual conflict in Chapter 4).

1.4.1 Theories of Emotion Regulation

The following three models of emotion regulation are relevant to the current dissertation. First, ability models (e.g., Berking & Whitley, 2014; Gratz & Roemer, 2004) focus on dispositional qualities that underlie one's potential to change facets of emotional responding. For example, people who are better able to access and reflect on their subjective emotional state tend to be more effective at modulating negative emotion (Guendelman et al., 2017; Zaki et al., 2013). Ability models are thus relevant to the

current dissertation because there is evidence that a person's greater capacity to shift out of negative emotional states during conflict facilities repair within couples and predicts greater relationship satisfaction and length (Gottman and Gottman, 2017). Second, strategy models (e.g., Aldao et al., 2010; Gross, 2015) conceptualize emotion regulation in terms of the various approaches that people use to manage emotion. Common emotion regulation strategies fall into the categories of disengagement, aversive cognitive perseveration, and adaptive engagement and include behaviors such as expressive suppression, rumination, and problem solving, respectively (Naragon-Gainey et al., 2017). Strategy models are relevant to the current dissertation because evidence suggests that greater use of strategies characterized by disengagement and aversive cognitive perseveration impair conflict resolution and communication (Low et al., 2019), potentially because these strategies interfere with intimacy, memory, and increase negative emotion. Third, interpersonal models of emotion regulation (e.g., Rosen & Bergeron, 2019; Zaki & Williams, 2013) focus on how interpersonal factors and processes shape the experience and expression of emotion: a person's ability to regulate emotion within their sexual relationship influences how couples experience sexual difficulties and, consequently, couples' psychological, relational, and sexual well-being (Rosen & Bergeron, 2019). Whereas ability and strategy models focus on intrapersonal processes that underlay emotion regulation, interpersonal models consider relationship contexts and the interdependence of dyad members' emotional dynamics as key to the emergence and correlates of emotion regulation (English and Eldesouky, 2020).

The studies of the current dissertation test predictions based on ability, strategy, and interpersonal models of emotion regulation. While each model offers a unique perspective from which to conceptualize emotion regulation, they converge on the view that a person's emotion regulation is effective insofar as it facilitates actions aligned with their predetermined goals and values (Hofmann, 2014; Naragon-Gainey et al., 2017). As reviewed in Chapter 2 of this dissertation, empirical evidence from research at the intersection of emotion regulation and sexual well-being is consistent with this notion as well as the aforementioned theories of emotion regulation. For instance, negative emotion interferes with sexual outcomes and there is preliminary evidence that women's poorer emotion regulation abilities and strategies are associated with lower sexual well-being, including in the context of FSIAD (Sarin et al., 2016). However, until my dissertation, few studies had included both members of the couple or assessed emotion regulation in sexual contexts.

In support of interpersonal models of emotion regulation, contextual factors (e.g., the presence of other people, valence and intensity of emotion) play a key role in a person's emotion regulation abilities, strategy selection, and the consequences thereof (Aldao & Tull, 2015; English et al., 2017; see Kobylińska & Kusev, 2019, for a review). For example, Kashdan et al. (2016) found that interpersonal contexts were the most common cue for negative emotion (i.e., anger). The same study found that when anger was cued by another person, it was experienced as particularly intense and difficult to regulate. Moreover, intense negative emotion contexts undermine emotion regulation abilities and increase the risk of less effective coping (e.g., avoidance, self-injurious acts; Tull & Aldao, 2015; Zaki et al., 2013). In social situations, individuals are also prone to

regulate their emotions using suppression (English et al., 2017)—a strategy that has been shown to interfere with communication, intimacy, and relationship satisfaction (Butler et al., 2003; Dworkin et al., 2019). And while there is agreement that contextual factors are important in the study of emotion regulation, research on emotion regulation in interpersonal and sexual contexts is relatively limited. This oversight is notable because social situations are common antecedents to instances of emotion regulation (English & Eldesouky, 2020, for a review) and sex elicits emotional experiences that influence sexual well-being (see Chapter 2). It is possible that the scarcity of research in interpersonal and sexual contexts is a consequence of how emotion regulation is traditionally assessed.

1.4.2 Measuring Emotion Regulation

Self-report questionnaires are the most common method of measuring emotion and its regulation (Gratz et al., 2020; Robinson & Clore, 2002). Widely used questionnaires assess participants' beliefs about their own emotion regulation strategies and abilities at the trait level (Gratz & Roemer, 2004; Gross & John, 2003; Sorman et al., 2021). These include the Emotion Regulation Questionnaire (ERQ; Gross & John), which assesses participants' tendency to use two emotion regulation strategies (reappraisal and suppression), and the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), which measures participants' perceptions of their emotion regulation ability (e.g., emotional awareness and clarity). Both measures have high reliability and good construct validity (Gratz & Roemer, 2004; Gross & John, 2003). Research using the ERQ and DERS typically find greater use of reappraisal is associated with better relationship well-being, whereas greater use of suppression and more difficulties regulating negative

emotion are linked with poorer relational and sexual well-being, respectively (see Chapter 2). While self-report questionnaires have been integral to advancing theory and research of emotion regulation within individuals (and couples when analyzed using dyadic data analyses), it is challenging to capture the dynamic nature of emotion regulation as it emerges in interpersonal contexts using these methods (Levenson et al., 2014).

Performance-based measures assess emotional regulatory practices within the contexts that they occur (Stephens et al., 2022). Such measures typically include multiple methods, such as observational and self-report assessments, and thus mitigate the well-documented limitations of questionnaire studies alone (e.g., shared method variance and recall bias; Folkman & Moskowitz, 2004; Robinson & Clore, 2002). Levenson and Gottman (1983), for example, developed a paradigm in which couples' interactions are filmed during a laboratory discussion task and subsequently coded to yield continuous multimethod data, including participants' emotional experience and behavior. Performance-based emotion regulation indices can then be derived from these continuous streams of data. Dworkin and colleagues (2019), for example, derived emotional suppression indices from a laboratory-based interaction task and found women's greater and more rigid use of suppression during couples' disagreement was associated with their own lower relationship satisfaction. Using a similar method, Bloch et al. (2014) showed quicker downregulation of negative emotion during married couples' general conflict was associated with greater marital quality.

Couples' interactions paradigms and performance-based assessments closely capture the temporal nature of emotion, have high ecological validity, and can be tailored

to specific research questions, making them well-suited for research on emotional regulation in couples (Levenson et al., 2014). Although these methods have been used to study emotion regulation during nonsexual conflict (for overviews, see Levenson et al., 2014; Stephens et al., 2022), no study has used performance-based measures to assess emotional regulatory practices during couples' sexual conflict.

1.4.3 Gender Differences in Emotion Regulation

Similar to gender differences in sexual well-being reviewed at the start of this chapter, studies show notable gender differences in aspects of emotion regulation. In terms of regulatory strategies, women draw from a larger repertoire of strategies, demonstrate more flexible implementation of strategies, and rely less on suppression to regulate their emotions when compared to men (Chaplin & Aldao, 2013; Goubet & Chrysikou, 2019; Gross & John, 2003; Nolen-Hoeksema, 2012). The social consequences of suppression, however, appear more detrimental for women versus men (Chervonsky & Hunt, 2017). Indeed, as will be reviewed in Chapter 4, women's expression and downregulation of negative emotion during conflict discussions appears to have greater influence on, and more associations with, relationship well-being compared to men's emotion regulation (Bloch et al., 2014; Dworkin et al., 2019). The research on gender differences in emotion regulation abilities is less established, yet there is some evidence to suggest that women report more difficulty accepting negative emotion than men, whereas men report more difficulties accessing strategies to regulate negative emotion relative to women (Anderson et al., 2016; but see also Ritschel et al., 2015). Thus, research suggests gender differences in emotion regulation may be relevant to couples' sexual well-being. Although research from the relationship sciences suggests gender

could moderate associations between emotion regulation and sexual outcomes (e.g., Bloch et al., 2014), no studies had tested this possibility prior to my dissertation or with data drawn from a diverse sample (i.e., inclusive of gender/sex divergent individuals and/or couples comprised of same-gender/sex romantic partners).

1.5 Summary and Overview of Studies

Sexual well-being is integral to the quality and longevity of long-term romantic relationships (Byers & Rehman, 2014; Fallis et al., 2016). Couples, however, report declines in sexual well-being as the duration of their relationship increases (Impett et al., 2014) and sexual problems are highly prevalent (Briken et al., 2020). It is therefore critical to identify factors that are associated with the sexual well-being of couples over time. Doing so may uncover new treatment targets and increase the effectiveness of couples-based interventions aimed at promoting sexual well-being and helping couples cope with sexual problems.

Recent theory and emerging empirical evidence suggest emotion regulation is relevant to sexual well-being (c.f., Rosen & Bergeron, 2019), yet key gaps in knowledge remain. First, research on the correlates of sexual dysfunction has prioritized studies of biological factors and among men, thereby limiting knowledge of interpersonal factors associated with women's clinically low desire. Second, a lack of dyadic studies that account for interdependence within a couple has limited understanding of the interpersonal nature of emotion regulation within sexual relationships. Third, reliance on self-report measures that assess global regulatory strategies and abilities has limited understanding of how emotion regulation in sexual contexts, as well as in-vivo regulatory practices, relate to couples' adjustment. Finally, knowledge of gender differences in the

correlates of romantic couples' emotion regulation during conflict is based largely on samples of mixed-sex couples, thus limiting knowledge of how emotion regulation during conflict is related to outcomes for gender/sex diverse couples.

The overarching aim of my dissertation was to understand how emotion regulation is associated with sexual well-being among long-term couples in both a clinical and community context. Guided by this aim, I examined the relationship between emotion regulation and sexual well-being in a narrative review article and two empirical studies using dyadic data analyses and multiple methods. These articles comprise the body of my dissertation (Chapters 2-4).

The first manuscript of my dissertation is a narrative review article on emotional regulation and sexual well-being (Chapter 2). The purpose of this article was to clarify the emotional correlates of sexual well-being and guide future study. To this end, I conducted a critical review and evaluation of research at the intersection of emotion regulation and sexual well-being, with a focus on studies that examined associations between these constructs among women. I report on the presence or absence of gender differences in constructs where relevant throughout this chapter.

In the second manuscript of my dissertation, I present the findings from a cross-sectional dyadic study of associations between emotion regulation and the adjustment of mixed gender/sex couples (n = 87) in which one member was diagnosed with FSIAD (Study 1, Chapter 3). Using validated self-report measures and dyadic data analytic techniques, I tested the predication that less effective emotion regulation (i.e., greater difficulties regulating negative emotion and greater use of less adaptive emotion regulation strategies employed in a sexual context) would be associated with poorer

psychological, relational, and sexual adjustment of both members of couples in which one person was diagnosed with FSIAD. To account for gender differences in emotion regulation and sexual desire, I restricted my sample to participants in mixed-gender romantic relationships. I completed my analyses via multilevel modeling, in accordance with the Actor–Partner Interdependence Model (APIM; Cook & Kenny, 2005). I explored gender differences in outcomes by using APIMs wherein members of the couple were treated as distinguishable based on FSIAD status/gender (Kenny & Ledermann, 2010).

The final manuscript of my dissertation is the product of an observational and longitudinal dyadic study that examined concurrent and prospective (i.e., 12 months later) links between 150 community couples' emotion regulation during an in-lab discussion about a conflict in their sexual relationship and sexual well-being (Study 2, Chapter 4). I designed this study to overcome the limits of cross-sectional and questionnaire-based studies of couples' emotion regulation. Using intensive time-series data coded from a couples' interaction task, I derived performance-based measures of emotion regulation that reflected how quickly, on average, a participant's negative emotional experience and behavior returned to neutral during their discussion. Participants also completed measures that assessed their sexual distress, satisfaction, and desire prior to the sexual conflict discussion and 12 months later. I predicted that when individuals had less effective emotion regulation, defined by slower downregulation of negative emotion of negative emotional experience and behaviour during the sexual conflict discussion, they and their partners would report poorer sexual well-being, concurrently and 12 months later. I expected that an individual's gender would moderate associations, such that the expected

negative associations between rate of downregulation and sexual well-being would be stronger for women compared to men. Analyses were conducted per the APIM. Because my data were drawn from a sample inclusive of gender/sex divergent individuals and participants in same-gender relationships, I treated members of the couple as indistinguishable in my analyses. I accounted for gender differences in emotion regulation and sexual well-being by testing whether a person's gender moderated associations between downregulation of emotion and outcomes.

Finally, I discuss the overall findings of my program of research in the general discussion of this dissertation (Chapter 5). I summarize the theoretical and clinical implications of my work as well as the limitations of my research and opportunities for future inquiry.

CHAPTER 2: EMOTION REGULATION AND SEXUAL WELL-BEING AMONG WOMEN: CURRENT STATUS AND FUTURE DIRECTIONS

The manuscript prepared for this study is presented below. Readers are advised that Justin P. Dubé, under the supervision of Dr. Natalie Rosen, was responsible for the preparation and execution of this study. He was the lead on the initial draft of the manuscript and received and incorporated feedback from his coauthors. The manuscript underwent peer-review, and required one revision, which Justin led the response to, prior to the manuscript's acceptance in *Current Sexual Health Reports* on May 6, 2020. The full reference for this manuscript is:

Dubé, J.P., Dawson, S.J. & Rosen, N.O. (2020). Emotion regulation and sexual well-being among women: Current status and future directions. *Current Sexual Health Reports 12* (3), 143–152. https://doi.org/10.1007/s11930-020-00261-9

2.1 Abstract

Purpose of review Emotion regulation is a key contributor to social functioning and mental health, yet its influence on sexual well-being has only recently gained research attention. To elucidate correlates of women's sexual outcomes and guide future study, the present review evaluates research at the intersection of emotion regulation and sexual well-being.

Recent findings There are clear associations between mood and sexual well-being, with the interference of negative emotion on sexual outcomes stronger for women relative to men. Although there is evidence that women's poorer emotion regulation *abilities* are related to poorer sexual well-being, associations between specific emotion regulation *strategies* and sexual outcomes are less established, possibly due to the abundance of regulatory strategies and dearth of research on emotion regulation in sexual contexts. Still, our review suggests that women's greater sexual well-being is positively associated with strategies characterized by adaptive engagement (e.g., problem solving, acceptance, reappraisal) and negatively associated with strategies characterized by disengagement (e.g., avoidance, suppression, distraction) and aversive cognitive perseveration (e.g., worry, rumination).

Summary Extant research is consistent with models of women's sexual response and offers preliminary support for the emotion regulation–sexual well-being link. While the explanatory power of the current literature is limited by a lack of dyadic and longitudinal studies, interventions targeting emotion regulation hold promise for improving women's and couples' sexual well-being.

Keywords: Emotion regulation; Difficulties in emotion regulation; Emotion regulation strategies; Sexual well-being; Sexual dysfunction; Sexual satisfaction

2.2 Introduction

Emotion regulation refers to the abilities and strategies that people use to influence their experience and expression of emotion (Naragon-Gainey et al., 2017). Associated with functioning in myriad aspects of life, from physical health to romantic relationships (Appleton et al., 2013; Chervonsky & Hunt, 2017), it has emerged as one of the most influential constructs in psychology (Koole et al., 2016; McRae & Gross, 2020). Recent conceptualizations emphasize the bidirectionality of emotion regulation and social relations (Burkitt, 2018), making the regulation of emotion relevant to the inherently interpersonal context of sexual relationships (Rosen & Bergeron, 2019).

Sexual well-being predicts overall well-being, life satisfaction, and is a leading contributor to the quality and longevity of romantic relationships (Impett et al., 2020). For the purposes of this review, we adopt a definition of sexual well-being which includes an individual's subjective evaluation of their sexual satisfaction, desire, and frequency of sexual activity, as well as their degree of sexual problems and distress. The importance of emotion to women's sexual well-being is common across biopsychosocial conceptualizations (Basson, 2000; Dewitte, 2014; Metz & McCarthy, 2011). Yet, collaboration between the fields of sex research and emotion regulation is rare.

Although emotion regulation is also linked with men's sexual well-being (Dubé et al., 2019), there are notable gender differences in these processes. For example, women endorse a larger repertoire of regulatory strategies, more frequent use of rumination to manage emotion (Nolen-Hoeksema & Aldao, 2011), and a greater interference of negative emotion on sexual functioning relative to men (Lykins et al., 2012). We therefore heed the call to consider such differences in emotion research (Kret & De

Gelder, 2012) and focus on women for the purpose of this review. Where relevant, we report on gender differences in the studies reviewed, emphasizing findings for women's sexual well-being.

After establishing the relationship between emotions and sexual outcomes, we examine existing evidence linking women's emotion regulation to their sexual well-being and provide an overview of emotion regulation in current theoretical models of women's sexual response. We end by identifying notable gaps in current knowledge, directions for future research, and implications of our review for theory, research, and clinical work.

2.3 Emotion and Sexual Well-Being

Despite considerable research into the study of emotion, there remains little consensus on its specific definition (Frijda, 2016). Emotions are elicited in response to internal and external events, and involve shifts in cognitive processing, changes in expression and physiology, as well as one's own subjective experience (Gross, 2015). Interpersonally, emotions can facilitate communication and influence behavior (e.g., by relaying non-verbal information and spurring behavioral responses in oneself and others; Linehan, 1993). Emotions or mood states tend to fit into categories (e.g., fear, anger, happiness, joy) and can be broadly classified as positive or negative (Tellegen et al., 1999).

2.3.1 Emotions about Sex

Cross-sectional and longitudinal studies find that emotional responses to sexual experiences early in life are associated with sexual well-being in adulthood (Koch, 1988). This relationship may be important for understanding how individuals regulate their emotions before, during, and after sex. Both positive (e.g., excitement) and negative (e.g.,

fear) emotions are commonly reported in response to a range of first sexual experiences (e.g., kissing, oral sex, intercourse), as well as following casual sex. In general, women report more negative emotions in response to these, largely mixed-gendered, sexual activities than do men (Malacad & Hess, 2010; Regan et al., 2007; Sprecher et al., 1995; Vasilenko et al., 2015). Limited research has investigated the link between emotional responses and sexual well-being outcomes directly; however, there is some evidence to suggest that positive and negative emotional responses to most recent sexual encounters are positively and negatively related, respectively, to sexual satisfaction (Rellini et al., 2012; Zimmer-Gembeck et al., 2015). In the following section we discuss the relationships between positive and negative emotions and the various facets of sexual well-being.

2.3.2 The Relationship between Emotions and Sexual Well-Being

There is high comorbidity between sexual dysfunction and depressive and anxiety disorders among men (Rajkumar & Kumaran, 2015) and women (Burri & Spector, 2011), with some evidence to suggest that mood and anxiety disorders may precede the development of sexual dysfunction (Khandker et al., 2011; Rajkumar & Kumaran, 2015). Trait-level negative mood is linked with poorer sexual function in men and women (Oliveira & Nobre, 2013; Peixoto & Nobre, 2017), whereas trait-positive mood is associated with better sexual function (Nimbi et al., 2018; Oliveira & Nobre, 2013; Peixoto & Nobre, 2017). Trait-level positive, but not negative, mood distinguishes women with and without clinical levels of sexual function problems, highlighting the potential importance of positive mood for sexual functioning. Individuals with sexual dysfunction also report experiencing less positive and more negative emotional reactions

during sexual activity (Nobre & Pinto-Gouveia, 2006, 2008; Peixoto & Nobre, 2016). A daily experience study found that on days when women with genito-pelvic pain reported higher levels of anxiety and depressive symptoms and had sex, they reported greater pain, poorer sexual function, and higher distress; when their partners reported higher anxiety and depressive symptoms, women with genito-pelvic pain reported higher sexual distress (Paquet et al., 2018). In a longitudinal study, anhedonia—the inability to feel pleasure—in one week was associated with poorer sexual function in subsequent weeks; however, the reverse was not true (Kalmbach et al., 2015). Taken together, findings from cross-sectional research establish clear links between emotions and sexual functioning, with longitudinal studies providing evidence of causality that support mood as a predictor of poorer sexual function.

Whereas negative emotional states, including clinical levels of depression and anxiety, are typically associated with women's decreased sexual desire and frequency (Kane et al., 2019; von Hippel et al., 2019), the opposite relationship has been documented among heterosexual men (Kane et al., 2019). Daily experience studies find coitus on one day is not linked with negative mood on the same-day (Fortenberry et al., 2005), but is linked with lower next-day negative mood and anxiety (Kashdan et al., 2014; Kashdan et al., 2017). In contrast, sexual activity (i.e., oral sex, passionate kissing, penetration) on one day is associated with increased positive mood on the same-day (Fortenberry et al., 2005; Vasilenko & Lefkowitz, 2018) and next-day (Dewitte et al., 2015; Kashdan et al., 2017). More pleasurable sexual activity is linked with lower next-day negative mood and anxiety (Kashdan et al., 2011; Kashdan et al., 2017) and higher

next-day positive mood (Kashdan et al., 2017). Longitudinal studies reveal similar patterns (Wesche et al., 2018).

Regarding associations between mood and the likelihood of engaging in sexual activity, one study found higher negative mood on one day was linked with lower likelihood of sexual activity that same-day; whereas there was no effect for positive mood and same-day sexual activity (Fortenberry et al., 2005). However, the effects of positive and negative mood on next-day sexual activity are mixed: higher positive and negative moods on one day have been associated with higher (Dewitte et al., 2015) and lower (Fortenberry et al., 2005) likelihoods of sexual activity on subsequent days, respectively. Other studies find no relationship between mood and next-day sexual activity (Kashdan et al., 2014; Kashdan et al., 2017)

Studies find negatively valenced emotional states are associated with lower sexual arousal and desire (but see Peterson and Janssen, 2007, who found negative affect predicted women's greater genital response), whereas positive emotional states are associated with higher arousal and desire in women and men (Deziel et al., 2018; Hodgson et al., 2016; Nimbi et al., 2018; Peterson & Janssen, 2007). A less intuitive finding, given these patterns, is that ambivalent mood or co-occurring positive and negative mood is associated with high subjective arousal and desire, perhaps highlighting the importance of experiencing a range of emotions for sexual well-being (Peterson & Janssen, 2007). Because positive emotions have been shown to counteract the psychophysiological effects of negative emotions (Fredrickson, 2000), it is possible that the detrimental effects of negative mood on sexual well-being are lessened when opposite moods co-occur. In a dyadic study of heterosexual couples, positive mood was positively

related to sexual desire for both members, but negative mood was unrelated to sexual desire (Elaut et al., 2016). Longitudinal studies find similar results, such that increased anhedonia and anxiety in a given week were associated with lower levels of sexual desire and subjective arousal during the same week (Kalmbach et al., 2015). Induction of negative mood (e.g., anxiety, sadness) has been shown to result in increased, decreased, or no change in self-reported arousal, desire, and objectively measured physiological arousal in a laboratory context (Kane et al., 2019; ter Kuile et al., 2010). Induction of positive mood does not appear to influence arousal and desire in a laboratory context (ter Kuile et al., 2010). These somewhat conflicting findings are likely due to methodological differences between studies.

In cross-sectional and longitudinal studies, negative affect is linked with lower levels of sexual satisfaction, more sexual problems, and greater distress for women and men, although effects are stronger for women (Kalmbach et al., 2015; Lykins et al., 2012; Paquet et al., 2018). Positive mood is linked with greater sexual satisfaction for both women and men (Lykins et al., 2012).

Although the directional relationships between emotions and sexual wellbeing are mixed, sexual activity clearly evokes both positive and negative emotions and these emotions are linked with increases and decreases in sexual well-being. It follows then that how individuals and couples manage their emotional responses before, during, and after sex, may be an important mechanism for explaining the links between emotions and sexual well-being.

2.4 Emotion Regulation and Sexual Well-Being

Recent conceptualizations view emotion regulation as a collection of abilities and strategies that influence the experience of emotion (Naragon-Gainey et al., 2017). Ability models (e.g., Berking & Whitley, 2014; Gratz & Roemer, 2004) define emotion regulation in terms of dispositional qualities (e.g., emotional awareness, tolerance of distress, and regulatory flexibility) that influence one's potential to modulate emotion. Strategy models (e.g., Aldao et al., 2010; Gross, 2015) focus on the characteristics and consequences of various approaches to managing emotion, often classifying strategies as more or less adaptive in terms of their capacity to alleviate or maintain distress (e.g., reappraisal versus rumination; Koole, 2009; Naragon-Gainey et al., 2017). Despite recognition of their bidirectional influence (Tull & Aldao, 2015), few studies have integrated ability and strategy models within the same design. Consequently, we review empirical findings for emotion regulation abilities and strategies separately.

2.4.1 Emotion Regulation Abilities

Difficulties in emotion regulation—problems acting towards predetermined goals while experiencing negative emotion (Hallion et al., 2018)—are related to lower sexual well-being among non-clinical samples of women, including lower sexual satisfaction, frequency, and functioning (Besharat et al., 2018; Rellini et al., 2012; Tutino et al., 2017). Relative to controls, cross-sectional studies have found that women with genito-pelvic pain (Vasconcelos et al., 2020) and clinically low sexual arousal and/or desire (Sarin et al., 2016) report greater difficulties with emotion regulation. Regarding women's adjustment to sexual dysfunction, one study found emotion regulation ability was unrelated to women with female sexual interest/arousal disorder (FSIAD)'s own sexual

desire and distress (Dubé et al., 2019). Thus, while preliminary research supports the link between difficulties in emotion regulation and sexual dysfunction, evidence that regulation abilities are related to sexual adjustment among women with sexual dysfunction is currently lacking.

Distress tolerance, which refers to one's ability to endure negative emotions (Naragon-Gainey et al., 2017), has been recommended as a target for treating sexual problems in older adults (Foley, 2015) and promoting sexual health among individuals diagnosed with substance use disorder (Montgomery-Graham, 2017; Tull & Gratz, 2013) and women with out-of-control sexual behavior (i.e., problematic hypersexuality; Montgomery-Graham, 2017). Affect dysregulation, a construct which captures problems in emotion regulation ability and distress tolerance (Briere & Runtz, 2002), mediated the relationship between chronic childhood maltreatment and women's lower sexual satisfaction (Bigras et al., 2017). Relatedly, Borderline Personality Disorder (BPD), which is more prevalent among women than men (Linehan, 1993), has been linked to engaging in more risky sexual behaviors (Mangassarian et al., 2015), poorer sexual health (Ciocca et al., 2018), greater avoidance of sex (Karan et al., 2016), and high rates of sexual dysfunction (Collazzoni et al., 2017). Because difficulty regulating negative emotion and tolerating distress are symptoms of BPD (Chapman, 2019), it is possible that deficits in these abilities may adversely impact women's sexual well-being.

Another emotion regulation process relates to actively accessing and reflecting on one's emotional state (Berking & Whitley, 2014). Individuals who score higher on measures of alexithymia—difficulties in identifying and communicating their emotions—tend to report more sexual problems relative to those with lower alexithymia (Ciocca et

al., 2013; Wise et al., 2002). Symptoms of alexithymia might interfere with establishing an emotional connection with a partner, which is frequently associated with lower sexual desire and satisfaction in women (Rosen & Bergeron, 2019).

Conversely, emotional awareness and clarity have been found to benefit sexual well-being. Mindfulness, for example, involves the nonjudgmental awareness of one's experience. It is associated with several core emotion regulation abilities, including emotional clarity and awareness as well as distress tolerance and regulatory flexibility (i.e., the flexible use of various emotion regulation strategies; Roemer et al., 2015). Cross-sectional studies have linked greater trait mindfulness to higher sexual satisfaction and sexual desire among community (Dosch et al., 2016; Newcombe & Weaver, 2016; Pepping et al., 2018) and clinical samples (Deziel et al., 2018). One study found that better emotional regulation abilities underlay these associations; that is, individuals higher in trait mindfulness were better able to regulate their negative emotions (e.g., insecurities about sex), which in turn led them to feel more sexually satisfied (Pepping et al., 2018).

2.4.2 Emotion Regulation Strategies and Women's Sexual Well-Being

Despite recognition that context (e.g., setting, intensity and type of emotion) influences both the selection and consequences of regulatory strategies (Aldao & Tull, 2015; McRae & Gross, 2020), little is known about emotion regulation strategies in sexual contexts. Furthermore, the context-dependent nature of emotion regulation strategies presents a challenge for research (Berking & Wupperman, 2012; Koole, 2009; Naragon-Gainey et al., 2017); anything undertaken to change an emotion, from eating chocolate to skydiving, could be considered a regulatory strategy. To balance breadth

with focus, we organize the following section according to the three factor structure found to underlay common emotion regulation strategies (Naragon-Gainey et al., 2017).

The first factor, *disengagement,* is characterized by strategies used to avoid emotion, such as behavioral avoidance, emotional suppression, and distraction (Naragon-Gainey et al., 2017). Several studies indicate women's use of avoidance to manage negative emotions (e.g., fear) is associated with their lower sexual well-being. A prospective study of women with genito-pelvic pain found avoidance coping predicted declines in sexual functioning five months later, accounting for pain intensity (Engman et al., 2018). Targeting avoidance in cognitive-behavioral interventions for genito-pelvic pain leads to improved sexual function and greater frequency of sex (Bergeron et al., 2016; ter Kuile et al., 2013). Moreover, compared to controls, women who self-reported symptoms of FSIAD endorsed greater disgust in response to sexual stimuli and more avoidance of sexual activity (DePesa & Cassisi, 2017), suggesting the possibility that women with low sexual desire and/or arousal use avoidance to regulate feelings of disgust.

One of the few studies to explicitly assess the use of suppression to manage emotions in sexual contexts (e.g., concealing the expression of emotion when talking about sexual problems) was conducted by Dubé and colleagues (2019). Although greater suppression was linked to poorer relationship adjustment among couples coping with FSIAD, its use was unrelated to women with FSIAD's levels of sexual distress and desire. Constructs related to suppression, however, have been associated with lower sexual satisfaction. Self-silencing, for example, involves concealing emotions, thoughts, and actions to maintain relationships (Jack, 1991) and is therefore conceptually similar to

suppression (Abrams et al., 2019). In a mixed-method longitudinal study, higher levels of self-silencing in women predicted lower sexual satisfaction over the course of a year (Peleg-Sagy & Shahar, 2015). Whereas women's distraction in sexual contexts is typically related to diminished sexual well-being (Gillen & Markey, 2019; Giraldi et al., 2013), its consequences as a regulatory strategy are less established. In one study, greater self-distraction assessed at the trait level (e.g., turning to work or other activities to cope) was linked to lower sexual functioning in a large community sample of women (Crisp et al., 2015). Conversely, a separate study found lower distraction during sex was linked to women's greater sexual satisfaction (Newcombe & Weaver, 2016).

The second factor, *aversive cognitive perseveration,* involves preoccupation with negative thoughts and feelings; it includes strategies such as worry and rumination (Naragon-Gainey et al., 2017). Greater pain-related anxiety (e.g., worry that something terrible will happen due to pain) is associated with poorer sexual function in women with genito-pelvic pain (Desrochers et al., 2009). Catastrophizing, which includes repetitive rumination (e.g., "I can't seem to keep it out of my mind"), is associated with poorer sexual satisfaction, and functioning, as well as lower frequency of sexual activity in community and clinical samples of women (Anderson et al., 2016; Ekdahl et al., 2018; Gerrior et al., 2015; Tutino et al., 2017). However, one study found catastrophizing was unrelated to pain intensity during intercourse among women with genito-pelvic pain if they perceived their partners as highly supportive (Benoit-Piau et al., 2018), highlighting the reciprocal nature of emotion regulation and social processes.

The third factor, *adaptive engagement,* is characterized by active strategies to manage emotion, such as problem solving, acceptance, and reappraisal. In a qualitative

study, problem solving emerged as a common strategy among young adults (57% female) for resolving feelings of sexual distress and low desire (O'Sullivan et al., 2019). Whereas participants in this study who engaged in problem solving reported enhanced sexual experiences, young women who reported barriers to using this strategy continued to experience unsatisfying sex. Moreover, a form of problem solving therapy, which targeted the resolution of negative emotion, improved sexual satisfaction over the course of 12 weeks in a small sample of Iranian women (Enjezab et al., 2019). Regarding acceptance (i.e., a willingness to experience emotion and events, unaltered), women with genito-pelvic pain who reported greater acceptance of pain endorsed better sexual functioning and had partners who were more sexually satisfied (Boerner & Rosen, 2015). A recent clinical trial comparing two cognitive therapies for women with genito-pelvic pain found that acceptance mediated improvements in pain and sexual distress, regardless of treatment modality (Brotto et al., 2020). In terms of reappraisal (i.e., changing one's perception of a situation to manage emotion), Dubé and colleagues (2019) found use of this strategy in sexual contexts was unrelated to sexual well-being among women with FSIAD; however, greater use of reappraisal in male partners of women with FSIAD was linked to their own higher sexual desire. Further, greater levels of trait reappraisal among college students (80.4% women) was associated with greater confidence in their ability to up-regulate (but not down-regulate) their sexual desire (Surti & Langeslag, 2019).

Taken together, it appears women's greater sexual well-being is positively associated with strategies characterized by adaptive engagement and negatively associated with disengagement and aversive cognitive perseveration strategies.

2.4.3 Theoretical Models of Emotion Regulation and Sexual Well-Being

Theoretical models of women's sexual response have long acknowledged the central importance of emotional experiences, particularly in relation to one's sexual relationship (Basson, 2000; Dewitte, 2014; Metz & McCarthy, 2011). For example, Basson's Circular Model of sexual response suggests that a desire for emotional intimacy is a key motivation behind seeking out or being receptive to a partners' initiation of sexual activity (Basson, 2000). Other clinical theories, such as the Good Enough Sex model, have likewise featured more adaptive emotional responses to sex (e.g., honest expression of feelings, empathic response to sexual disclosures) as one of the core ingredients to maintaining sexual satisfaction over time (Metz & McCarthy, 2011). Prior theories have positioned the role of emotions within a broader biopsychosocial framework of understanding women's sexual response and have rarely delved deeper into articulating specific emotion regulation processes that may influence women's sexual function.

One recent exception is Rosen and Bergeron's *Interpersonal Emotion Regulation Model* of women's sexual dysfunction (Rosen & Bergeron, 2019). Given the high negative affect that often accompanies sexual problems (e.g., guilt, shame, anxiety) (Rosen et al., 2019) as well as the heightened perceived threat that sexual conflicts pose to relationships (Rehman et al., 2017), the authors propose emotion regulation as a central pathway for determining couples' adjustment to sexual dysfunction. The model consists of two key tenets. First, interpersonal factors acting at both the distal and proximal levels reciprocally affect couples' emotion regulation in response to the sexual problem. Distal factors refer to relationship experiences, contexts, or styles that mainly predate the sexual

dysfunction (e.g., childhood maltreatment). Proximal factors refer to interpersonal interactions that occur before, during, or just after partnered sexual activities (e.g., empathic or hostile responses to the sexual problem). Rosen and Bergeron (2019) conceptualize distal and proximal variables as risk factors for poor emotion regulation ability and as factors that interfere with or facilitate the use of more adaptive emotion regulation strategies within the couple when coping with a sexual dysfunction.

The second core assumption of the model is that difficulties regulating negative emotions in turn affects women's sexual response and the couples' psychological, relational, and sexual adjustment to the sexual problem. Specifically, difficulties regulating negative emotions are thought to enhance couples' sensitivity and reactivity to negative stimuli (e.g., couple conflict over sex) and to promote the use of less adaptive emotion regulation strategies over more adaptive strategies. For example, difficulty coping with common feelings of guilt and anxiety about a woman's sexual problem (low desire, painful intercourse, etc.) may heighten the perceived threat to the relationship, lead to more emotional outbursts, and promote the use of emotional suppression and avoidance in order to cope with these negative emotions. In contrast, more effective management of negative emotions within the couple via appropriate disclosures and perceived partner responsiveness (i.e., feeling understood and cared for by a partner) would promote more adaptive emotion regulation strategies such as reappraisal and acceptance. According to the model, these emotion regulation processes in turn affect women's sexual response and the couples' adjustment.

To date, the *Interpersonal Emotion Regulation Model* is supported by evidence from the following two areas. First, there are links between interpersonal factors (e.g.,

dyadic conflict, sexual satisfaction) and emotion regulation difficulties and use of more or less adaptive emotion regulation strategies (e.g., emotional suppression; Bigras et al., 2017; Dubé et al., 2019). Second, couples who are better able to coregulate their cognitive, affective, and motivational responses to a sexual problem experience fewer negative impacts of sexual dysfunction to their lives (Rosen & Bergeron, 2019). Still, as the authors note, there are many aspects of the model that require empirical validation, including a test of the core hypothesis that emotion regulation mediates the associations between interpersonal factors and couple adjustment to sexual dysfunction in women.

2.5 Gaps in Knowledge and Future Directions

Despite agreement that emotion and its regulation are socially situated (Barthel et al., 2018; Campos et al., 2011; Koole & Veenstra, 2015), limited attention has been paid to emotion regulation as it relates to sexual well-being in interpersonal contexts. Dyadic studies that account for interdependence in emotion regulation and sexual well-being among both members of the couple are rare. Consequently, our understanding of how individuals' emotion regulation influences both their own and their partners' sexual well-being is limited. Methods for analyzing dyadic data, such as the actor-partner interdependence model (Kenny et al., 2006), should be incorporated into future studies.

We also lack knowledge, especially within sexual contexts, of the correlates and consequences of strategies people use to regulate *their partners'* emotions—a construct termed *extrinsic* emotion regulation (Gross, 2015). Variation in regulators' motives, emotional intelligence, and self-efficacy influence outcomes in the person who is the target of the regulatory attempts (Nozaki & Mikolajczak, 2020); yet, implications of these individual differences for sexual well-being are unknown. One's use of the social context

to regulate emotion—interpersonal emotion regulation (Zaki & Williams, 2013)—is another understudied regulatory strategy. It can be intrinsic (e.g., hugging someone to feel better about one's self) or extrinsic (e.g., hugging someone to cheer the other person up). Preliminary work from the relationship sciences suggests extrinsic interpersonal emotion regulation is relevant for couples' well-being (e.g., Horn et al., 2019). It is therefore possible that interpersonal emotion regulation, both intrinsic and extrinsic, is related to women's sexual well-being. However, the consequences of interpersonal strategies vary with context: whereas affectionate touch decreases stress for most individuals (Jakubiak & Feeney, 2017), it appears to have the opposite effect for women with sexual problems (Rancourt et al., 2017). Thus, further research of interpersonal strategies specific to sexual well-being is needed.

A handful of studies within the field of sex research allude to sexual activity as a means to manage emotion, yet systematic study of sex as a regulatory strategy is largely absent. In a qualitative study of women's sexual pleasure, regulating negative emotion (e.g., stress, negative mood, pain) emerged as a common motive for masturbation (Goldey et al., 2016). Engaging in partnered sexual activity to avoid negative emotion (e.g., guilt) or experience positive emotion (e.g., happiness) has been linked to poorer and better sexual well-being in studies of sexual motivation, respectively (Impett et al., 2020). Additionally, problems in emotion regulation are proposed as central to the development of compulsive sexual behavior (Lew-Starowicz et al., 2019); avoidance of negative emotion is thought to fuel sexual impulsivity in women with BPD (Mangassarian et al., 2015) and contribute to compulsive cybersex (Wery & Billieux, 2017). Together, it appears there is tacit recognition that sex can serve to regulate emotion, but evidence to

date is atheoretical and research has focused on sex as a regulatory strategy in the context of pathologies. There remain several unknowns. For example, do sexual activities to regulate emotion differ from conceptually related strategies (e.g., distraction, avoidance) and do emotion regulation abilities and strategies interact to influence whether sexual activity is used to regulate emotion? Future research should systematically examine women's use of sexual activity as an emotion regulation strategy.

A final notable gap in knowledge stems from the tendency of emotion regulation research to focus on down-regulation of emotion. Amplification of positive emotion is also relevant to the couple context (Levenson et al., 2014). Indeed, emotional expressivity—positive and negative—is associated with partner responsiveness (Ruan et al., 2019) and women who perceive their partners as more responsive report greater sexual satisfaction (Impett et al., 2020). Moreover, preliminary work suggests amplification of positive emotion and trait level strategies, such as reappraisal, influence abilities and beliefs related to the modulation of sexual desire and arousal (Surti & Langeslag, 2019; van Overveld & Borg, 2015). It is possible that clinical strategies which aim to increase positive emotion may facilitate upregulation of positive emotion in sexual contexts. Such strategies might include, for example, self-monitoring (encouraging clients to collect evidence related to positive thoughts and beliefs; Bannink, 2014), capitalization (sharing positive events with their partner; Gable & Reis, 2010), and savoring (attending to positive aspects of events; Linehan, 1993). Yet, how the regulation of pleasant emotional experiences influences women's and couples' sexual well-being remains to be explored.

2.6 Implications

The current review underscores that sex elicits both positive and negative emotion, with consequences for women's sexual well-being. A practical implication is raising the significance of emotion regulation in women's sexual well-being. Current conceptualizations of women's sexual well-being typically endorse a biopsychosocial perspective with emotions embedded within the psychosocial aspect of models. Despite widespread acknowledgment of the importance of emotional perceptions and experiences in women's sexual well-being—within both clinical and nonclinical models of women's sexual response—empirical studies of specific emotion regulation processes are exceedingly rare. Thus, our evaluation of the literature has theoretical implications by suggesting that both emotion regulation abilities and strategies should be explicitly incorporated into theoretical conceptualizations of women's sexual well-being.

Clinically, this review may inform interventions aimed at improving women's and couples' sexual well-being by suggesting more and better integration of emotion regulation as a core target for intervention. Our review followed the empirically supported three-factor structure of emotion regulation strategies to link strategies to sexual well-being, which could help clinicians choose which factors to focus on with their clients. This recommendation is consistent with other clinicians who have suggested that enhancing emotion regulation abilities via emotion-focused therapy may be helpful in treating sexual problems (Girard & Woolley, 2017; Johnson & Zuccarini, 2010). Cognitive-behavioral interventions focusing on increasing the use of more adaptive emotion regulation strategies (e.g., problem-solving, acceptance, reappraisal) and reducing reliance on less adaptive strategies (e.g., suppression, avoidance) would also be

useful. Finally, enhanced mindfulness has been linked to better emotion regulation, and in turn, greater sexual satisfaction (Pepping et al., 2018), indicating that mindfulness-based therapy is another relevant approach. Indeed, a meta-analysis of mindfulness-based therapy for sexual dysfunction reported improvements in all aspects of sexual function following intervention (Stephenson & Kerth, 2017).

2.7 Conclusions

The current review identified clear links between emotions and sexual outcomes; however, the role of emotion regulation in women's sexual well-being is less established. Evidence from *ability models* is promising—greater awareness, understanding, and identification of emotion tends to be associated with greater sexual well-being. Yet, there is a paucity of research on emotion regulation *strategies* and sexual well-being. While notable patterns emerged (e.g., strategies characterized by disengagement and aversive perseveration seem to interfere with women's sexual well-being) the lack of dyadic studies, longitudinal research, and research examining emotion regulation in sexual contexts limits the explanatory power of the current literature. Despite these limitations, extant studies correspond with theoretical models, such as the Interpersonal Emotion Regulation Model of women's sexual dysfunction (Rosen & Bergeron, 2019), and suggest this nascent area of study has great potential for improving the sexual well-being of women. Clinically, the integration of emotion regulation into the assessment, conceptualization, and treatment of women's sexual problems may bolster the effectiveness of existing treatments.

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2.10 Transition to Study 1

The purpose of my narrative review article (Chapter 2) was to shed light on associations between emotion regulation and women's sexual well-being. To that end, I conducted a critical review and evaluation of research at the intersection of emotion regulation and women's sexual well-being, including their sexual satisfaction, desire, frequency, function, and distress (Dubé et al., 2020). The literature indicated that there are strong associations between mood and sexual well-being, with negative emotion having a stronger negative effect on women's versus men's sexual outcomes. My review also suggested that there was preliminary support for the emotion regulation–sexual well-being link, particularly for associations between emotion regulation abilities and sexual outcomes.

Importantly, the findings of my review article provided evidence that emotion regulation is relevant to the adjustment of women experiencing sexual dysfunction. For example, researchers have shown that negative emotions about sex often accompany sexual problems and that more frequent use of less adaptive regulatory strategies to manage negatively valenced emotion predicted worse sexual function among women with genito-pelvic pain (Engman et al., 2018). Further, a prior study indicated that women with FSIAD reported more difficulties with emotion regulation than controls (Sarin et al., 2016). Yet, this same study did not assess whether variability in emotion regulation abilities were associated with couples' adjustment in the context of FSIAD.

Although evidence aligned with theoretical models for women's sexual (dys)function, another important insight from my review article was that key gaps in knowledge remained. These included a limited understanding of (a) how an individual's

emotion regulation relates to their romantic partner's well-being in the context of sexual problems, and (b) how strategies to manage emotions about sex are associated with couples' adjustment to sexual difficulties. I therefore designed Study 1 to advance knowledge of emotion regulation and sexual well-being among couples coping with FSIAD by collecting data from both members of the couple, using dyadic analytic techniques, and assessing emotion strategies specifically in sexual contexts.

My main objective in Study 1 was to determine whether emotion regulation—both difficulties in emotion regulation and regulation strategies to manage emotion in sexual situations—was linked to the psychosocial and sexual adjustment of women experiencing FSIAD and their partners. I selected outcome variables assessing participants' psychological, relational, and sexual well-being to best capture the overall adjustment of couples with FSIAD. This approach was consistent with previous dyadic studies of sexual dysfunction (Rosen et al., 2006; Santerre-Baillargeon et al., 2018) and it is one that I took to enhance knowledge of FSIAD, which was a relatively new clinical entity when I started my program of research. Overall, I sought to examine associations between emotion regulation (abilities and strategies) to identify relevant targets for intervention in this particular population.

CHAPTER 3: EMOTION REGULATION IN COUPLES AFFECTED BY FEMALE SEXUAL INTEREST / AROUSAL DISORDER

The manuscript prepared for this study is presented below. Readers are advised that Justin P. Dubé, under the supervision of Dr. Natalie Rosen, was responsible for devising the research questions and hypotheses, and preparing the datasets for analyses. He was the lead on data analysis and interpretation, with the support of his coauthors. Justin wrote the initial draft of the manuscript and received and incorporated feedback from his coauthors. The manuscript underwent peer-review, and required one revision, which Justin led the response to, prior to the manuscript's acceptance in *Archives of Sexual Behavior* on May 10, 2019. The full reference for this manuscript is:

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3.1 Abstract

Female sexual interest/arousal disorder (FSIAD) is associated with psychological, relational, and sexual consequences for affected women, and their romantic partners also suffer repercussions. Prior research suggests that women with FSIAD report more difficulties with emotion regulation than controls. Yet, whether emotion regulation is associated with the psychological, relational, and sexual well-being of both members of affected couples is unknown. Eighty-seven women diagnosed with FSIAD via a clinical interview and their male partners completed standardized measures of difficulties in emotion regulation, depression, anxiety, relationship satisfaction, dyadic conflict, sexual desire, and sexual distress. A subset (n = 71 couples) also completed measures of emotional suppression and reappraisal in relation to sex. Analyses used multilevel modeling guided by the actor–partner interdependence model. When women reported greater difficulties regulating negative emotion, they reported greater depression and anxiety, and when men reported more of these difficulties, they had greater depression, anxiety, and sexual distress, and the women with FSIAD reported lower relationship satisfaction. When women reported greater emotional suppression, they reported greater depression and anxiety, and lower relationship satisfaction; when they reported greater use of emotional reappraisal, they had fewer symptoms of depression and anxiety, and their partners reported lower dyadic conflict. When men reported greater emotional suppression, they had greater depression, lower relationship satisfaction, and sexual desire; when they reported greater emotional reappraisal, they had lower depression and anxiety, higher relationship satisfaction, lower dyadic conflict, higher sexual desire and women reported higher relationship satisfaction and lower dyadic conflict. Emotion

regulation may be an important target for interventions to help couples cope with FSIAD.

Keywords: Female sexual interest/arousal disorder, Couples, Emotion regulation, Sexual dysfunction, DSM–5

3.2 Introduction

Female sexual interest/arousal disorder (FSIAD) was introduced in the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM–5; American Psychiatric Association, 2013) and combines the former diagnoses of female hypoactive sexual desire disorder (HSDD) and female sexual arousal disorder (FSAD). FSIAD is characterized by at least three or more of the following symptoms that involve little/lack of: interest in sexual activity; sexual thoughts or fantasies; initiation of sexual activity or responsiveness to a partner's initiations; sexual excitement/pleasure during sexual activity; responsiveness to internal or external sexual cues; and genital or non-genital sensations during sexual activity. The symptoms are present the majority of the time, accompanied by distress, and persist for at least 6 months (American Psychiatric Association, 2013). Using a nationally representative sample, 38.7% and 26.1% of women were estimated to experience low sexual desire and low arousal, respectively, and almost 30% of women with low sexual desire reported sexual distress (Rosen et al., 2009). A recent more stringent prevalence estimate for FSIAD, which included all of the DSM-5 criteria, estimated that 0.6% of women meet the diagnostic criteria for FSIAD (Mitchell et al., 2016). Despite the discrepancy between the frequency of desire and arousal difficulties and the rate at which individuals may meet diagnostic criteria, low desire and arousal persist as a distressing sexual difficulty for many women.

FSIAD is associated with several psychological and interpersonal problems. Clinically low sexual desire and arousal have been associated with mood disorders (e.g., depression), lower relationship satisfaction, and poorer sexual satisfaction (Laumann, Paik, & Rosen, 1999; Rosen et al., 2009). Although data regarding the impact of FSIAD

on romantic partners are scarce, the dysfunction typically occurs in the context of a romantic relationship (Rosen et al., 2009), which suggests that partners may also be negatively affected. Indeed, existing studies indicate partners of women with FSIAD report higher sexual distress and lower relationship satisfaction, sexual satisfaction, functioning, and communication compared to control partners (Rosen, Dubé, Corsini-Munt, & Muise, 2019; Trudel, Aubin, & Matte, 1995; Trudel, Boulos, & Matte, 1993).

Such findings elucidate the scope of influence that a sexual difficulty such as FSIAD may exert on intimate relationships and underscore the importance of dyadic studies examining factors maintaining or exacerbating the sexual difficulty and its associated consequences for couples. One potentially relevant factor is emotion regulation (Chervonsky & Hunt, 2017), which broadly refers to the management of emotional experience and expression in the service of one's goals (Gross, 2014). In both community and clinical populations, emotion regulation has emerged as an important psychological factor associated with relationship and sexual satisfaction (Bloch, Haase, & Levenson, 2014; Rellini, Vujanovic, Gilbert, & Zvolensky, 2012). The present study examined whether emotion regulation in couples affected by FSIAD is associated with their psychological (depression and anxiety), relational (satisfaction and dyadic conflict), and sexual (desire and distress) adjustment, with the goal of informing the development of treatment for couples struggling with this distressing condition.

The etiology of FSIAD is widely considered multifactorial (Krapf, Buster, & Goldstein, 2016), and several psychosocial correlates have been identified. A history of sexual abuse, depression, posttraumatic stress disorder, and poor childhood sex education have been associated with an elevated risk of HSDD (Abdo, Valadares, Oliveira Jr,

Scanavino, & Afif-Abdo, 2010; Laumann et al., 1999, 2005). A recent study by Sarin, Amsel, and Binik (2016) found that, compared to healthy controls, women with HSDD/FSAD reported higher levels of negative mood, negative sexual attitudes, sexual dissatisfaction, body image self-consciousness, and sexual distress. The same study found that women with HSDD/FSAD reported more difficulties with emotion regulation compared to controls (but see also DePesa & Cassisi, 2017); however, whether emotion regulation was associated with women's (and partners') psychological, relational, and sexual adjustment was not assessed.

3.2.1 Difficulties with Emotion Regulation

Emotion regulation refers to the process of modulating an emotional response, which includes whether and how an emotion is experienced or expressed (Gross, 1998). Differences in emotion regulation ability and strategies can be conceptualized as more or less adaptive insofar as they mitigate or maintain distress (Hofmann, 2014). In a longitudinal study of married couples, more successful downregulation of negative emotion in women (i.e., more rapid reduction in emotional experience and behavior following emotionally provoking negative events) was cross-sectionally linked to both women's and men's greater marital satisfaction and was linked to women's greater marital satisfaction 13 years later (Bloch et al., 2014). Moreover, greater difficulty regulating negative emotion (e.g., low awareness and clarity of emotion when upset) has been linked to poorer adjustment to several clinical conditions (e.g., Doolan, Bryant, Liddell, & Nickerson, 2017; Lutz, Gross, & Vargovich, 2018), including poorer sexual satisfaction in women with a history of sexual abuse (Rellini et al., 2012; Rellini, Vujanovic, & Zvolensky, 2010). Thus, while FSIAD itself constitutes poor sexual well-

being, research suggests that deficits in the ability to regulate negative emotion may be associated with more severe FSIAD symptoms (i.e., lower desire/arousal and heightened distress).

Given that conversations about sex tend to be among the most difficult to negotiate and often provoke feelings of vulnerability and anxiety (Rehman, Lizdek, Fallis, Sutherland, & Goodnight, 2017), emotion regulation may be more salient in the context of couples coping with sexual dysfunctions such as FSIAD. The presence of alexithymia, a personality trait characterized by difficulty identifying one's emotions (Swart, Kortekaas, & Aleman, 2009), has been associated with several sexual dysfunctions, including low sexual desire (Madioni & Mammana, 2001; Wise, Osborne, Strand, Fagan, & Schmidt Jr, 2002). Further, women with FSIAD experience many negative emotions about their condition, attributing low self-confidence, feelings of embarrassment, and fears of partner infidelity to their low sexual desire (Kingsberg, 2014). Given that negative emotions in sexual contexts are linked to impaired desire and arousal, as well as heightened sexual distress; (Bancroft, Loftus, & Long, 2003; Nobre & Pinto-Gouveia, 2006, 2008), it follows that deficits in the ability to regulate negative emotion may be associated with reduced relational and sexual well-being in women with FSIAD and their partners.

Theories of emotion regulation suggest that poor emotion regulation enhances distress and interferes with adaptive coping, resulting in negative psychosocial consequences such as greater anxiety and depression (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Gross, 2002). Difficulty regulating negative emotion has therefore been proposed as a key mechanism influencing how interpersonal factors (e.g., intimacy,

attachment, and sexual communication) affect the well-being of couples in a recent model of women's sexual dysfunction (Rosen & Bergeron, 2019). Applied to FSIAD, those who struggle to regulate their emotions may experience more sexual distress and less adaptive behaviors, such as avoidance of sexual activity or other displays of affection, leading to lower relationship satisfaction and sexual well-being. In addition to emotion regulation difficulties, the strategies by which an individual regulates their emotions may interfere with couples' psychological, relational, and sexual well-being.

3.2.2 Emotion Regulation Strategies

Reappraisal and suppression are two commonly used emotion regulation strategies (John & Gross, 2004). Reappraisal involves modulating an emotional experience by changing how one perceives an emotionally provoking event (John & Gross, 2004). Greater use of this strategy in community samples has been associated with better psychological well-being and more adaptive social functioning, such as seeking social support and emotional closeness (John & Gross, 2004). Suppression involves inhibiting one's emotional reaction to an event and, compared to reappraisal, has been associated with less favorable social functioning, such as impaired memory for social information, less authenticity, more stressful social interactions, and lower relationship quality (Chervonsky & Hunt, 2017; John & Gross, 2004). Greater use of suppression has been linked to poorer adjustment in other clinical populations (e.g., via increased psychological distress and greater health complaints among women diagnosed with breast cancer (Iwamitsu, Shimoda, Abe, & Okawa, 2005; Li et al., 2015; Tamagawa et al., 2013), and greater processing of distressing emotions in community samples (Butler et al., 2003; Richards, Butler, & Gross, 2003). Women with FSIAD who employ

greater suppression may too experience more difficulty adjusting to their condition, potentially ruminating more about their sexual problems and experiencing even poorer outcomes as a result.

Recent models conceptualize emotion regulation as an interpersonal system whereby partners' regulation strategies affect each other's experience, behavior, and physiology in a reciprocal fashion (Butler, 2011). Indeed, an individual's emotion regulation has been found to impact their romantic partner's well-being, potentially through changes in their partner's affect (Ben-Naim, Hirschberger, Ein-Dor, & Mikulincer, 2013; Debrot, Schoebi, Perrez, & Horn, 2014). Emotional suppression has been likened to "second-hand smoke" in that suppression adversely affects the psychophysiology of both the suppressor and the partner (e.g., via heightened cardiovascular arousal and negative mood; Ben-Naim et al., 2013). Finally, emotional distance, which is linked to suppression (Butler et al., 2003; Gross, 2002), has been found to be a robust predictor of depressive symptoms in both members of married couples (Heim & Snyder, 1991).

We are unaware of any research examining the links between emotion regulation strategies employed in sexual situations and couples' adjustment to FSIAD. It is possible that sexual emotion regulation strategies function analogously in FSIAD and community couples; however, several aspects of FSIAD suggest an investigation of reappraisal and suppression in affected couples is warranted. Lower emotional closeness during sex, for example, is linked to women's greater sexual distress (Bancroft et al., 2003), and interpersonal factors, such as open communication (Butler et al., 2003; John & Gross, 2004), are thought to mitigate the negative consequences of women's low

desire (Brotto & Laan, 2015). In the context of FSIAD, greater use of emotional suppression in relation to sex could result in less authentic interactions and emotional distance between partners, resulting in lower relationship quality, sexual well-being, and heightened distress. Conversely, as emotional reappraisal has been linked to more optimism, sharing of emotions, and problem-focused coping (Carver, Scheier, & Weintraub, 1989; John & Gross, 2004), greater use of reappraisal when navigating FSIAD could help alleviate couples' distress and result in more favorable relationship and sexual well-being.

3.2.3 Gender Differences in Emotion Regulation and Sexual Desire

Compared to women, men tend to report higher sexual desire (Baumeister, Catanese, & Vohs, 2001; Eplov, Giraldi, Davidsen, Garde, & Kamper-Jorgensen, 2007; Levine, 2003; but see also Dawson & Chivers, 2014), a greater interest in sex during negative mood states (Lykins, Janssen, & Graham, 2006; Raisanen, Chadwick, Michalak, & van Anders, 2018), and a greater tendency to regulate negative emotion through sex (Hill & Preston, 1996). Men are also more likely to use emotional suppression than women (Gross & John, 2003). In contrast, women report a greater repertoire of emotion regulation strategies (Nolen-Hoeksema & Aldao, 2011) and engage in emotion regulation more for relational concerns compared to men (Timmers, Fischer, & Manstead, 1998). Importantly, women experience lower level of threat when expressing vulnerable information to other women than when disclosing to men (Mendes, Reis, Seery, & Blascovich, 2003). In light of these gender differences, we restricted our sample to individuals in mixed-gender relationships. This approach is in line both with recommendations to consider gender differences in research of emotion

(Kret & De Gelder, 2012) and sexual desire (Carvalho & Nobre, 2011; Peplau, 2003), and with methods employed in previous studies of emotion regulation (Bloch et al., 2014; Troy, Wilhelm, Shallcross, & Mauss, 2010).

3.2.4 Objective and Hypotheses

The current study examined whether global difficulties regulating negative emotion, and emotion regulation strategies employed in a sexual context (i.e., suppression and reappraisal), were associated with the psychological (depression, anxiety), relational (satisfaction, dyadic conflict), and sexual (desire, distress) adjustment of couples coping with FSIAD. The outcomes were selected to reflect the broad spectrum of impairments experienced by affected couples (Rosen et al., 2019). With regard to sexual adjustment, we examined sexual desire and distress because these variables represent the core clinical manifestations of FSIAD (Parish & Hahn, 2016) and partners of women with FSIAD report more sexual distress than controls (Rosen et al., 2019). Among women with FSIAD, theory and research suggest there is variation in these variables even at extreme ends of these spectrums (i.e., from absent to low sexual desire and moderate to extreme distress in the case of women with FSIAD; Cherkasskaya & Rosario, 2019). For example, women with combined low desire and arousal report significantly greater sexual distress than women reporting exclusively low desire or exclusively low arousal (Sarin et al., 2016).

We expected that individuals with more effective emotion regulation—as defined by less difficulty regulating their negative emotions, greater use of emotional reappraisal, and lower use of emotional suppression—would report fewer symptoms of anxiety and depression, greater relationship satisfaction, lower dyadic conflict, greater sexual desire,

and lower sexual distress than those with poorer emotion regulation. Further, we also predicted that individuals with more effective emotion regulation would have partners who reported greater psychological, relational, and sexual well-being, compared to those with poorer emotion regulation.

3.3 Method

3.3.1 Participants

Couples were recruited throughout Canada and the U.S. via flyers, online postings and social media applications, word-of-mouth, and radio/podcast advertisements from September 2016 to May 2018. To be eligible, couples were required to meet the following criteria: 18 years or older; fluent in English; in a committed romantic relationship that had lasted at least 6 months; have had a minimum of four in-person contacts per week with their partner during the last month or cohabitating (to ensure opportunities for sexual activity); and both members of the couples were able and willing to participate. Eligible couples had one member that received a diagnosis consistent with DSM-5 criteria for FSIAD (American Psychiatric Association, 2013), described below under Procedure. Participants were excluded if they met any of the following criteria: pregnant, breastfeeding, or one year postpartum; undergoing hormonal therapy (hormonal contraceptives were allowed); did not have previous sexual experience (i.e., oral, anal, or vaginal sex, or non-genital sexual touching and mutual masturbation); and the low sexual interest/arousal was attributable to another psychiatric diagnosis, medication, or medical condition. Two hundred and fifteen individuals contacted the laboratory and completed a brief screening call to determine preliminary eligibility. Of the 174 women that were deemed potentially eligible following the screening call, 143

completed the clinical interview and 31 were no longer interested in participating. After completion of the clinical interview, 25 women did not meet the diagnostic criteria for FSIAD (i.e., they either attributed low desire/arousal to another illness, were not significantly distressed, or endorsed less than three symptoms) and were deemed ineligible. Thirty eligible couples were excluded from final analyses due to failed attention checks (i.e., failure to select instructed response items; n = 15; 50%), incomplete questionnaires (n = 6; 20%), or because they were in a same-gendered relationship (n = 9; 30%). The final sample size was 87 couples (174 individuals; see Table 1 for participant characteristics). Only 71 couples completed the measure of emotion regulation strategies because it was added to the study after recruitment began.

3.3.2 Measures

Sociodemographics. Participants reported their gender, sexual orientation, relationship status and duration, education, income, and ethnicity.

Difficulties in emotion regulation. Difficulties with emotion regulation were assessed using the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), modified to address psychometric limitations of the original measure (Bardeen, Fergus, Hannan, & Orcutt, 2016). Participants rated 29 items describing how they act when upset (e.g., "When I'm upset, I become out of control") on a scale from 1 (*almost never*) to 5 (*almost always*). Total scores range from 29 to 145, with higher scores indicating greater difficulty regulating emotions. This measure has shown excellent internal consistency, convergent, and criterion validity (Bardeen et al., 2016). Cronbach's alphas for the current sample were .97 for women and .96 for partners.

Emotion regulation strategies. The Emotion Regulation questionnaire (ERQ; Gross & John, 2003) is a 10-item scale, which assesses individual differences in the use of two emotional regulation strategies: suppression (4 items; e.g., "I keep my emotions to myself") and reappraisal (6 items; e.g., "I control my emotions by changing the way I think about the situation I'm in"). Items are rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Total scores for the reappraisal subscale range from 6 to 42, with higher scores indicating greater use of emotional reappraisal; total scores for the suppression subscale range from 4 to 28, with higher scores indicating greater use of emotional suppression. The ERQ has demonstrated good validity, internal consistency (Cronbach's alphas of .79 for reappraisal and .73 for suppression), and test–retest reliability (Gross & John, 2003). In the current study, the instructions were adapted to assess emotion regulation strategies in the context of the sexual relationship (i.e., when thinking or talking about sex or in the context surrounding a sexual experience). Cronbach's alphas for the reappraisal subscale were .86 for women and .92 for partners, and Cronbach's alphas for the suppression subscale were .76 for women and .77 for partners.

Depression. The Beck Depression Inventory II (BDI-II) was used to assess the severity of depressive symptoms in participants. Developed by Beck, Steer, and Brown (1996), the BDI-II consists of 21 group statements (e.g., Sadness: 0 = *I do not feel sad*; 1= *I feel sad much of the time*; 2= *I am sad all of the time*; 3 = *I am so sad or unhappy that I can't stand it*) from which participants selected how they had been feeling over the past 2 weeks. Item 9 (suicidal intent) was removed at the request of our ethics board (i.e., because it was not feasible to conduct a thorough risk assessment). Total scores range

from 0 to 63, with higher scores indicating greater levels of depression. Cronbach's alphas for the current sample were .94 for women and .88 for partners.

Anxiety. Anxiety was assessed using a six-item short-form of the trait scale of the State-Trait Anxiety Inventory (STAI; Marteau & Bekker, 1992). Participants rated items on a scale from 1 (*almost never*) to 4 (*almost always*) to indicate how they generally felt (e.g., "I feel pleasant", "I feel nervous"). Total scores range from 6 to 24, with higher scores indicating greater levels of anxiety. The short-form of the trait scale of the STAI has been shown to have both good reliability and validity (Marteau & Bekker, 1992). Cronbach's alphas for the current sample were .88 for women and .84 for partners.

Relationship satisfaction. Relationship satisfaction was assessed with the 16-item version of the Couples Satisfaction Index (CSI; Funk & Rogge, 2007). Using Likert-type scales, participants rated the quality of their relationship across several factors (e.g., how happy they are with their relationship, how frequently they disagree with their partner). Responses are summed to generate a total score for overall relationship satisfaction ranging from 0 to 80 with higher scores indicating greater relationship satisfaction. The CSI has been shown to have strong convergent and construct validity (Funk & Rogge, 2007). Reliability for the current sample was .97 for women and .96 for partners.

Relational conflict. Conflict within the relationship was assessed with two items from the Revised Dyadic Adjustment Scale (Busby, Christensen, Crane, & Larson, 1995). Using 6-point Likert-types scales, participants indicated how frequently (e.g., 0 = *all the time*, to 5 = *never*) they quarreled with and annoyed their partner. Total scores range from

0-10, with higher scores indicating lower levels of relational conflict. Cronbach's alphas for the current sample were .80 for women with FSIAD and .79 for partners.

Partner-focused Sexual Desire. Partner-focused sexual desire was assessed using the partner-focused dyadic sexual desire subscale (Moyano, Vallejo-Medina, & Sierra, 2017) of the Sexual Desire Inventory (Spector, Carey, & Steinberg, 1996). Using Likert-type scales, participants rated six items about the strength of their sexual desire for their partner (e.g., 0 = *no desire* to 8 = *strong desire*) and two items on the frequency of a partner-focused sexual thought or desired sexual behavior (e.g., 0 = *not at all* to 7 = *many times a day*). Total scores range from 0 to 54, with higher scores indicating higher levels of partner-focused sexual desire. The partner-focused dyadic sexual desire scale has demontrated good validity and reliability (Moyano et al., 2017). In the current sample, Cronbach's alphas were .78 for women with FSIAD and .83 for partners.

Sexual distress. Sexual distress was assessed with the 13-item Female Sexual Distress Scale-Revised (FSDS-R; DeRogatis, Clayton, Lewis-D'Agostino, Wunderlich, & Fu, 2008). Using a 5-point Likert scale, participants indicated how frequently (e.g., 1 = *never*, to 5 = *always*) they experienced distress (e.g., frustration or guilt) related to their sex lives. Total scores range from 13 to 66, with higher scores indicating higher levels of sexual distress. The FSDS-R has demontrated good discriminant validity and high test–retest reliability (DeRogatis et al., 2008). Originally developed for use in women, the items are gender neutral and the scale has recently been validated in men (Santos-Iglesias, Mohamed, Danko, & Walker, 2018). Cronbach's alphas for the current sample were .91 for women with FSIAD and .91 for partners.

3.3.3 Procedure

Interested women participated in a structured telephone screening interview with a research assistant. Women who met the basic eligibility requirements, and confirmed that both they and their partner were interested in participating in the study, were then scheduled for a semi-structured clinical interview by phone (30–45 min), with a clinical psychologist or senior Ph.D. student in Clinical Psychology, to confirm the FSIAD diagnosis. The clinical interview was developed based on prior studies (e.g., Paterson, Handy, & Brotto, 2016; Sarin et al., 2016) and the clinical expertise of our team. The interview is available for review at the following Open Science Framework (OSF) link: https://osf.io/fb4gu/?view_only=4f6a063839 0c4574b02843ad689888dd. Eligible women and their partners were then sent individual links to the online consent form, and independently completed an online survey comprised of standardized self-report questionnaires. The surveys were hosted on Qualtrics, a secure online survey platform. Participants who did not complete the survey within a week of being sent the link received a reminder phone call from a research assistant. Reminder emails were sent to participants who had not completed the survey at 2 and 3 weeks thereafter. Failure to complete the survey within 4 weeks resulted in removal from the study. Each member of the couple was compensated $18 CAD in Amazon gift cards for their participation in the study. Couples were also provided information on how to access treatment resources.

3.3.4 Data Analysis

Data analyses were completed using multilevel modeling in SPSS 24.0.0.1. We first examined bivariate correlations between sociodemographics of the sample, emotion regulation (difficulties and strategies), and the study outcomes. To account for the non-

independence of the dyadic data, analyses were conducted using multilevel modeling (Kenny, Kashy, & Cook, 2006), in accordance with the actor–partner interdependence model (APIM; Cook & Kenny, 2005). Use of the APIM allowed for an examination of how an individual's emotion regulation was linked to both their own psychological, relational, and sexual well-being (i.e., actor effects) and to their partner's psychological, relational, and sexual well-being (i.e., partner effects). We used a two-level model in which individuals were nested within dyads. Due to the different sample sizes (i.e., to maximize power) and low correlations between the measures of emotion regulation difficulties and strategies, separate APIM models were run for difficulties in emotion regulation and emotion regulation strategies (reappraisal and suppression together). A separate APIM model was conducted for each of the dependent variables. To account for multiple testing and hypotheses with unknown dependencies, we controlled for the false discovery rate (FDR) using the Benjamini, Krieger, and Yekutieli (BKY) adaptive linear step-up procedure (Benjamini, Krieger, & Yekutieli, 2006). The BKY procedure reduces the risk of Type 1 error among a study's significant discoveries by using the *p*-value distribution to calculate adjusted αs for each significance test (i.e., *q*-values). Given the need to balance between Type 1 and Type II error in novel areas of research (Fiedler, Kutzner, & Krueger, 2012; Perneger, 1998) and because estimates of the uncorrected science-wide false positive rate range from 14 to 50% (Jager & Leek, 2013; Vidgen & Yasseri, 2016), we employed a FDR of 15% (meaning there will be fewer than 2 false positives if the BKY procedure yields 10 significant results). Correlations between sample characteristics and outcome variables were run using a two-tailed test of significance. As per Frigon and Laurencelle (1993), we used a threshold of $r = .30$ to

determine covariates for analysis, since lower values of *r* are indicative of poor covariate selection and/or a nonlinear relationship between variables. We found no correlation coefficient for sample characteristics and outcome variables was greater than or equal to $r = .30$; thus, no demographic variables were included as covariates in subsequent analyses.

3.4 Results

Descriptives for the study measures are reported in Table 2. Bivariate correlations for emotion regulation and outcome measures are reported in Table 3.

3.4.1 Difficulties in Emotion Regulation and Psychological, Relational, and Sexual Outcomes

As reported in Table 4, when women with FSIAD reported greater difficulties in emotion regulation, they reported greater levels of depression and anxiety. Women's difficulties in emotion regulation were not associated with their own or men's relationship satisfaction, dyadic conflict, sexual desire, or sexual distress; nor were they associated with men's symptoms of depression or anxiety.

When men reported greater difficulties in emotion regulation, they reported greater symptoms of depression and anxiety, more sexual distress, and women with FSIAD reported lower relationship satisfaction. Men's difficulties in emotion regulation were unrelated to their own relationship satisfaction, dyadic conflict, and sexual desire and to women's depression, anxiety, dyadic conflict, sexual desire, and sexual distress.

3.4.2 Emotional Reappraisal and Psychological, Relational, and Sexual Outcomes

Results from the APIMs with emotion regulation strategies employed in a sexual context and study outcomes are reported in Table 5. Women with FSIAD who reported

greater use of emotional reappraisal reported fewer symptoms of depression and anxiety, and their partners reported lower dyadic conflict. Women's emotional reappraisal was not linked to their own relationship satisfaction, sexual desire, or sexual distress. Women's reappraisal was also unrelated to their partners' depression, anxiety, relationship satisfaction, sexual desire, and sexual distress.

Men who reported greater emotional reappraisal reported fewer symptoms of depression and anxiety, higher partner-focused sexual desire, higher relationship satisfaction, and lower dyadic conflict, and the women with FSIAD also reported more relationship satisfaction and lower dyadic conflict. There were no associations between men's emotional reappraisal and their own sexual distress or women's depression, anxiety, sexual desire, or sexual distress.

3.4.3 Emotional Suppression and Psychological, Relational, and Sexual Outcomes

As reported in Table 5, the greater use of emotional suppression in sexual contexts by women with FSIAD was associated with their own greater symptoms of depression and anxiety, and lower relationship satisfaction. Women's emotional suppression was not associated with their own dyadic conflict, sexual desire, or sexual distress; nor with their partners' depression, anxiety, relationship satisfaction, dyadic conflict, sexual desire, or sexual distress.

Men's greater use of emotional suppression was associated with their own greater symptoms of depression, lower relationship satisfaction, and lower sexual desire. Men's suppression was unrelated to their own anxiety, dyadic conflict, and sexual distress and to women's depression, anxiety, relationship satisfaction, dyadic conflict, sexual desire, and sexual distress.

3.4.4 Correction for Multiple Testing

Results from our APIM models remained significant at FDR < 15% using the BKY adaptive linear step-up procedure.

3.5 Discussion

This study extends the emotion regulation and FSIAD literatures by demonstrating that emotion regulation abilities and strategies are associated with the adjustment of couples coping with FSIAD. Specifically, results revealed that for women with FSIAD and their male partners, greater difficulties regulating negative emotions were associated with their own greater symptoms of depression and anxiety; men's greater difficulties were linked to their own greater sexual distress and women's lower relationship satisfaction. Further, women with FSIADs and men's greater use of emotional suppression in sexual contexts were linked to their own lower relationship satisfaction and greater symptoms of depression and, for women, their own greater anxiety. Men's higher suppression was also linked to their own lower partner-focused sexual desire. In contrast, women's and men's greater use of emotional reappraisal in sexual contexts was linked to their own lower depression and anxiety and to lower perceived dyadic conflict of their partners. Finally, men's greater use of emotional reappraisal was linked to their own and women's higher relationship satisfaction, as well as their own lower dyadic conflict and higher partner-focused sexual desire.

3.5.1 Psychological Adjustment

Consistent with our predictions, greater difficulty regulating negative emotion was linked to more symptoms of depression and anxiety for both women with FSIAD and their partners. Similarly, women's and men's greater use of suppression specific to

sexual contexts (e.g., concealing their emotions during conversations about sex, or during sex itself) was linked to their own greater symptoms of depression and to women's own greater anxiety. These results are in line with theories on difficulties with emotion regulation (Gratz & Roemer, 2004) and prior research (Aldao et al., 2010; Cameron & Overall, 2018), which suggest that poor ability to regulate negative emotions and use of emotional suppression may exacerbate the psychological distress experienced by both members of couples coping with FSIAD. Such findings are again consistent with the robust positive association found in the literature between emotional suppression and depression and anxiety (Aldao et al., 2010; Campbell-Sills, Barlow, Brown, & Hofmann, 2006). As suppression has been linked to rumination (Liverant, Kamholz, Sloan, & Brown, 2011) and emotional detachment (Butler et al., 2003) members of couples coping with FSIAD who suppress their emotions about sex may ruminate more about the sexual problem within their relationship and feel emotionally alienated from their partner, exacerbating their symptoms of depression as a result (Heim & Snyder, 1991). And although one study found that greater suppression in daily life was associated with greater depression over time (Cameron & Overall, 2018), another longitudinal study suggested that depressive symptoms precede the habitual use of suppression (Larsen et al., 2013). Thus, given the cross-sectional nature of the current study, it is also possible that greater symptoms of depression may lead individuals to suppress their emotions about sex as a way of coping with their distress.

In contrast, greater use of emotional reappraisal by women and men in relation to the sexual relationship was linked to their own lower depression and anxiety. It is possible that use of reappraisal helps to alleviate some of the distress associated with

FSIAD. For example, a woman with FSIAD may reframe a sexual experience to focus on intimacy with her partner, even if her sexual desire or arousal is low. Indeed, prior research has shown that greater use of reappraisal mitigates the negative emotions provoked by relational conflict (Mauss, Cook, Cheng, & Gross, 2007). It is also possible that when women with FSIAD think about sexual issues in a more positive light they may be more motivated to engage in sexual activity in pursuit of positive outcomes (i.e., approach goals), such as to experience closeness with their partner or to make their partner happy, as greater approach goals have been linked to lower depression in women with other types of sexual dysfunction (e.g., genito-pelvic pain/penetration disorder; Rosen, Dewitte, Merwin, & Bergeron, 2017). Alternatively, women with FSIAD and partners who report lower psychological distress may experience fewer cognitive biases associated with depression and anxiety (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van IJzendoorn, 2007; Gotlib, Krasnoperova, Yue, & Joormann, 2004) and could, therefore, find it easier to reappraise their emotions in a sexual context, compared to those who experience greater symptoms of anxiety and depression.

3.5.2 Relational Adjustment

Women's and men's greater use of emotional suppression in relation to sex was linked to their own lower relationship satisfaction. These findings are consistent with the process model of emotion regulation (Gross, 1998), which posits that emotional suppression is detrimental to relationships because it disrupts signals of interest that are conveyed via expressed emotions, provoking more stressful social interactions (Butler et al., 2003), as well as research showing that emotional suppression was linked to lower relationship satisfaction in daily diary and longitudinal studies of community couples

(Impett et al., 2012; Velotti et al., 2016). In FSIAD, couples' use of emotional suppression when navigating sexual issues may convey disinterest or apathy to their partners, heightening relationship stress and leading couples to avoid conversations about the sexual problem. This avoidance could, in turn, lower relationship satisfaction, as has been shown with topic avoidance in couples coping with cancer (Donovan-Kicken & Caughlin, 2010). It is also possible that individuals coping with FSIAD may suppress their emotions about sex with the goal of protecting their partner from distress. However, suppression has been found to have the paradoxical effect of fostering preoccupation with the thoughts that one is seeking to suppress (Wegner, Schneider, Carter, & White, 1987), increasing the intensity of negative emotions and the likelihood of couple conflict and dissatisfaction (Roberton, Daffern, & Bucks, 2012).

In line with our predictions, men's greater use of emotional reappraisal in sexual contexts was associated with their own greater relationship satisfaction and lower perceptions of dyadic conflict. Prior research has shown that an individual's greater use of emotional reappraisal when discussing problems in their relationship is linked to greater perceptions of constructive criticism (i.e., criticism that is perceived as helpful and amicable; Klein, Renshaw, & Curby, 2016). Because constructive criticism is positively associated with relationship satisfaction (Renshaw, Blais, & Caska, 2010), men who employ more reappraisal in sexual contexts may engage in more constructive communication when navigating FSIAD with their partner, lowering perceptions of conflict and increasing relationship satisfaction as a result.

Notably, several partner effects emerged for relational adjustment. Consistent with research indicating that poor emotion regulation ability interferes with couples'

intimacy (Tani, Pascuzzi, & Raffagnino, 2015), men's greater difficulty regulating negative emotion was linked to women's lower relationship satisfaction. This finding suggests that, in the context of FSIAD, men's ability to manage emotion may be important for the relationship, which is counter to Bloch et al. (2014) who found that only wives' emotion regulation during conflict uniquely predicted community couples' marital quality. In addition, an individual's greater tendency to manage their emotions about sex via reappraisal was related to *their partner's* lower dyadic conflict and men's greater reappraisal was linked to women's higher relationship satisfaction. These findings support the growing body of research that suggests managing emotions via reappraisal is beneficial for both partners (Ben-Naim et al., 2013; Finkel, Slotter, Luchies, Walton, & Gross, 2013). Indeed, reappraisal is associated with both partner responsiveness (John & Gross, 2004) and greater empathic concern (López-Pérez & Ambrona, 2015). A member of a FSIAD couple who favors reappraisal, for example, might manage their frustration over a desire discrepancy by reframing the disagreement as an opportunity to empathize with, or respond to, their partner's needs (i.e., to either have sex, or not). Correspondingly, and in line with findings that greater partner responsiveness is linked to greater relationship satisfaction in other sexual dysfunctions (Muise, Bergeron, Impett, & Rosen, 2017), partners of individuals who cope with sexual emotions by reframing their experience may feel more satisfied in their relationship and perceive less conflict because reappraisal promotes a more positive interpersonal context.

3.5.3 Sexual Adjustment

As expected, male partners' greater difficulty regulating negative emotions was related to their own higher sexual distress. Because difficulty regulating negative

emotion interferes with goal-directed behavior (Gratz & Tull, 2010), it is possible that partners find their attempts to sexually engage a partner with low interest/arousal and to manage the negative emotions that often accompany a desire discrepancy (Mark, 2015), thwarted by poor emotion regulation abilities. Additionally, men's greater emotional suppression was linked to their own lower sexual desire, whereas greater reappraisal was linked to higher desire. Given that emotional suppression and reappraisal influence emotional closeness (Cameron & Overall, 2018; Velotti et al., 2016), these results converge with findings that men in long-term relationships qualitatively report emotional connection with their partner as a factor which inhibits or elicits their sexual desire (Murray, Milhausen, Graham, & Kuczynski, 2017).

Surprisingly, our results revealed no association between women's emotion regulation and their own or their partner's sexual desire or distress, or between men's emotion regulation strategies and women's sexual well-being. This finding is unexpected given that Rellini et al. (2012) found a link between women's greater difficulty regulating negative emotion and sexual dissatisfaction, a construct which is closely related to sexual distress (Stephenson & Meston, 2010). It is possible that the lack of effects for women could be due to the limited range of sexual distress and desire in our sample. Emotion regulation may be linked to facets of sexual wellbeing for women with FSIAD that were not assessed in the current study, such as orgasm frequency (Burri, Cherkas, & Spector, 2009), sexual communication, or sexual compatibility. It is also possible that couples affected by FSIAD use emotion regulation strategies for sexual contexts which were not assessed in the current study, such as acceptance, aggressive externalization, perspective taking, or problem solving (Aldao et

al., 2010; Vater & Schröder-Abé, 2015). For example, prior research suggests that distraction—the emotion regulation strategy of shifting attention away from emotionally provoking stimuli—is employed more often than emotional reappraisal in situations of high versus low emotional intensity (Sheppes, Scheibe, Suri, & Gross, 2011). Finally, the selection of an emotion regulation strategy is influenced by contextual, emotional, and motivational factors (Sheppes et al., 2014). Collapsing emotion regulation strategies employed across all sexual contexts—as we did in this study—may have obscured effects for sexual adjustment because people could select different strategies depending on the situation (e.g., when engaged in sexual activity versus conversations or thoughts about sex). In summary, future research should assess broader components of participants' sexual well-being, additional emotion regulation strategies in FSIAD, and emotion regulation strategies employed in specific sexual contexts (e.g., during sexual activity) separately.

3.5.4 Strengths and Limitations

This was the first study, to our knowledge, to demonstrate that emotion regulation is associated with women's and partners' adjustment to FSIAD, answering calls for research on emotion regulation in intimate relationships (Gross, 2015; Rellini et al., 2010). Although rare in prior research, the inclusion of partners in our study is noteworthy because FSIAD typically occurs in the context of a romantic relationship (Parish & Hahn, 2016), and women with low sexual desire who are in relationships are more likely to experience negative symptoms, such as sexual distress (Rosen et al., 2009).

The study has limitations, which should also be noted. First, the study's cross-

sectional design limits our ability to make causal interpretations. Second, given that partner willingness to participate has been theorized to exclude more distressed couples in dyadic studies of sexual dysfunction (Corsini-Munt, Rancourt, Dubé, Rossi, & Rosen, 2017), our eligibility requirements may have biased our sample to include less distressed participants and/or those who are regulating their emotions more effectively. Third, the retrospective nature of questions assessing emotion regulation strategies may not have accurately captured strategies employed in vivo. Objective measures of emotion regulation, such as observational and physiological measures, will enable researchers to capture emotion regulation as it happens, rather than relying upon participants' retrospective recall, and should be incorporated into future studies. Fourth, the clinicians who interviewed potential participants were aware of the study's hypotheses; this knowledge may have influenced the provision of diagnoses. Fifth, because trait emotional suppression and reappraisal were not assessed, we are unable to determine whether associations between strategy use and study outcomes are unique to sexual versus general situations. However, other studies have demonstrated the unique contribution of cognitive-affective factors specific to sexuality (e.g., sexual communication, sexual beliefs) beyond general measures of these constructs (Glowacka, Vannier, & Rosen, 2020; Impett, Peplau, & Gable, 2005; Maxwell et al., 2017; Rancourt, Flynn, & Rosen, 2020). Finally, our sample was comprised of individuals in mixed-gendered relationships which limits the generalizability of our findings.

3.5.5 Conclusions

Overall, our findings suggest that emotion regulation among couples with FSIAD may be linked more to indicators of their distress (e.g., symptoms of anxiety and

depression, dyadic conflict, and relational dissatisfaction) than their enhanced well-being (e.g., better relational and sexual well-being). Although unanticipated, this pattern of results is consistent with previous research indicating that less adaptive emotion regulation strategies have stronger associations with psychopathology than adaptive strategies (Aldao & Nolen-Hoeksema, 2012; Aldao et al., 2010). This trend can be attributed, in part, to differences in how emotion regulation strategies are implemented. Whereas poor adjustment is linked to rigid implementation of less adaptive strategies, such as suppression, better adjustment is linked to the flexible implementation of multiple adaptive strategies (Aldao & Nolen-Hoeksema, 2012). It is therefore possible that couples with FSIAD who tend to adapt better to the condition (as reflected by greater well-being) may flexibly implement a range of adaptive strategies to manage their emotions about sex that were not assessed by the current study (e.g., acceptance and problem solving). These additional strategies should be assessed in future research. The general pattern of results also suggests that an individual's emotion regulation was more important for their own adjustment as it was unrelated to their *partner's* adjustment for couples' psychological and sexual well-being, perhaps reflecting the internalized nature of depression and anxiety (Krueger & Markon, 2006) and women's and men's unique experience of FSIAD and sexual desire (Carvalho & Nobre, 2011; Rosen et al., 2019).

In conclusion, findings support past and present recommendations that partners be included in treatment for sexual problems, including FSIAD (Masters & Johnson, 1970; Rosen, Rancourt, Bergeron, & Corsini-Munt, 2014), although empirically supported couple-based treatments for FSIAD still do not exist. Clinicians might target enhancing emotion regulation skills and adaptive strategies in couples affected by FSIAD, with the

aim of helping couples to better regulate emotion via cognitive, affective, and behavioral strategies. Couples who are better able to manage their negative emotions, both globally and in sexual contexts via greater use of cognitive reappraisal and less emotional suppression, may adjust better to FSIAD and experience fewer negative consequences as a result.

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3.8 Tables

Table 3.8.1

Sociodemographic Characteristics for the Sample (n =87 Couples)

Variable	*M* (range)	*n*	*SD*	%
Age (years)				
Women	31.52 (19-57)		7.83	
Men	32.86 (19-70)		9.46	
Education (years)				
Women	16.41 (4-24)		3.22	
Men	16.11 (3-28)		3.88	
Ethnicity				
Women				
Caucasian/White		60		69.0
Asian American/Asian		9		10.3
Other		18		20.7
Men				
Caucasian/White		66		75.9
Asian American/Asian		9		10.3
Other		12		13.8
Relationship status				
Married		40		46.0
Cohabitating		39		44.8
Dating		8		9.2

Variable	*M* (range)	*n*	*SD*	%
Relationship length (months)	98.47 (9-419)		87.32	
Women's low interest/arousal duration (months)	56.91 (6-372)		65.62	

Note. M = mean of sample; *n* = total number of observations; *SD* = standard deviation; % = percentage of sample. *Other* Ethnicities included the following: African American/Black, East Indian, Hispanic/Latino/Latina, Middle Eastern/Central Asian, Biracial/Multiracial, Portuguese, Ashkenazic.

Table 3.8.2

Descriptives for Study Measures for Women with FSIAD and Partners (n = 87 Couples)

Variable	*M*	*Range*	*SD*
Difficulties in emotion regulation			
women	72.78	(30-141)	26.46
men	58.30	(30-141)	20.09
Emotional reappraisal (*n* = 71)			
women	27.82	(6-41)	6.79
men	29.48	(6-42)	7.74
Emotional suppression (*n* = 71)			
Women	11.49	(4-25)	5.04
Men	13.76	(4-23)	4.83
Depression			
Women	15.38	(2-51)	11.97
Men	9.98	(0-31)	7.32
Anxiety			
Women	14.91	(6-24)	4.29
Men	11.98	(6-22)	3.60
Relationship satisfaction			
Women	57.80	(15-80)	15.74
Men	60.67	(18-81)	13.07
Dyadic conflict			
Women	6.15	(2-8)	1.41

Variable	*M*	*Range*	*SD*
Men	6.38	(0-9)	1.33
Partner-focused sexual Desire			
Women	15.93	(0-36)	7.90
Men	35.18	(6-46)	6.65
Sexual distress			
Women	30.83	(11-50)	9.46
Men	17.39	(0-37)	9.64

Note. M = mean of sample; *SD* = standard deviation.

Table 3.8.3

Bivariate Correlations Between Difficulties in Emotion Regulation and Emotion Regulation Strategies and Outcome Variables in Women with FSIAD and Partners

Measure	1	2	3	4	5	6	7	8	9
1. DERS	**.26***	-.22	.17	.51**	.43*	-.12	-.12	-.03	.33**
2. RAP	-.20	**-.06**	.31**	-.24*	-.21	.28*	.15	.14	-.02
3. SUPP	.27*	.30**	**.08**	.14	.08	-.09	.05	-.15	.15
4. BDI	.56**	-.20	.25*	**.25***	.73**	-.38**	-.32**	-.26*	.49**
5. ANX	.53**	-.25*	.23*	.77**	**.24***	-.53**	-.34**	-.01	.49**
6. CSI	-.15	-.21	-.38**	-.28**	-.30**	**.51****	.59**	.11	-.50**
7. DAS	-.18	.21	.05	-.13	-.24*	.54**	**.49****	.07	-.14
8. SDI-D	.05	-.22	-.21	-.07	-.11	.26*	.17	**-.14**	.13
9. FSDS	.11	-.04	-.05	.14	.22*	.07	.01	.05	**.10**

Note. Correlations above the diagonal are for men; correlations below the diagonal are for women with FSIAD; bold correlations on the diagonal are between women with FSIAD and partners. Bivariate correlations in the ranges of .10, .30, and .50 indicate small, medium, and large effects sizes, respectively. *DERS* Difficulties in Emotion Regulation Scale, *RAP* Adapted Emotion Regulation Questionnaire

Reappraisal Subscale, *SUPP* Adapted Emotion Regulation Questionnaire Suppression Subscale, *BDI* Beck Depression Inventory II, *ANX* trait scale of the State-Trait Anxiety Inventory, *CSI* Couples Satisfaction Inventory, *DAS* Dyadic Adjustment Scale, *SDI-D* Partner-Focused Dyadic Sexual Desire Subscale of the Sexual Desire Inventory, *FSDS* Female Sexual Distress Scale – Revised.

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

Table 3.8.4

Actor–Partner Interdependence Model with Difficulties in Emotion Regulation as the Independent Variable and all Outcomes

	Difficulties in Emotion Regulation (n = 87)				
	b	*SE*	*df*	*t*	*p*
Model 1: Depression					
Actor effects					
Women	**.24**	**.04**	**84**	**5.78**	**.00**
Men	**.19**	**.04**	**84**	**5.34**	**.00**
Partner effects					
Women	.05	.06	84	.87	.39
Men	-.01	.03	84	-.36	.72
Model 2: Anxiety					
Actor effects					
Women	**.09**	**.02**	**84**	**5.59**	**.00**
Men	**.07**	**.02**	**84**	**4.07**	**.00**
Partner effects					
Women	.00	.02	84	.02	.98
Men	.01	.01	84	.67	.50
Model 3: Relationship satisfaction					
Actor effects					
Women	-.06	.06	84	-.85	.40

	Difficulties in Emotion Regulation (n = 87)				
	b	*SE*	*df*	*t*	*p*
Men	-.07	.07	84	-.99	.32
Partner effects					
Women	**-.17**	**.09**	**84**	**-2.01**	**.048**
Men	-.02	.06	84	-.42	.68
Model 4: Dyadic conflict					
Actor effects					
Women	-.01	.01	84	-1.66	.10
Men	-.01	.01	84	-.84	.40
Partner effects					
Women	.00	.01	84	.04	.97
Men	.00	.01	84	-.83	.41
Model 5: Partner-focused sexual desire					
Actor effects					
Women	.03	.03	84	.92	.36
Men	-.01	.04	84	-.27	.79
Partner effects					
Women	-.08	.04	84	-1.80	.08
Men	.00	.03	84	.14	.89
Model 6: Sexual distress					

	Difficulties in Emotion Regulation (n = 87)				
	b	*SE*	*df*	*t*	*p*
Actor effects					
Women	.04	.04	84	1.02	.31
Men	**.16**	**.05**	**84**	**3.17**	**.00**
Partner effects					
Women	-.01	.05	84	-.14	.89
Men	-.01	.04	84	-.19	.85

Note. The coefficients reported are unstandardized betas (*b*) and interpreted as the change in the outcome for every one-unit increase in the predictor from the sample mean. Actor effects refer to the association between women's or partners' difficulties in emotion regulation and their own outcomes, whereas partner effects refer to the association between women's or partners' difficulties in emotion regulation and their partners outcomes (e.g., the association between men's greater difficulties and women's lower relationship satisfaction). Significant effects are bolded. All bolded effects achieved FDR<15%.

Table 3.8.5

Actor-Partner Interdependence Model with Emotion Regulation Strategies as Independent Variables and all Outcomes

	Emotional Reappraisal (n = 71)					*Emotional Suppression (n = 71)*				
	b	*SE*	*df*	*t*	*p*	*b*	*SE*	*df*	*t*	*p*
Model 1: Depression										
Actor effects										
Women	**-.56**	**.20**	**66**	**-2.74**	**.01**	**.73**	**.28**	**66**	**2.63**	**.01**
Men	**-.32**	**.11**	**66**	**-2.84**	**.01**	**.37**	**.18**	**66**	**2.00**	**.049**
Partner effects										
Women	.17	.18	66	0.92	.36	-.33	.29	66	-1.15	.26
Men	-.02	.13	66	-0.12	.90	.12	.17	66	0.67	.51
Model 2: Anxiety										
Actor effects										
Women	**-.21**	**.07**	**66**	**-2.92**	**.01**	**.22**	**.10**	**66**	**2.27**	**.03**
Men	**-.12**	**.06**	**66**	**-2.16**	**.03**	.10	.09	66	1.16	.25

	Emotional Reappraisal (n = 71)					*Emotional Suppression (n = 71)*				
	b	*SE*	*df*	*t*	*p*	*b*	*SE*	*df*	*t*	*p*
Partner effects										
Women	.06	.06	66	1.01	.32	-.05	.10	66	-0.52	.60
Men	.05	.06	66	0.75	.46	.09	.09	66	1.11	.27
Model 3: Relationship satisfaction										
Actor effects										
Women	-.19	.25	66	-0.76	.45	**-.99**	**.33**	**66**	**-2.97**	**.00**
Men	**.74**	**.18**	**66**	**4.09**	**.00**	**-.67**	**.29**	**66**	**-2.29**	**.03**
Partner effects										
Women	**.53**	**.22**	**66**	**2.39**	**.02**	.18	.35	66	0.50	.62
Men	.33	.20	66	1.64	.11	-.50	.28	66	-1.80	.08
Model 4: Dyadic conflict										
Actor effects										
Women	.03	.03	66	1.13	.26	.01	.03	66	0.34	.73

	Emotional Reappraisal (n = 71)					*Emotional Suppression (n = 71)*				
	b	*SE*	*df*	*t*	*p*	*b*	*SE*	*df*	*t*	*p*
Men	**.05**	**.02**	**66**	**2.83**	**.01**	-.01	.03	66	-0.35	.72
Partner effects										
Women	**.07**	**.02**	**66**	**2.87**	**.01**	.01	.04	66	0.24	.81
Men	**.05**	**.02**	**66**	**2.35**	**.02**	-.03	.03	66	-1.33	.19
Model 5: Partner-focused sexual desire										
Actor effects										
Women	-0.22	0.15	66.00	-1.51	0.14	-0.24	0.20	66.00	-1.23	0.22
Men	**0.22**	**0.11**	**66.00**	**2.01**	**0.049**	**-0.52**	**0.18**	**66.00**	**-2.96**	**0.00**
Partner effects										
Women	-0.07	0.13	66.00	-0.56	0.57	0.23	0.21	66.00	1.11	0.27
Men	-0.13	0.12	66.00	-1.02	0.31	0.03	0.17	66.00	0.19	0.85
Model 6: Sexual distress										
Actor effects										

	Emotional Reappraisal (n = 71)					*Emotional Suppression (n = 71)*				
	b	*SE*	*df*	*t*	*p*	*b*	*SE*	*df*	*t*	*p*
Women	-.04	.16	66	-0.24	.81	-.17	.21	66	-0.81	.42
Men	-.07	.16	66	-0.41	.68	.33	.25	66	1.31	.19
Partner effects										
Women	.23	.14	66	1.62	.11	-.03	.22	66	-0.12	.91
Men	.16	.18	66	0.88	.38	.41	.24	66	1.70	.09

Note. The coefficients reported are unstandardized betas (*b*) and interpreted as the change in the outcome for every one-unit increase in the predictor from the sample mean. Actor effects refer to the association between women's or partners' emotion regulation strategies and their own outcomes, whereas partner effects refer to the association between women's or partners' emotion regulation strategies and their partners outcomes (e.g., the association between women's greater reappraisal and men's greater relationship satisfaction). Significant effects are bolded. All bolded effects achieved FDR<15%.

3.9 Transition to Study 2

Study 1 (Chapter 3) was the first to examine associations between emotion regulation (abilities and strategies) and women's and partners' adjustment to FSIAD. This was also the first study, to my knowledge, that investigated how the use of emotional reappraisal and suppression to manage emotions in sexual situations were related to couples' psychological, relational, and sexual well-being. Although published in 2019, this work remains the only study of the links between emotion regulation among couples with FSIAD and outcomes.

Using cross-sectional dyadic data from participants in mixed-gender romantic relationships, I found greater difficulty regulating negative emotion was related to more symptoms of depression and anxiety for both women with FSIAD and their partners. Greater difficulty regulating negative emotion was also linked to greater sexual distress in partners who were men. In terms of regulation strategies to manage emotion in sexual contexts, women with FSIAD's and men's greater use of suppression was linked to their own lower relationship satisfaction and own greater symptoms of depression. Greater use of emotional reappraisal by both women with FSIAD and men, on the other hand, was linked to lower depression, lower anxiety, and lower perceived conflict. Men's greater use of emotional reappraisal was also linked to their own higher partner-focused sexual desire and women's higher relationship satisfaction.

Overall, my results showed that emotion regulation was related to the adjustment of both members of couples affected by FSIAD. Findings suggested that individuals in couples coping with sexual problems who are better able to manage negative emotion and use more adaptive emotion regulation strategies to manage emotion in sexual situations

may, concurrently, experience more favourable psychological, relational, and sexual well-being.

There were also notable limitations to Study 1. First, I restricted my sample to couples in mixed-gender relationships. I made this design decision because research suggests that the mechanisms through which more adaptive emotion regulation might influence couples' well-being could differ depending on the gender makeup of the couple. These mechanisms include, for example, greater sharing of emotions, intimacy, and seeking social support in woman-woman couples versus woman-man couples (Gabriel et al., 2010; Kurdek, 1998; Laurenceau et al., 1998; Tani et al., 2015).

Unfortunately, the number of women with FSIAD in same-gender relationships in my original sample (n=9) was insufficient to test for moderation via Actor-Partner moderation analyses (Garcia et al., 2015). Thus, because prior research and theory indicated that gender differences would change the magnitude of the associations between my study variables and because I lacked participants to test for moderation, I restricted my sample to only individuals in a mixed-gender relationship. This approach was in line both with recommendations to consider gender differences in research of emotion (Kret & De Gelder, 2012) and sexual desire (Carvalho & Nobre, 2011; Peplau, 2003), and with methods employed in previous studies of emotion regulation (Bloch et al., 2014; Parkinson et al., 2016; Troy et al., 2010). However, restricting my sample limited the scope of my findings to individuals in mixed-gender relationships.

Second, I relied on self-report measures to assess associations between participants' emotion regulation and outcomes. Self-report measures can be influenced by factors such as social desirability, shared method variance, and recall bias (Folkman &

Moskowitz, 2004), which limits their external validity. Furthermore, research on couples' emotion regulation suggests that self-report measures are not consistently correlated with the real-life emotion regulatory practices of individuals in romantic relationships (Levenson et al., 2014; Stephens et al., 2022). Moreover, emotion regulation involves changing multiple facets of emotional responding, including behavior (Gross, 2014). Although the emotion regulation measures I used assessed aspects of behavior (e.g., "*When I am upset, I have difficulty controlling my behaviors*"; Gratz & Roemer, 2004), these measures capture participants' perceptions of, versus objectively observed, emotional behavior. Thus, findings from Study 1 may not generalize to real-world situations. They also may not reflect how the behavioral aspects of couples' emotion regulation are associated with outcomes.

Third, I used cross-sectional data drawn from a clinical sample of couples coping with FSIAD in Study 1. I was therefore limited in my ability to determine how emotion regulation was tied to couples' sexual well-being over time. Additionally, because Study 1 was conducted using a clinical sample, it was unclear how findings might generalize to long-term community couples without FSIAD, who also experience challenges to their sexual well-being but may differ in important ways from clinical samples. Indeed, Rosen et al. (2019) showed that couples affected by FSIAD experience lower relationship satisfaction and greater psychological distress compared to controls. Thus, community and clinical samples of couples may have differences in their sexual relationship and levels of psychological well-being that result in unique associations between emotion regulation and outcomes for each sample type.

I made several design decisions in Study 2 to overcome the limitations of Study 1. I recruited a diverse sample of community couples in long-term relationships (n = 150; n = 22 in same-gender couples or couples that included a member who identified as non-binary, queer, or gender fluid). Further, I employed a multimethod longitudinal design to mitigate limitations of self-report and cross-sectional studies. The main objective of Study 2 was to assess concurrent and prospective links between couples' emotion regulation during sexual conflict and their sexual well-being, using data from a laboratory-based couples' interaction paradigm. A second objective was to test for gender differences in the strength of associations between emotion regulation and sexual well-being using moderation.

CHAPTER 4: HOOKED ON A FEELING: DOWNREGULATION OF NEGATIVE EMOTION DURING SEXUAL CONFLICT IS ASSOCIATED WITH SEXUAL WELL-BEING

The manuscript prepared for this study is presented below. Readers are advised that Justin P. Dubé, under the supervision of Dr. Natalie Rosen, was responsible for devising the research questions and hypotheses, and preparing the datasets for analyses. He was the lead on data analysis and interpretation, with the support of his co-authors. Justin wrote the initial draft of the manuscript and received and incorporated feedback from his coauthors. On May 17, 2022, this manuscript received a request for revisions from the journal *Emotion.* The full reference for this manuscript is:

Dubé, J.P., Bergeron, S., Bosisio, M., Vaillancourt-Morel, M.P., Drudge, E., & Rosen, N.O. (revision requested). Hooked on a feeling: Downregulation of negative emotion during sexual conflict is associated with sexual well-being.

4.1 Abstract

Intimate partners experience more negative emotion in response to sexual versus nonsexual conflicts in their relationship. Negative emotions hinder communication and sexual well-being. In a laboratory-based observational study, we tested the prediction that couples who took longer to downregulate negative emotion during a sexual conflict discussion would report lower sexual well-being. Long-term couples (n = 150) were video recorded while they discussed the most contentious problem within their sexual relationship. Participants subsequently viewed their filmed discussion and used a joystick to continuously report on the valence of their *emotional experience* during their disagreement. Trained coders continuously coded the valence of participants' *emotional behavior*. Downregulation of negative emotion was assessed by calculating how quickly, on average, an individual's negative emotional experience and behavior returned to neutral during their discussion. Participants also completed measures assessing sexual distress, satisfaction, and desire prior to the discussion and one year later. Analyses were conducted per the Actor-Partner Interdependence Model. We found that a person's slower downregulation of negative *emotional experience* was concurrently associated with their own greater sexual distress and lower sexual desire, and with their partner's lower sexual satisfaction. Downregulation of negative *emotional experience* also predicted one's own lower sexual satisfaction and, surprisingly, higher sexual desire for both members of the couple one year later. People who took longer to downregulate their negative *emotional behavior* during the conflict also reported higher sexual desire one year later. Findings suggest emotion regulation is associated with the sexual well-being of long-term couples.

Keywords Emotion regulation; Couples; Conflict; Sexual Well-Being; Emotion dynamics

4.2 Introduction

Discussions about divergent sexual needs and motives—sexual conflict—provoke strong negative emotion among romantic partners (Rehman et al., 2019) and therefore elicit emotion regulation (i.e., attempts to modify the valence, insensity, and/or duration of one's emotional experience and expression; Tamir, 2016). Effective regulation of negative emotion underlies goal-directed behavior (Gratz & Roemer, 2004) and consequently facilitates open and respectful problem-focused communication, conflict resolution, and general well-being in relationships (Cupach & Olson, 2006; Halperin, 2014; see Stephens et al., 2022, for a review). During nonsexual conflict, better emotion regulation is linked to higher relationship satisfaction, better communication, and increased feelings of closeness between partners (Bloch et al., 2014; Dworkin et al., 2019; Shahar et al., 2019). Yet there is a scarcity of research on emotion regulation in the unique context of sexual conflict (Rehman et al., 2017). Furthermore, evidence for the emotion regulation–sexual well-being link is largely based on data from single-subject studies using self-report assessments and cross-sectional designs (Dubé et al., 2020). Sexual well-being (i.e., sexual satisfaction, desire, and distress) is a key contributor to the quality and longevity of romantic relationships and often declines as relationship length increases (Impett et al., 2014). Determining specific associations between couples' regulation of negative emotion during sexual conflict and their sexual adjustment may therefore provide empirical support for emotion regulation as a target for interventions to promote sexual well-being in long-term couples. Using an ecologically valid observational and longitudinal design, we examined associations between

downregulation of negative emotion during sexual conflict and long-term couples' sexual well-being.

4.2.1 Emotion Regulation and Sexual Well-Being

Although there is no universally agreed upon definition, theories of emotion regulation typically acknowledge that it involves the up- or down-regulation of emotion over time (Coifman et al., 2021; Gross, 2014), including both one's subjective experience and expressive behavior (Gross, 1998; Koole, 2009). Emotion regulation can be intentional or occur without conscious awareness (Koole, 2011), and broadly encompasses "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994). There is also growing consensus that emotion regulation influences social functioning and relationships (Burkitt, 2018; Dixon-Gordon, Bernecker, et al., 2015), including sexual relationships. In a recent theoretical model of sexual dysfunction, Rosen and Bergeron (2019) posit that couples' ability to regulate emotions in the context of their sexual relationship affects a person's experience of sexual problems and, in turn, couples' psychological, relational, and sexual well-being.

Research on the intersection of emotion regulation and sexual well-being, though limited, corresponds with the core tenets of Rosen and Bergeron's (2019) Interpersonal Emotion Regulation Model. For example, more difficulties with emotion regulation are related to lower relationship satisfaction and higher sexual distress for couples coping with clinically low sexual desire/arousal (Dubé et al., 2019). Additionally, processes associated with effective regulation of negative emotion (e.g., emotional awareness, understanding, and identification) are positively associated with women's sexual well-

being (see Dubé et al., 2020, for a review). In a recent scoping review, Fischer and colleagues (2022) found that poorer emotion regulation abilities and greater use of less adaptive emotion regulation strategies (e.g., rumination, emotional suppression) were cross-sectionally associated with poorer sexual functioning and sexual satisfaction among women, men, couples, singles, and clinical and community samples.

There is evidence that facets of emotional responding—experiential, expressive-behavioral, and physiological systems—interact within and between individuals (Butler, 2011). Compared to controls, participants who were instructed to suppress their expression of emotion when discussing an emotional topic demonstrated diminished coordination between their own emotion systems (Butler et al., 2014) and had conversation partners who showed increased cardiovascular arousal and negative affect (Ben-Naim et al., 2013; Butler et al., 2003). In an ecological momentary assessment study of romantic couples, Horn et al. (2019) found that a person's use of positive emotional behavior (i.e., humor) was related to increases in their partner's experience of intimacy and positive emotion. In contrast, studies have found women's greater use of suppression was negatively associated with relationship quality for both members of married couples (Velotti et al., 2016).

Reflecting the broader literature on emotion regulation in couples (e.g., Stephens et al., 2022), studies find associations between a person's emotion regulation in sexual contexts and their romantic partner's outcomes. In couples coping with female sexual interest/arousal disorder, for example, when one member of the couple endorsed greater use of reappraisal (i.e., cognitively reframing an emotionally charged situation) to regulate negative emotions about their sexual relationship, their partner reported lower

conflict within the relationship (Dubé et al., 2019). In two non-clinical samples of couples, upregulating the expression of sexual desire in the absence of genuine feelings of sexual desire was linked to both partners' lower sexual satisfaction (Horne et al., 2021). This same study found that people reported higher relationship satisfaction when, during sex, their partner managed their experience of low sexual desire by actively concealing their disinterest in sex. Theory and research therefore suggest that a person's ability to regulate negative emotion is related to sexual well-being for both members of a couple; however, no study has examined specific links between emotion regulation during sexual conflict and sexual well-being using an ecologically valid design.

4.2.2 Emotion Regulation and Couples' Sexual Conflict

The consequences of emotion regulation during sexual conflict have received limited research attention. This oversight is notable for several reasons. First, emotion regulation is context-dependent (Aldao & Tull, 2015). Individuals favour regulatory strategies characterized by disengagement (e.g., avoidance, distraction) in high negative emotion situations (Dixon-Gordon, Aldao, et al., 2015; Shafir et al., 2016). Thus, the specific context of sexual conflict might have unique implications relative to other relationship conflicts. Indeed and second, compared to general relationship conflict, sexual conflict activates greater levels of anxiety and threat to the self (e.g., feelings of inadequacy and failure), and people respond with higher levels of negative emotion (e.g., shame, anger, and sadness; Rehman et al., 2019; Rehman et al., 2017). Third, couples avoid sexual communication more than nonsexual communication (Byers & Demmons, 1999), even though discussions about sexual preferences promote satisfying sexual experiences (Byers, 2011). Salient differences therefore exist in how couples experience

and approach sexual versus nonsexual conflict, underscoring the need for research specific to emotion regulation during sexual conflict to clarify the associations in this vulnerable context.

4.2.3 Gender Differences in Emotion Regulation During Conflict

Research has documented differences in how women and men behave, approach, and experience interactions with their romantic partner. Relative to men, women in long-term relationships tend to express more negative emotion and are perceived as more confrontational during relationship conflict (Carstensen et al., 1995). Compared with women, men demonstrate a greater tendency to avoid conflict (Carstensen et al., 1995) and withdraw in response to their partners' negative emotional behavior (Gottman, 1993). In a study of emotional coregulation, Randall et al. (2013) found that when women's emotional valence became more negative, their partner subsequently reported more negative emotion. In contrast, when men's emotional valence became more negative, their partner's emotional valence became more positive.

Similarly, other studies have found that women's regulation of negative emotion during couples' conflict had stronger associations with outcomes than men's (Bloch et al., 2014; Gottman et al., 2002). For example, Bloch et al. (2014) found women's quicker downregulation of negative emotion (experience and behavior) during nonsexual conflict was cross-sectionally associated with higher marital satisfaction for both members of mixed-gender couples and predicted women's higher marital satisfaction 13 years later. Men's emotion regulation was unrelated to outcomes, despite equivalent rates of downregulation between genders.

Taken together, these findings suggest that, relative to men, women's regulation of negative emotion during sexual conflict may have a greater influence on the emotional tone of both members of the couple during sexual conflict and, consequently, exhibit stronger associations with sexual well-being. We are unaware of research exploring how gender moderates associations between emotion regulation during sexual conflict and sexual well-being; however, there are strong associations between relationship satisfaction and facets of sexual well-being (e.g., sexual satisfaction; Fallis et al., 2016; Vowels & Mark, 2018). There is also evidence that negative emotion interferes with sexual well-being, with negative emotional experiences related to higher levels of sexual dissatisfaction, sexual distress, and sexual problems for women and men (Dubé et al., 2020, for a review). Thus, given (a) women's regulation of negative emotion has stronger associations with relationship satisfaction than men's, (b) relationship satisfaction is associated with sexual well-being, and (c) a person's greater experience of negative emotion is associated with lower sexual well-being, it is possible that women's (relative to men's) downregulation of negative emotion will be more strongly associated with couples' sexual well-being.

4.2.4 The Current Study

To investigate associations between emotion regulation and sexual well-being, we collected continuous data on emotional experience and behavior during quasi-naturalistic sexual conflict discussions between long-term romantic partners. Given the positive associations between negative emotional states and poorer sexual well-being (Dubé et al., 2020), our measure of emotion regulation focused on the downregulation of negative emotion. We used a performance-based measure of emotion regulation to assess how

quickly, on average, a participant shifted the valence of their emotion from negative to neutral during the conflict, based on subjective experience and observer coded behavior. Performance-based measures assess emotional regulatory practices within the context that they occur (Stephens et al., 2022). They are derived from intensive-time series data collected via multiple methods, such as observational and self-report assessments, and thus mitigate the well-documented limitations of questionnaire based-studies (e.g., shared method variance and recall bias; Robinson & Clore, 2002). Because couples' interaction paradigms and performance-based assessments closely capture the temporal nature of emotion, have high ecological validity, and can be tailored to specific research questions, they are well-suited to assess the dynamic nature of emotion regulation as it occurs in interpersonal contexts, such as intimate relationships (Levenson et al., 2014). We used self-report measures of sexual distress, sexual satisfaction, and sexual desire to assess participants' sexual well-being at two timepoints: prior to the conflict discussion, at Time 1, and 12 months later, at Time 2. We investigated the robustness of longitudinal findings by accounting for stress related to the COVID-19 pandemic that emerged during data collection.

We expected that when participants had less effective emotion regulation during the sexual conflict (i.e., slower downregulation of self-reported negative emotional experience and observer coded emotion behavior), they and their partners would report lower sexual well-being at Time 1 and Time 2. We also predicted that a person's gender would moderate associations such that the expected negative associations would be stronger for women compared to men.

4.3 Method

4.3.1 Participants

A community sample of couples (n = 150) was recruited in two (*masked*) cities via online advertisements, posters in public spaces, and word of mouth between May 2019 and January 2020. Interested couples completed a telephone eligibility screening interview, which assessed for the following inclusion criteria: (a) at least 18 years old, (b) a history of partnered sexual activity (defined broadly, including non-penetrative activities), (c) fluent in *masked for review* (i.e., language of the study), and (d) in a monogamous relationship and cohabitating with their current romantic partner for a minimum of 12 months. We excluded participants if one member of the couple met the following criteria: (a) pregnant, breastfeeding, or within one-year postpartum, (b) experiencing serious (self-reported) psychiatric or physical illness, (c) receiving treatment for sexual difficulties, or (d) taking medication and/or drugs with significant sexual side effects. Couples were not invited to complete the laboratory session or follow-up survey if one member of the couple failed two out of three instructed response items (i.e., attention checks) in the initial survey or failed to complete the initial survey.

Sample size was determined by an actor-partner interdependence model (APIM) power analysis (Ackerman et al., 2016) based on: (a) a medium actor effect (β = .29), (b) a small partner effect (β = .21), (c) a .22 correlation between partners' emotion regulation from community couples (Bloch et al., 2014; Impett et al., 2012), (d) power = 90% at an alpha of .05, and (e) recommendations by Galbraith et al. (2002) to account for attrition in longitudinal research. We excluded an eligible couple from our analyses as an outlier because one partner demonstrated extreme persistence of negative emotional behavior (z-

score = 8.26 for downregulation) during their sexual conflict discussion. As shown in Figure 1, 570 couples contacted our study; 304 couples did not respond after first contact and 116 were ineligible after screening or excluded from the laboratory session and follow-up survey, resulting in a final sample of 150 couples.

4.3.2 Procedure

This study was part of a larger project for which there has been one prior publication focused on another laboratory interaction task (*masked*). Screening materials, data, and syntax can be found at the following Open Science Framework (OSF) link: https://osf.io/mjzgf/?view_only=c75c2efd04074f36aa76221fce24330d.

Couples completed two main activities: an online survey and a laboratory-based couple interaction task. For the online survey, each member of the couple provided informed consent and independently completed a battery of self-report questionnaires, which included standardized measures of sexual distress, sexual satisfaction, and sexual desire. The survey also assessed participants' socio-demographic information and level of stress related to the COVID-19 pandemic. Participants completed the survey during the week that preceded their laboratory session—Time 1 (T1)—and again 12 months later, at Time 2 (T2). The surveys were hosted on Qualtrics Research Suite and administered via a secure email link. Study procedures were approved by Institutional Review Boards at each site.

During the laboratory session, couples engaged in the four discussion tasks: (1) warm-up–a 5-minute discussion about everyday events, (2) positive event–an 8-minute discussion about a previously undisclosed personal pleasant experience, (3) sexual conflict–an 8-minute discussion about the most important problem within their sexual

relationship, and (4) cool-down–a 5-minute discussion in which members of the couple discussed each other's attractive qualities. Data from the sexual conflict discussion comprise the current study. A research assistant filmed each discussion from an adjacent room using two discretely placed cameras positioned to capture the body language and facial expressions of each participant. Each member of the couple was compensated via $20 Amazon gift cards for completing both online surveys and $50 for the laboratory session (total of up to $140/couple). Couples also received a list of resources specific to romantic and sexual relationships.

In line with Rehman et al. (2017), couples' sexual conflict discussion topics were selected and assigned using the Sexual Problems Questionnaire and protocol (see *Measures* section). Participants were asked to discuss the most important problem in their sexual relationship as naturally as possible. Immediately following their sexual conflict discussion, participants completed a video cued-recall task. Each member of the couple independently viewed their filmed conflict discussion and used a joystick to continuously report on the valence (positive to negative) of their own moment-to-moment emotional experience during their discussion (Girard & Wright, 2018; Gottman & Levenson, 1985). Trained coders used the same joystick rating protocol to continuously code the valence of participants' emotional behavior throughout the conflict. Participants also rated the degree to which their in-lab sexual conflict resembled a typical sexual conflict discussion for the couple on a scale from 0 (*not at all*) to 5 (*extremely*; $M = 4.06$, $SD = 0.86$). Most participants (79%) rated their in-lab discussion as very or extremely representative of sexual conflict within their current relationship.

4.3.3 Measures

Sexual Conflict Topic. Couples' area of sexual disagreement was assessed via the Sexual Problems Questionnaire (SPQ; Rehman et al., 2017). Participants individually rated the degree to which they considered 25 items to be a problem in their sexual relationship (e.g., sexual frequency, sexual initiation) on a scale from 1 (*not at all*) to 7 (*very much so*). Using the same scale, participants could rate up to five self-generated items if they experienced problems that were not represented by examples. Participants subsequently ranked the three items that they perceived to be the most problematic for their sexual relationship. A research assistant then reviewed participants' top-ranked items and assigned either the highest ranked item (if it was the same for both members of the couple) or an item that each partner ranked in their top-three problems as the topic of discussion. Given the high degree of overlap in problems endorsed by participants within a couple, all couples (100%) discussed a topic that was rated as the most important problem by *at least* one member of the couple; 52 couples (35%) discussed a problem that was rated as the most important by both members of the couple. Consistent with Sutherland et al. (2019), sexual frequency (n = 80 couples, 26.8%), sexual initiation (n = 60 couples, 20.1%), and showing an interest in having sex (n = 24 couples, 8.1%) were among the most frequently assigned topics for the sexual conflict discussion.

Continuous Rating of Emotional Experience. We assessed emotional experience using a video-mediated recall task. Participants used a Thrustmaster USB Joystick and the Dual Axis Rating and Media Annotation software (DARMA; Girard & Wright, 2018) to continuously rate their emotional experience during sexual conflict. During a brief training exercise, participants learned to indicate the degree to which an

emotional experience was positively valenced (e.g., pleasant, excited, relaxed), neutral, or negatively valenced (e.g., unpleasant, stressed, depressed) by moving the joystick to the right, middle, or left, respectively. After demonstrating mastery of the protocol on a sample video, participants viewed footage of themselves during the filmed conflict and used the rating procedure to report on variations in the quality of emotions they experienced over the course of their discussion. They were told to rate how they felt from moment-to-moment during the conflict and not how they felt while completing the rating task. Partners completed the video-cued recall procedure separately and did not see each other's ratings. Time-series data for emotional experience was collected using the DARMA software, which sampled the position of participants' joystick throughout the 8-minute sexual conflict in 0.5-second increments. The scale for emotional experience ranged from -1,000 (*very unpleasant*) to 1,000 (*very pleasant*). Video-cued recall has been shown to be a reliable and valid method of assessing emotional experience across time (Ruef & Levenson, 2007) and similar to ratings of emotion that are made in real time (Mauss et al., 2005).

Continuous Rating of Emotional Behavior. Two trained coders at each site used Thrustmaster Joysticks and DARMA software to rate the emotional behaviors of participants during their sexual conflict discussion. Consistent with dimensional models of emotion (e.g., Russell, 2003) and prior couples interaction studies (e.g., Dworkin et al., 2019; Sullivan et al., 2018), behaviors were rated using a dimensional scheme that was based on a cultural informant approach of coding emotion-expressive behavior (Butler et al., 2014): moving the joystick to the right indicated more positive emotional behavior (e.g., shared laughter, caring statements) and moving the joystick to the left indicated

more negative behavior (e.g., insults, eye rolls). Moving the joystick to middle position indicated neutral emotional behavior. The scale for emotional behavior ranged from -1,000 (*very negative*) to 1,000 (*very positive*). We averaged observers' time-series data (i.e., the rating at each 0.5-second increment) to create each participant's emotional behavior time-series.

Two coders at each site rated videos for all participants at their respective site. Intraclass correlation coefficient (ICC) estimates and their 95% confidence intervals (CIs) were calculated to assess coder reliability per site using a mean-rating ($k = 2$), absolute-consistency, 2-way random-effects model (Koo & Li, 2016). The ICCs for emotional behavior were 0.86, 95% CI [0.80, 0.90] in site 1 and 0.80, 95% CI [0.72, 0.86] in site 2 which were considered good to excellent (Cicchetti, 1993). The mean difference in between-site ICCs based on bias corrected bootstrapping was .06, 95% CI [-.02, .09] which was considered roughly equivalent.

Downregulation of Negative Emotion. Downregulation of negative emotion was operationalized using a duration per episode approach (Yap et al., 2008). We wrote a function in R, version 4.0.5, to determine the average rate of emotional downregulation during the conflict for each participant. This function executed the following calculations for the time-series data: sequences of within-person z-scores ≤ -1 for emotional experience were calculated to represent negative emotion events during the conflict (Levenson & Gottman, 1983); negative emotion events were then summed to yield the total duration of negative emotion during the conflict; the total duration of negative emotion during the conflict was then divided by the frequency of negative emotion events (Bloch et al., 2014). Thus, our measure of downregulation represents how quickly, on

average, someone shifted their valence of emotion (experience and behavior) from negative to within 1 standard deviation of neutral during their conflict discussion. We repeated these calculations for the observer coded time-series of participants' emotional behavior and thereby obtained two emotion regulation scores per participant: one score for downregulation of negative emotional experience (self-reported) and another for downregulation of negative emotional behavior (observer-coded). For self-reported emotional experience, the frequency of negative emotion events during the conflict was $M = 6.24$, $SD = 5.29$ for each partner and $M = 12.51$, $SD = 7.34$ for couples. There were two couples in which both members did not report experiencing a negative emotional event during the sexual conflict (see Supplementary Table A). For observer-coded emotional behavior, the frequency of negative emotion events was $M = 11.26$, $SD = 4.25$ for each partner and $M = 22.48$, $SD = 6.37$ for couples. All couples demonstrated at least one observer-coded negative emotional behavior event (see Supplementary Table A).

Stress Related to the COVID-19 Pandemic. A single-item measure developed for the current study assessed participants' level of stress related to COVID-19 on a scale from 1 (*no stress*) to 6 (*extreme stress*). This measure was added as a covariate for T2 analyses, which occurred during the COVID-19 pandemic.

Sexual Distress. Sexual distress was assessed with the Female Sexual Distress Scale-Revised (DeRogatis et al., 2008). This 13-item self-report scale uses a Likert-type scale ranging from 0 (*never*) to 4 (*always*) to measure sexually related personal distress. Total scores range from 13 to 36, with higher scores indicating higher sexual distress. Originally developed for use with women, this scale has demonstrated good discriminant validity and test-retest reliability and has additionally been validated for use with men

(Santos-Iglesias et al., 2018). Cronbach's alphas for sexual distress in the current sample were .93 at T1 and .95 at T2.

Sexual Satisfaction. Sexual satisfaction was measured using the well-validated Global Measure of Sexual Satisfaction (Lawrence & Byers, 1998). This is a scale consisting of 5 items that participants rate on 7-point bipolar scales (e.g., *negative-positive, satisfying-unsatisfying*) to describe their sexual relationship with their partner. Sexual satisfaction scores range from 5 to 35, with higher scores indicating higher satisfaction. Cronbach's alphas for sexual satisfaction were .92 at T1 and T2.

Partner-Focused Sexual Desire. Dyadic sexual desire was assessed using the Partner-Focused Dyadic Sexual Desire subscale of the Sexual Desire Inventory (Moyano et al., 2017). This 7-item measure uses Likert-type scales to assess the frequency of partner-focused sexual thoughts (two items, on a 7-point scale) and the strength of desire for sexual activity with a partner (five items, on an 8-point scale). Total scores range from 0 to 54, with higher scores indicating higher partner-focused sexual desire. Cronbach's alphas for dyadic sexual desire were .88 at T1 and T2.

4.3.4 Data Analysis

Descriptive statistics and bivariate correlations were calculated using SPSS, version 26.0. In accordance with Bloch et al. (2014), all variables were z-standardized for analyses. We used Mplus, version 8.0 (Muthén & Muthén, 1998-2017) to test our hypotheses, conducting path analyses within APIMs (Cook & Kenny, 2005) to account for the non-independence of our dyadic data. Specifically, we used APIMs to simultaneously estimate actor effects (e.g., the association between a person's downregulation of emotion and their own sexual well-being) and partner effects (e.g., the

association between a person's downregulation of emotion and their partner's sexual well-being). Because our sample included mixed- and same-gender couples, dyads were treated as indistinguishable (Olsen & Kenny, 2006). As per Olsen and Kenny (2006), we randomly permuted the order of dyad membership (i.e., partner 1, partner 2) in our dataset and constrained variances, actor effects, partner effects, means, and intercepts to be equal between members of the couple in our APIMs.

Separate APIMs were conducted for downregulation of emotional experience and downregulation of emotional behavior per timepoint, resulting in a total of four APIMs. Sexual distress, satisfaction, and desire were entered simultaneously as dependent variables in each of our four models. We controlled for T1 levels of sexual distress, sexual satisfaction, and dyadic sexual desire in our T2 models, which also included COVID-19-related stress as a covariate. Finally, to test whether a person's gender moderated associations between downregulation of emotion and outcomes, we added the interactions between a person's emotional downregulation (experience and behavior, separately) and their own gender (men = -0.50, women = 0.50) into our models. We excluded couples where one member identified as non-binary, queer, or gender fluid when testing for gender moderation due to the small sample size of such couples (n = 7), though these couples were retained for our main analyses.

We performed our analyses using maximum likelihood parameter estimates with robust standard errors and chi-square test (MLR). Missing data were handled using the full information maximum likelihood approach (Muthén & Muthén, 1998-2017). We evaluated model fit via the following commonly used indices and criteria: Confirmatory Fit Index (CFI) value greater than .95; Root Mean Square Approximation of Error

(RMSEA) less than .06 with a 90% confidence interval that omits values greater than or equal to .08; and Standardized Root Mean Square Residual (SRMR) that is less than .08 (Schermelleh-Engel et al., 2003).

4.3.5 Transparency and Openness

Our hypotheses, study design, and data analytic plan were not preregistered, though we developed them *a priori* based on prior research and theory (e.g., Bloch et al., 2014; Rosen & Bergeron, 2019). We describe sample size calculations, data exclusions, measures, and software used for analyses in the current report. The data and analyses syntax are available at this OSF link: https://osf.io/mjzgf/?view_only=c75c2efd04074f36aa76221fce24330d

4.4 Results

4.4.1 Sample Characteristics

All members of eligible couples (n = 300 participants) completed the T1 survey and laboratory session and 265 participants completed the T2 survey, for a retention rate of 88.3%. We excluded data from four couples that separated (n = 8 participants) and five couples that became pregnant (n = 10 participants) between T1 and T2 from our longitudinal analyses. Thus, the sample size for the longitudinal analyses was 141 couples. To determine if study variables differed between excluded and retained participants, we conducted independent sample t-tests to compare downregulation of negative emotional experience and behavior and T1 sexual well-being variables for excluded and retained participants, with separate tests per excluded group (i.e., members of couples that separated versus retained participants; members of couples that became pregnant versus retained participants). Participants that separated reported greater sexual

distress at T1 (M = 22.80, SD = 8.51) compared to participants that remained in their relationship (M = 11.84, SD = 9.48), t (298) = 3.60, p < .001. Participants that separated also reported lower sexual satisfaction (M = 23.10, SD = 5.17) compared to participants that remained in their relationship (M = 29.73, SD = 5.84), t (298) = -3.54, p < .001. There were no other significant differences in T1 independent or dependent variables for excluded versus retained participants. There were also no differences in T1 independent or dependent variables for participants who completed the T2 survey (n = 265) compared to those who did not (n = 33). Participant characteristics are reported in Table 1. Descriptive statistics and bivariate correlations for downregulation of negative emotion, sexual well-being, and COVID-19-related stress are reported in Table 2.

4.4.2 Associations between Downregulation of Negative Emotion During Sexual Conflict and Sexual Well-Being at T1

Actor and partner effects from APIM analyses for sexual wellbeing at T1 are presented in Table 3. The first model for downregulation of emotional experience fits the data well, $\chi^2(20) = 17.53$, p = .619; RMSEA = .00, 90% CI [.00, .06]; CFI = 1.00; SRMR = .07. When someone took longer to downregulate their negative emotional experience during the sexual conflict discussion, they reported greater sexual distress, lower dyadic sexual desire, and they had partners that reported lower sexual satisfaction. This model explained 4.5% of the variance in sexual distress, 3.7% of the variance in sexual satisfaction, and 3.4% of the variance in dyadic sexual desire. Although the second model for downregulation of emotional behavior fit the data well, $\chi^2(20) = 18.56$, p = .551; RMSEA = .00, 90% CI [.00, .07]; CFI = 1.00; SRMR = .06, a person's downregulation of

negative emotional behavior was unrelated to their own and their partner's sexual well-being at T1.

4.4.3 Associations between Downregulation of Negative Emotion During Sexual Conflict and Sexual Well-Being at T2

Actor and partner effects from APIM analyses for sexual wellbeing at T2 are presented in Table 3. The first model for downregulation of emotional experience fits the data well, χ^2 (68) = 86.28, p =.067; RMSEA = .04, 90% CI [.00, .07]; CFI = 0.96; SRMR = .07. A person's slower downregulation of negative emotional experience during the sexual conflict discussion was associated with their own lower sexual satisfaction and their own and their partner's higher dyadic sexual desire 12 months later (controlling for sexual well-being at T1). A person's downregulation of negative emotional experience during the sexual conflict was unrelated to their own and their partners' sexual distress 12 months later. This model explained 40.9% of the variance in sexual distress, 12.6% of the variance in sexual satisfaction, and 47.2% of the variance in dyadic sexual desire.

The second model for downregulation of emotional behavior fits the data well, χ^2 (68) = 70.57, p =.392; RMSEA = .02, 90% CI [.00, .05]; CFI = 0.99; SRMR = .06. A person's slower downregulation of negative emotional behavior during the sexual conflict discussion was associated with their own higher dyadic sexual desire 12 months later (controlling for sexual well-being at T1). A person's downregulation of negative emotional behavior during the sexual conflict was unrelated to their own and their partners' sexual distress and sexual satisfaction 12 months later. This model explained 40.7% of the variance in sexual distress, 9.0% of the variance in sexual satisfaction, and 46.3% of the variance in dyadic sexual desire.

When COVID-19-related stress was added as a covariate in these T2 APIMs, all effects remained significant except for the association between a person's slower downregulation of negative emotional experience and their partner's higher dyadic sexual desire, which became marginally significant, β (*SE*) = 0.07 (0.04), p = .071; 95% CI = [-0.01, 0.15].

4.4.4 Differences between Men and Women

We added the interactions between a person's level of downregulation and their own gender (men = -0.50, women = 0.50; n = 143 couples) to each APIM to determine whether actor and partner effects were significantly different between men and women. Across models, all interactions were nonsignificant; the gender of the person downregulating their negative emotional experience/behavior did not moderate the associations between downregulation of negative emotion and their own or their partner's sexual well-being.

4.5 Discussion

Using data from a laboratory-based couples' interaction paradigm, we tested the prediction that slower downregulation of negative emotion (experience and behavior) during sexual conflict would be associated with lower sexual well-being cross-sectionally and one year later. In general, our cross-sectional results supported our main hypothesis that slower downregulation of negative emotional experience during sexual conflict would be associated with poorer sexual well-being, and with lower sexual satisfaction one year later. However, contrary to our predictions, slower downregulation of negative emotional experience and behavior (coded from the sexual conflict discussion) predicted higher sexual desire one year later. Gender did not moderate these associations. In line

with Rosen and Bergeron's theoretical model of sexual dysfunction (Rosen & Bergeron, 2019), a person's emotion regulation during sexual conflict was related to their own and their partner's sexual adjustment. Findings advance knowledge of emotion regulation in couples by determining correlates of emotion regulation in the unique context of sexual conflict.

As expected, when participants took longer to downregulate their negative *emotional experience* during the sexual conflict discussion, they cross-sectionally reported greater sexual distress and lower sexual desire, and their partners reported lower sexual satisfaction. A person's slower downregulation of negative emotional experience was also associated with their own lower sexual satisfaction one-year later. These findings correspond with a large body of work documenting links between emotion dynamics and social adjustment (Butler, 2011; Levenson et al., 2014) and can be interpreted considering the impact of negative emotion on partner responsiveness and communication. In intimate relationships, people who struggle to shift out of negative emotional states are perceived as less responsive (i.e., less understanding, supportive, and affectionate or caring) by their partners, who subsequently feel less satisfied with their relationship (Luginbuehl & Schoebi, 2020). Perceived partner responsiveness is a robust predictor of sexual well-being (Bergeron et al., 2021; Birnbaum et al., 2016). Negative emotion also interferes with problem solving, communication, and conflict resolution (Dixon-Gordon et al., 2011; Low et al., 2019). Accordingly, theories point to effective regulation of negative emotion as a mechanism that promotes more adaptive communication about, and coping with, sexual problems (Aloni et al., 2019; Rosen & Bergeron, 2019). Although we did not assess the quality of couples' communication,

related research suggests that people who are quicker to shift out of negative emotion during conflict are able to communicate more constructively (i.e., collaborate, negotiate, and remain focused on the problem) and, in turn, are more satisfied with their relationship (Bloch et al., 2014). In the context of couples coping with a sexual dysfunction, Rancourt et al. (2017) found greater collaborative sexual communication was associated with higher sexual satisfaction and lower sexual distress. Taken together, it is possible that people who take longer to downregulate their negative emotional experience during sexual conflict are less responsive and communicate less effectively about the problems within their sexual relationship. Consequently, these individuals may struggle to address the problem adequately (i.e., may engage in avoidance or hostile behaviors), and experience lower sexual desire and satisfaction and higher sexual distress concurrently, and lower sexual satisfaction over time.

Longitudinally, the effect of emotion regulation during sexual conflict on sexual desire was opposite to our predictions: a person's slower downregulation of negative *emotional experience* during the sexual conflict was related to higher desire for both members of the couple one year later. Similarly, a person's slower downregulation of negative *emotional behavior* during the conflict was associated with their own higher sexual desire a year later. Considered alongside our cross-sectional effects, this pattern of results suggests poor emotion regulation is proximally linked with one's own lower sexual desire but distally linked to higher desire for both partners. The counterintuitive findings for sexual desire can be interpreted in light of both the intimacy-interfering aspect of poor emotion regulation and the context-dependent function of sexual desire in relationships (Birnbaum, 2018). Because difficulties regulating negative emotion

undermine moment-to-moment intimacy (i.e., the degree to which intimate partners feel close, connected, and bonded to each other; Fávero et al., 2021; Tani et al., 2015), individuals who struggle more to manage their negative feelings and behaviors during sexual conflict may feel less emotionally close with their partner: concurrently, they may report lower dyadic sexual desire. Indeed, the positive associations between intimacy and sexual desire appear to be stronger when these constructs are measured in closer proximity to each other (Shrier & Blood, 2016; van Lankveld et al., 2021). Over time, however, the association between emotion regulation and sexual desire may shift. It is possible that when couples' conversations about sex are consistently characterized by longer durations of negative emotion, partners may feel less connection with one another and less stable in their relationship. When sexual relationships involve partners with intimacy-interfering qualities (e.g., poorer communication and higher levels of anxiety or anger), functional theories of sexual desire posit that desire rises because it serves, in part, to maintain relationship bonds and fulfill attachment-related needs (Birnbaum, 2018). Thus, although sexual desire declined overall from baseline to follow-up in our sample, which replicates prior research (van Lankveld et al., 2021), our findings suggest that the opposite pattern emerges for couples who are slower to downregulate negative emotion during sexual conflict. This pattern emerged for both emotional experience and behavior; yet, given that it was contrary to expectations and because our interpretations are post-hoc, the longitudinal effects for emotion regulation during sexual conflict on sexual desire should be replicated to increase confidence in these results.

The gender of the person experiencing and displaying negative emotion did not moderate associations between downregulation during the conflict and sexual well-being.

The absence of interaction effects for gender and emotion regulation on our outcomes was surprising because related research suggests couples' adjustment depends more on women's emotion regulation during conflict than men's (Bloch et al., 2014; Gottman & Levenson, 1985; Gottman et al., 2002). One possible explanation for this discrepancy could be that gender differences in interpersonal emotion regulation have declined in recent years. We based our prediction on studies of married, mixed-sex couples that were recruited in the 1980s—samples described as "baby boomers" and "children of the Great Depression" (Bloch et al., 2014) that were, and continue to be, used in numerous studies of emotion (see Brown et al., 2021, for a list of publications using data from this sample). Indeed, Bloch and colleagues (2014) interpreted their results—that couples' relational quality hinged uniquely on women's downregulation—as an artifact of gender differences in the socialization of children during an era when women, but not men, were expected to be focused on relationships and were considered the "emotional centers" of marriage. Although gendered norms in emotion display and regulation likely still exist (Zimmermann & Iwanski, 2014), contemporary attitudes towards gender roles have shifted to view caregiving, intimacy, and emotional expression as important to people of all genders' socio-emotional well-being (Churchill & Craig, 2021; Elliott, 2016). This shift, along with a more diverse sample (i.e., gender/sex diverse participants, same-gender couples, and unmarried couples), could explain why gender effects were absent from our findings.

We were also surprised to find an imbalance of effects for different components of emotion regulation on outcomes. Whereas slower downregulation of negative experience (i.e., coded by the participants themselves) was associated with several facets

of sexual well-being, downregulation of negative emotional behavior (i.e., coded by observers) was only associated with one sexual outcome—dyadic sexual desire. This result was unexpected given that prior work has documented the importance of managing negative emotional behavior for relationship outcomes (Bloch et al., 2014; Bradbury & Bodenmann, 2020), but can be explained by differences in sexual and nonsexual conflict communication (Roels et al., 2022). Romantic partners, for example, exhibit more warmth towards each other and report more concern about hurting each other's feelings during sexual versus nonsexual communication (Rehman et al., 2019). Thus, even though sexual conflict is more threatening than nonsexual conflict (Rehman et al., 2017), people may regulate the behavioral component of negative emotion more effectively in this unique context than their subjective experience. Because it is experienced as more persistent than negative emotional behavior in this context (see Table 4.6.2), participants' negative emotional experience may have relatively more weight in how they evaluate their sexual well-being.

It is also possible that the method we used to derive our emotion regulation indices contributed to the relatively few effects for downregulation of behavior. Specifically, whereas we calculated scores for downregulation of experience using participants' own single time series-data, we derived scores for downregulation of behavior from time-series data that was computed by taking the average of independent coder's rating at each 0.5-second increment during the sexual conflict. Prior work suggests that averaging ratings across coders reduces the range of values of time-series data in continuous measurement protocols (e.g., Sadler et al., 2009). Thus, because a restricted range of values can weaken the strength of associations between variables

(Bland & Altman, 2011), the lack of associations between downregulation of negative behavior and sexual outcomes may be a consequence of a more restricted range of values for participants' emotional behavior versus emotional experience scores during the sexual conflict discussion (see Table 4.6.2). Nonetheless, that facets of emotion regulation differed in their number of effects in the current study is consistent with research from the affective sciences, which shows absent or modest coherence between emotion systems (see Mauss & Robinson, 2009, for a review) and underscores the importance of assessing multiple channels of emotional responding when studying emotion.

4.5.1 Strengths and Limitations

The present study answers the call for multimethod research of how couples' emotion regulation relates to outcomes beyond relationship satisfaction (Stephens et al., 2022). It is the first study to our knowledge to examine concurrent and prospective links between couples' emotion regulation during sexual conflict and their sexual well-being. We used real-time interaction data to calculate emotion regulation indices, shedding light on how emotion regulatory practices relate to sexual outcomes.

There are also limitations to this research. First, although the current study was inclusive with respect to sexual orientation and gender, participants in our sample were in long-term and cohabiting partnerships, non-treatment seeking, culturally homogenous, and primarily heterosexual; thus, findings may not generalize to treatment-seeking individuals in newer relationships, from non-western cultures, and who do not identify as heterosexual. Second, we only assessed emotion regulation during one sexual conflict discussion. There is likely variability in how couples experience and behave during sexual conflict based on daily factors (e.g., mood) and in laboratory versus home settings.

Thus, research designs using daily diary methods should be used to increase confidence in our results. Third, to enhance the emotional relevance of the conflict for participants, we asked each couple to discuss a sexual problem that was unique to their relationship. This design decision limited our ability to find links between couples' emotion regulation when discussing a specific sexual problem (e.g., low desire versus anorgasmia) and facets of their sexual well-being.

4.5.2 Conclusions

For both women and men, we established concurrent and long-term associations between the downregulation of negative emotion during sexual conflict and couples' sexual well-being using an ecologically valid study design. We found concurrent links between slower downregulation of negative emotion and greater sexual distress and sexual dissatisfaction, particularly between these outcomes and a person's own inner emotional experience during the sexual conflict. Relative to other facets of sexual well-being, the relationship between sexual desire and emotion regulation during sexual conflict may be more nuanced. Less effective emotion regulation was proximally related to one's own lower sexual desire; distally, it was related to higher sexual desire among both members of the couple. Emotion regulation appears to be a promising target for interventions aiming to promote the sexual well-being of long-term couples, but more research is needed to clarify how and when regulating components of emotional responding during sexual conflict may benefit specific facets of the sexual relationship.

4.6 Tables

Table 4.6.1

Sociodemographic Characteristics for the Sample (n = 300)

Variable	*M* (range)	*n*	*SD*	%
Age (years)	31.94 (18-63)		9.08	
Education (years)	16.30 (10-27)		2.77	
Student status				
Full-time student		59		19.7
Part-time student		9		3.0
Non-student		232		77.3
Culture				
English Canadian		144		48.0
Quebecois or French Canadian		114		38.0
Western European		16		5.3
Latin American or South American		9		3.0
Additional cultural identities[a]		14		4.7
Income				
$0-39,999		141		46.9
$40,000-59,999		93		31.0
>$60,000		66		21.9
Relationship length (years)	6.53 (1-37)		6.08	
Relationship status				
Living together, not married		212		70.7
Married		88		29.3
Sexual orientation				
Heterosexual		207		69.0
Lesbian/gay		24		8.0
Heteroflexible		21		7.0
Bisexual		24		8.0
Pansexual		9		3.0
Additional sexual orientations[b]		15		5.0

Note. M = mean. *n* = number of participants. *SD* = standard deviation. % = percentage of sample.

[a]Includes the following cultures: American, Eastern European, Australian, Middle Eastern, Caribbean, Française, and Canadienne-Latino-Metis, Réunionnaise.

[b]Includes the following sexual orientations: Homoflexible, Queer, Questioning, Asexual, Lesbian, Demisexual, Gay-Asexual Biromantique.

Table 4.6.2

Descriptive Statistics and Correlations Among Downregulation of Negative Emotional Experience, Downregulation of Negative Emotional Behavior, Sexual Distress, Sexual Satisfaction, and Sexual Desire

	n	*M* (*SD*)	Range	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Downreg Exp	263	13.16 (11.32)	0.50-60.00	**.13***	-.02	.18**	.09	-.13*	-.20**	-.19**	-.05	-.04
2. Downreg Beh	283	8.01 (3.67)	1.00-25.88	.04	**.08**	.05	.002	.01	-.03	-.01	.09	.03
3. Sex Distress T_1	300	12.20 (9.64)	0-45	.12*	.03	**.40****	.68***	-.52***	-.34***	-.39***	-.34***	.14*
4. Sex Distress T_2	251	12.68 (10.09)	0-49	.03	.02	.24***	**.32*****	-.33***	-.49***	-.31***	-.48***	.20***
5. Sex Sat T_1	300	29.51 (5.93)	5-35	-.16*	-.05	-.40***	-.25***	**.34*****	.28***	.28***	.23***	-.04
6. Sex Sat T_2	246	28.15 (7.20)	5-35	.01	-.002	-.19**	-.30***	.25***	**.40*****	.17**	.26***	-.14*
7. Desire T_1	300	39.20 (9.30)	1-54	-.01	-.05	-.10	-.01	.12*	.05	**.02**	.70***	-.13*
8. Desire T_2	251	36.84 (9.93)	2-54	.09	-.01	.01	.02	.05	.09	-.02	**-.10**	-.16*
9. COVID T_2	247	3.10 (1.20)	1-6	-.17*	-.02	-.04	.10	.03	.001	.08	.05	**.33*****

Note. Correlations above the bolded diagonal are between actor variables; correlations along and below the bolded diagonal are between the actor and partner variables.

M = Mean; *SD* = Standard deviation. Downreg Exp = Downregulation of negative emotional experience, in seconds. Downreg Beh = Downregulation of negative emotional behavior, in seconds. T_1 = Baseline. T_2 = Time 2. Sex Distress = Female Sexual Distress Scale–Revised. Sex Sat = Global Measure of Sexual Satisfaction. Desire = Partner-Focused Dyadic Sexual Desire Subscale of the Sexual Desire Inventory. COVID = COVID-19-related stress.

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

Table 4.6.3

Actor-Partner Interdependence Models for the Associations between Downregulation of Negative Emotional Expression and Behavior During Sexual Conflict and Sexual Well-Being

	Downregulation of Negative Emotional Experience						*Downregulation of Negative Emotional Behavior*					
	β	*SE*	*t*	*p*	*95% CI*		*β*	*SE*	*t*	*p*	*95% CI*	
					Lower	*Upper*					*Lower*	*Upper*
Time 1: Actor Effects												
Sexual Distress	**0.17**	**0.07**	**2.55**	**.011**	**0.04**	**0.30**	0.05	0.05	0.94	.348	-0.06	0.16
Sexual Satisfaction	-0.11	0.06	-1.82	.069	-0.23	0.01	0.02	0.05	0.28	.782	-0.09	0.12
Dyadic Sexual Desire	**-0.19**	**0.06**	**-2.95**	**.003**	**-0.31**	**-0.06**	-0.01	0.05	-0.13	.894	-0.12	0.09
Time 1: Partner Effects												
Sexual Distress	0.10	0.06	1.71	.088	-0.02	0.22	0.02	0.07	0.34	.735	-0.11	0.15
Sexual Satisfaction	**-0.14**	**0.07**	**-2.10**	**.036**	**-0.28**	**-0.01**	-0.05	0.05	-0.92	.360	-0.16	0.06
Dyadic Sexual Desire	0.02	0.07	0.31	.760	-0.12	0.17	-0.05	0.06	-0.81	.418	-0.16	0.07
Time 2: Actor Effects												
Sexual Distress	-0.02	0.05	-0.45	.656	-0.12	0.08	-0.03	0.03	-0.81	.419	-0.00	0.04
Sexual Satisfaction	**-0.19**	**0.08**	**-2.30**	**.021**	**-0.36**	**-0.02**	-0.03	0.06	-0.49	.621	-0.15	0.09
Dyadic Sexual Desire	**0.08**	**0.04**	**2.00**	**.045**	**0.01**	**0.15**	**0.09**	**0.04**	**2.43**	**.015**	**0.02**	**0.16**
Time 2: Partner Effects												
Sexual Distress	-0.04	0.05	-0.91	.361	-0.13	0.05	0.01	0.04	0.33	.742	-0.07	0.09
Sexual Satisfaction	0.07	0.07	1.04	.297	-0.06	0.20	0.00	0.05	0.07	.941	-0.10	0.11
Dyadic Sexual Desire	**0.09**[a]	**0.04**	**2.07**	**.037**	**0.002**	**0.16**	0.01	0.04	0.14	.885	-0.08	0.09

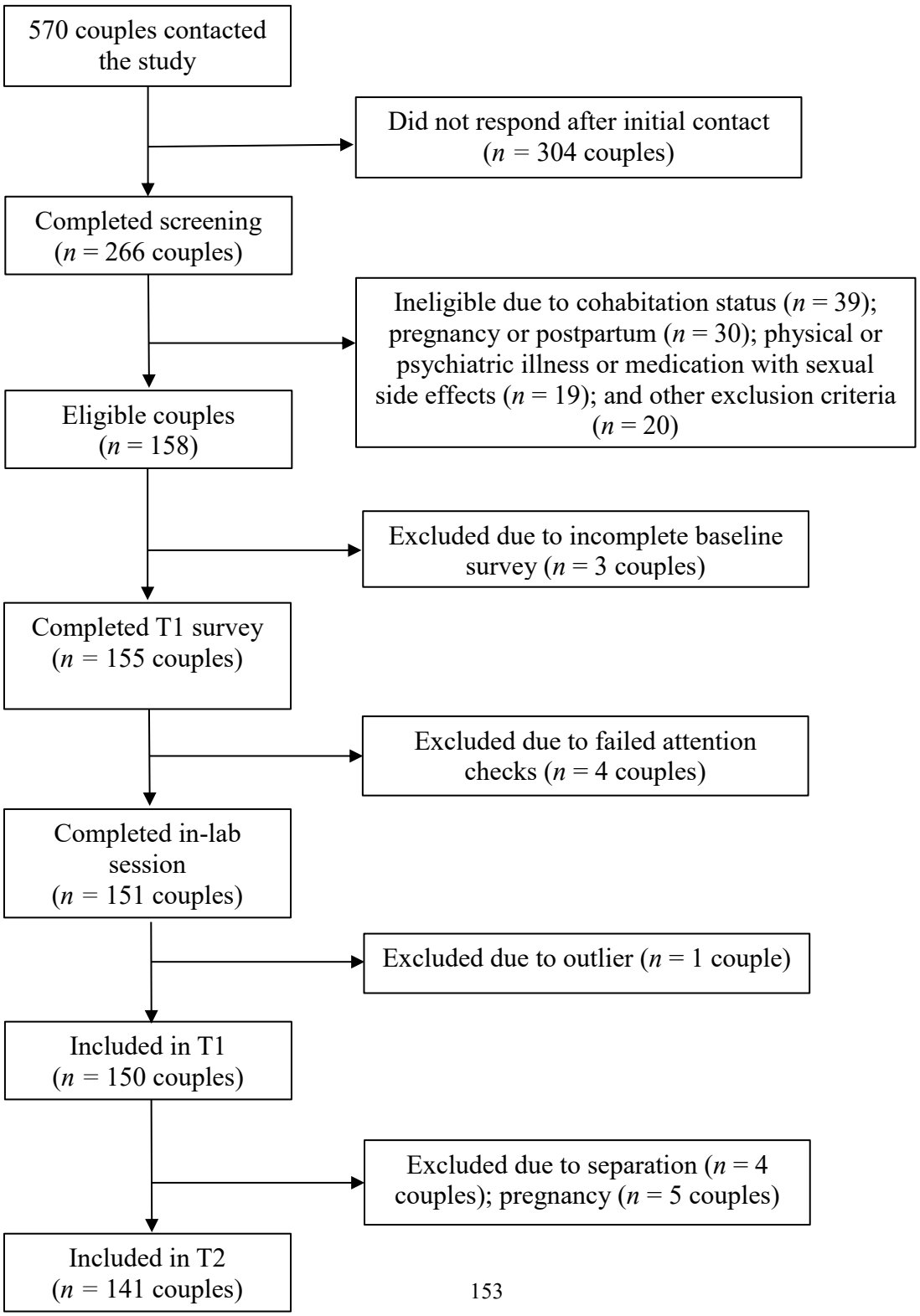
Note. Actor effects refer to the association between a person's level of downregulation and their own sexual well-being; partner effects refer to the association between a person's level of downregulation and their partner's sexual well-being. Significant effects are in bold.

[a] β(SE) = 0.07 (0.04), p = .071; 95% CI = [0.01, 0.16] when controlling for COVID-19-related stress.

4.7 Figures

Figure 4.7.1

Flowchart of Participation



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CHAPTER 5: GENERAL DISCUSSION

The overarching aim of my dissertation was to understand the relationship between emotion regulation and sexual well-being. First, I reviewed literature at the intersection of emotion regulation and sexual well-being. Next, I completed two dyadic studies to understand associations between emotion regulation and sexual well-being among long-term couples in both clinical and community contexts. The latter studies were the first to test models of emotion regulation among couples coping with sexual dysfunction and, separately, while discussing a sexual conflict in their relationship. In the following sections, I will summarize key findings from the manuscripts that comprised my dissertation. I will then discuss limitations of my research, opportunities for future work, and the theoretical and clinical implications of my research program.

The first manuscript of my dissertation (review article, described in Chapter 2) reviewed research on how emotion and its regulation are associated with sexual well-being. The literature showed strong associations between mood and sexual well-being, with the interference of negative emotion on sexual outcomes stronger for women relative to men. This review also showed preliminary support for the emotion regulation–sexual well-being link; however, the explanatory power of the literature was limited by a small number of studies overall, and more specifically, a lack of dyadic studies, longitudinal research, and research examining strategies to regulate negative emotion about sex and in sexual contexts. Additionally, the available research suggested that emotion regulation is relevant for the adjustment of women experiencing sexual dysfunctions.

The second manuscript of my dissertation (Study 1, described in Chapter 3) examined cross-sectional associations between emotion regulation and the adjustment of couples in which one member was diagnosed with female sexual interest/arousal disorder (FSIAD). I found that greater difficulty regulating negative emotion was related to higher symptoms of depression and anxiety for both women with FSIAD and their male partners, and to male partner's greater sexual distress. Further, greater use of suppression to regulate one's emotions in sexual contexts was linked to lower relationship satisfaction and greater symptoms of depression for both members of the couple. In contrast, the greater use of emotional reappraisal (i.e., reframing) by both partners in sexual contexts was linked to lower depression, anxiety, and perceived relationship conflict. Men's greater use of reappraisal to manage emotions about sex was also linked to their own higher sexual desire and women's higher relationship satisfaction. Thus, results showed that emotion regulation was linked to the adjustment of both members of couples coping with FSIAD.

The overall pattern of results from Study 1 showed that a person's emotion regulation was linked with psychological, relationship, and sexual well-being for both members of the couple. Less effective emotion regulation (i.e., greater difficulty regulating negative emotion and greater use of suppression) had relatively more links with indicators of psychological and relational distress than measures of sexual adjustment. Findings also showed that correlations between a person's emotion regulation and their partner's adjustment were present only for measures of relationship well-being. Taken together, my findings suggested that interventions which seek to enhance emotion regulation abilities and promote greater use of adaptive regulatory

strategies could improve adjustment among couples with FSIAD, particularly in the domains of relational and psychological well-being. It is likely that reduced psychological and relationship distress are relevant treatment targets among this population because evidence suggests that couples affected by FSIAD report lower relationship satisfaction compared to couples without this condition, and women with FSIAD experience greater psychological distress (depression and anxiety) compared to controls (Rosen et al., 2019),

There are several ways that my review article and Study 1 informed my final dissertation study (Study 2, Chapter 4). For example, both suggested that regulation of negative emotion is relevant for couples' sexual well-being as well as their relational and psychological adjustment in the context of coping with sexual problems. Thus, assessing the sexual correlates of couples' ability to shift out of negative emotion when navigating a sexual conflict appeared to be a promising avenue of research. Further, I interpreted the relatively few associations between emotion regulation and sexual outcomes among couples with FSIAD to be a consequence of retrospective bias inherent in self-report and a lack of specificity in how I assessed strategies in sexual contexts. That is, in Study 1, I asked participants about how they managed negative emotion when thinking or talking about sex as well as during sexual activity and not in a specific sexual context. Researchers, however, have shown that individuals select regulatory strategies according to context, including emotional intensity and valence (Sheppes et al., 2014). Thus, as outlined in the discussion section of Study 1, it is possible that effects for sexual adjustment were muted because I collapsed emotion regulation strategies employed across all sexual contexts. I therefore sought to overcome these limitations in Study 2 via

the use of an objective measure of emotion regulation in the specific context of a sexual conflict discussion.

The third manuscript of my dissertation (Study 2, described in Chapter 4) examined concurrent and prospective associations between downregulation of negative emotion during a sexual conflict discussion and sexual well-being among a community sample of cohabiting couples in long-term relationships. Dyadic data analyses indicated that slower downregulation of negative emotion during sexual conflict discussions was associated with greater sexual distress and sexual dissatisfaction, particularly for a person's own inner emotional experience during sexual conflict, which was coded by participants upon viewing their conflict discussion (relative to externally coded emotional behavior). Slower downregulation of negative *emotional experience* additionally predicted one's own lower sexual satisfaction and one year later. Slower downregulation of emotional experience was also proximally related to participants' own lower sexual desire; however, slower downregulation of both emotional experience and externally coded emotional behavior were distally related to higher sexual desire for both members of the couple 12-months later. I found no evidence that a person's gender moderated the strength of associations between downregulation of negative emotion and sexual outcomes.

Findings indicated that downregulation of negative emotional experience, versus observed behavior, during a sexual conflict discussion had more ties to couples' sexual well-being. That I found more associations between emotion regulation and sexual outcomes in Study 2 compared to Study 1 highlights the value of assessing emotion in the relevant context. It also underscores the benefit of assessing associations between

emotion regulation and sexual well-being within both clinical and community samples of couples, where variance in variables of interest may systematically differ according to population and, consequently, differentially influence the strength of associations between emotion regulation and outcomes.

Consistent with results from Study 1, findings from Study 2 pointed to emotion regulation as a potential target for interventions that aim to promote the sexual well-being of long-term couples. Results also underscored the need for additional work to clarify how and when regulating aspects of emotion may help or hinder the various dimensions of sexual well-being, particularly with respect to dyadic sexual desire.

5.1 Strengths and Limitations

The strengths and limits of my dissertation studies are described in detail in their respective chapters. Here, I will discuss some of the common strengths of my dissertation studies and follow with an overview of the broader limits of my dissertation, including those which I have not previously addressed.

5.1.1 Strengths

A key strength of my overall research program was its grounding in theoretical models of emotion and emotion regulation. This grounding not only helped me to advance research on emotion regulation by extending it into the realm of sexual relationships, it spurred my use of relatively novel research designs. Interpersonal models emphasize the role of social relations and processes in their conceptualizations of emotion and its regulation (Butler, 2011; Rosen & Bergeron, 2019; Zaki & Williams, 2013). These models informed my use of dyadic research methods and analyses (Studies 1 and 2): I examined how an individual's regulatory abilities, strategies, and practices

were associated with their partner's outcomes, testing theoretical assumptions (e.g., Rosen & Bergeron, 2019) and building knowledge of couples' emotion regulation as it relates to sexual well-being. Moreover, theories of emotion and emotion regulation, which highlight the temporal nature of both constructs (e.g., Butler, 2011; Gross, 2014), guided my decision to use a video-mediated recall paradigm in Study 2. Using this paradigm allowed me to capture the dynamic nature of emotion as it continuously unfolded in an interpersonal context, thereby increasing the ecological validity of my study and confidence that couples' emotion regulation in real-world settings is relevant to their sexual well-being.

My dissertation had several other notable strengths. First, I completed a review of emotion regulation strategies organized according to an empirically-based three factor model of regulatory strategies (see Chapter 2 and Naragon-Gainey et al., 2017). This approach was helpful because the relationship between emotion regulation strategies and sexual well-being would have been difficult to summarize without this framework, given that there are innumerable strategies that people use to regulate emotion. Second, I examined links between emotion regulation and outcomes using data from both clinical and community samples of couples (Studies 1 and 2), which increases confidence in the robustness of my overall findings. Moreover, Study 1 was the first dyadic study of couples coping with FSIAD. Collecting data from both members of couples experiencing FSIAD was a strength because, although theory and qualitative research identify interpersonal factors as central to the development and maintenance of low sexual desire (Basson, 2003; Birnbaum, 2018; Sims & Meana, 2010), studies had previously neglected to consider (a) the impact of FSIAD on partners and (b) associations

between partner characteristics and the adjustment of women with FSIAD. Third, I treated members of the couple as indistinguishable in the analyses for Study 2. This technique allowed me to include data from gender divergent individuals and same-gender dyads in my analyses, thereby building knowledge of couples and people that have been historically underrepresented in emotion regulation and sex research (Klein et al., 2021; Stephens et al., 2022).

A final important strength of the current dissertation stems from my use of observational data in Study 2. Researchers have called for studies using observational methods to advance understanding of emotion regulation and relationships (McNulty et al., 2021; Nolen-Hoeksema & Aldao, 2011). For example, McNulty and colleagues (2021) observed that current knowledge of relationship processes is limited because it is based almost entirely on self-report, which can be biased by factors such as sentiment override—a tendency whereby partners' overall view of their relationship interferes with accurate reporting of relationship dynamics and behaviors. Similarly, because self-report measures of emotion regulation assess beliefs and not practices, and are prone to biases such as retrospective recall, researchers have called for observational studies of couples' emotion regulation to advance this area of research (Levenson et al., 2014). I answered these calls in Study 2 and therefore increased understanding of couples' emotion regulation by showing that observer coded downregulation of emotion during couples' sexual conflict had unique associations with sexual well-being.

5.1.2 Limitations

5.1.2.1 Design

A limitation common among much of the research reviewed in this dissertation (Chapter 2) and in my own empirical studies (Chapters 3 and 4) is the use of cross-sectional, non-experimental, and correlational designs. Consequently, I am unable to make strong inferences regarding the causal relationship between emotion regulation and sexual well-being. Although I collected two waves of data in my final study (Chapter 4), participants were not randomized to separate conditions (e.g., quick downregulation versus slow downregulation) nor were they randomly selected from the population. As such, I cannot rule out the possibility that the effects I detected were better explained by an unmeasured variable (Toh & Hernán, 2008). Further, some researchers consider two waves of data inadequate for longitudinal research (e.g., Ployhart & Ward, 2011; Rogosa, 1995; but see also Wang et al., 2016). This critique is because additional waves are needed to parse true change in variables from measurement error (Ployhart & Ward, 2011). Thus, while my studies provided insight into associations between couples' emotion regulation and sexual well-being, studies using experimental and multi-wave longitudinal designs are needed to establish the direction of effects. Such studies will be especially useful in building knowledge of the relationship between couples' emotion regulation and dyadic sexual desire, which had conflicting cross-sectional and prospective associations with emotion regulation in Study 2.

Another limitation in the design of my dissertation studies stems from my failure to concurrently assess emotion regulatory strategies and practices in sexual and nonsexual contexts (Studies 1 and 2). Consequently, I was unable to control for trait-

levels of these variables in my analyses to determine whether associations between emotion regulation and outcomes were unique to sexual situations or reflect effects of a general approach to emotional regulation (i.e., trait). In Study 1, I adapted the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) to examine the correlates of two emotion regulation strategies (reappraisal and suppression) to manage negative emotions about sex, but I did not assess or control for associations between these same emotion regulation strategies in non-sexual contexts and outcomes. Likewise, I only assessed participants' downregulation of negative emotion during sexual conflict (and not during nonsexual conflict) in Study 2. Thus, although prior work has shown that contextual factors influence the implementation, success, and correlates of regulatory strategies and practices (Kobylińska & Kusev, 2019), my design limits my ability to comment on whether emotion regulation in sexual contexts offers explanatory power for couples' adjustment over and above regulatory strategies and practices in nonsexual contexts.

Additionally, it is possible that the sample sizes and statistical models I used in my dissertation may have resulted in low power, which refers to the "probability of correctly rejecting a null hypothesis" (Ledermann et al., 2022). In Study 1, my measure of emotional reappraisal and suppression to manage emotions about sex was added to the online survey after the study had launched, resulting in its completion by a subset of couples (i.e., $n = 71$ for the ERQ adapted to sex versus $n = 87$ for the measure of global difficulties in emotion regulation). In Study 2, my sample size was determined using a power calculation that omitted gender as a moderator. Insofar as (a) APIM models with distinguishable versus indistinguishable dyads (Study 1) require larger samples for adequate power, and (b) moderation models (Study 2) require relatively large samples to

detect effects (Garcia et al., 2015; Gistelinck et al., 2018; McClelland & Judd, 1993), it is possible that my failure to detect associations between regulatory strategies as well as gender moderation effects in Studies 1 and 2, respectively, are a result of designs with low power and not the true absence of effects. Future studies of couples' emotion regulation should ensure they are designed with adequate power.

5.1.2.2 Sample

The research that I reviewed and conducted in this dissertation has several limitations related to sample characteristics. First, most of the research on emotion, emotion regulation, and sexual well-being presented in this body of work was conducted using participants residing in, and identifying with, Western cultures, including Studies 1 and 2 of my dissertation. Yet, aspects of the main constructs of my research—emotion regulation and sexual well-being—are culturally bound (Atallah et al., 2016; Johnson-Agbakwu et al., 2022; Koole, 2009). Research on emotional suppression, for example, suggests that its interference on social functioning (e.g., perceptions of suppressors as unresponsive and hostile) depends on culture: individuals from cultures that value emotional restraint (e.g., Asian cultures) report and experience fewer consequences when using suppression relative to people from Western cultures, where open emotion expression is valued (Butler et al., 2007). Notions of sexual well-being and the prevalence of sexual problems also vary according to culture. For example, in their review, Atallah et al. (2016) found that people from non-Western cultures experienced sexual concerns as a function of cultural traditions, such as arranged marriage, religious beliefs, and female genital cutting, as well as societal norms regarding sexual desire. For example, whereas low desire is one of the most prevalent sexual problems among

Western women, its prevalence is overshadowed by orgasm concerns in cultures where women's low desire is considered normative (Atallah et al., 2016). Thus, the pattern of results for Study 1 may not generalize to cultures where women's low sexual desire is considered normative and accepted.

Second, the samples in my studies were comprised of long-term couples with two partners that were willing to participants in sex research. Thus, findings may not reflect the emotional or sexual adjustment of less established or more distressed couples, the latter of which are unlikely to participate is dyadic sex research (Corsini-Munt et al., 2017), or individuals in other relationship configurations (e.g., polyamorous relationships). Third, despite recruiting a relatively diverse sample in Study 2, participants in both of Studies 1 and 2 were primarily cisgender and heterosexual, which limits knowledge of the relationship between emotion regulation and outcomes among couples that consist of people who are transgender and/or not heterosexual. In sum, my results may not generalize to (a) non-Western couples, due to cultural differences in emotion regulation and sexual well-being, (b) newly established or polyamorous relationships, or couples with elevated relational distress, and (c) couples comprised of gender/sex divergent individuals who do not identify as heterosexual.

5.1.2.3 Emotion regulation

In this section, I will review how operationalizations of emotion regulation strategies and regulatory practices (i.e., downregulation of negative emotion) limit the conclusions that can be drawn from my dissertation.

Researchers have identified several shortcomings with the construct of emotional reappraisal. One notable limitation of reappraisal that is relevant to my research stems

from its measurement (Ford & Troy, 2019; McRae & Gross, 2020; Silvers & Guassi Moreira, 2019). Most studies of emotional reappraisal, including those reviewed in Chapter 2 and Study 1 of this dissertation, use the ERQ (Gross & John, 2003), which assesses one's tendency versus capacity[2] to use reappraisal (McRae & Gross, 2020). Researchers have noted that regulatory tendency and capacity are two distinct constructs (e.g., McRae & Gross, 2020; Silvers & Guassi Moreira, 2019). For example, an individual may demonstrate the capacity to effectively use reappraisal when instructed to do so in a laboratory setting but rarely employ reappraisal in everyday life. The opposite situation may also be true: someone may indicate that they frequently use reappraisal while also failing to implement this strategy effectively. Thus, although it is plausible that individuals who endorse the tendency to reappraise also have the capacity to use this strategy, associations between greater reappraisal and better outcomes (e.g., reviewed in Chapter 2 and found in Study 1) are limited to the frequency of reappraisal and may not generalize to its successful implementation. Likewise, associations between greater suppression and poorer outcomes discussed and found in this dissertation are limited to regulatory tendency and not capacity because studies (including Study 1) typically assess suppression using the ERQ (but see Dworkin et al., 2019, for an exception).

My assessment for downregulation of negative emotion also has limitations. In Study 2, I operationalized downregulation of negative emotion using a duration per episode approach (Yap et al., 2008) and derived emotion regulation indices from participant and observer coded time-series data. I selected this approach because prior

[2] In the emotion regulation literature (see McRae & Gross, 2020), reappraisal tendency is also referred to as reappraisal frequency, habitual reappraisal, and trait reappraisal; reappraisal capacity is sometimes referred to as reappraisal success, ability, and effectiveness. The former is assessed through questionnaire and the latter is assessed experimentally, by instructing participants to use reappraisal.

work demonstrated a person's ability to shift out of negative emotion during non-sexual conflict was associated with relationship outcomes (Bloch et al., 2014) and also because the experience of negative emotion interferes with conflict resolution (Dixon-Gordon et al., 2011; Low et al., 2019) and sexual well-being (see Chapter 2). Although this method allowed me to simultaneously assess how two important aspects of emotion regulation—valence and duration—were associated with couples' sexual well-being, it required a methodological step that limits the generalizability of my results. Specifically, I identified instances of significant negative emotion during the sexual conflict using a threshold of within-person z-scores less than, or equal to, -1 for valence of coded emotional experience and behavior. Thus, I am unable to comment on the effect of regulating various levels of negative emotion on outcomes because my downregulation scores are based on dichotomized variables.

Additionally, scores for downregulation of negative emotional behavior in Study 2 were based on observers' coding, which may have limited my ability to detect partner effects. Theories suggest that emotions are constructed based on context, past experiences, and culture (Barrett, 2016). To the extent that romantic partners have experiences and contextual information that are unique to their relationship, it is conceivable that a participant's emotional behavior may be rated differently when coded by objective coders versus a participant's own romantic partner. For instance, consider a participant with a history of withdrawing during sexual conflict, who then raises their voice during the conflict discussion. Whereas an objective coder might rate this participant's emotional behavior as negatively valanced, the participant's romantic partner might interpret this behavior as a sign of engagement and therefore rate this

behavior as positively valanced. Results from Study 2 may thus underestimate associations between an individual's downregulation of negative emotional behavior during sexual conflict and their partner's sexual well-being. Future research could include partners' coding of emotional behavior to better understand how one partner's negative emotional behaviors during sexual conflict influences their partner's sexual well-being.

5.2 Future Research Directions

Emotion regulation is a multifaceted construct that has only recently garnered attention within the field of sex research. As such, a fulsome discussion of research possibilities for this nascent field is beyond the scope of this section. I will therefore address a selection of areas with respect to couples' emotion regulation in sexual contexts that warrant research attention and build upon findings and insights from my dissertation.

First, studies should explore a broader range of emotion regulation strategies in sexual contexts. These studies are needed because, although there are numerous ways that people regulate their emotions, research has disproportionately focused on the correlates and effectiveness of two strategies: reappraisal and suppression (English & Eldesouky, 2020; Ford & Troy, 2019; Kelley et al., 2019). Moreover, studies rarely evaluate how these strategies relate to outcomes when used to regulate emotions about sex (see review article, Chapter 2). Findings from Study 1 (where greater use of reappraisal and suppression in sexual contexts was linked with better and poorer adjustment for couples coping with FSIAD, respectively) suggest that the strategies romantic partners use to manage emotions about sex are relevant to their psychosocial adjustment and sexual relationship. Future research can build upon this work by examining a more diverse set of strategies to manage emotions about sex (e.g., distraction, acceptance, problem solving).

Indeed, prior work has shown positive associations between women's use of acceptance as a regulatory strategy and their own sexual well-being, but more research is required to understand how use of this strategy in sexual situations influences one's overall sexual relationship (Stephenson & Kerth, 2017).

Given the interpersonal nature of couples' sexual problems, another crucial next step is advancing knowledge of the consequences of extrinsic emotion regulation strategies (i.e., the strategies that people use to regulate another person's emotion) to manage emotions about sex for couples' sexual outcomes. For example, evidence suggests that a person's use of humor to regulate their romantic partner's emotion increases feelings of intimacy and, in turn, their partner's level of positive emotion (Horn et al., 2019). Researchers have also found that people have sex to influence their partner's mood (e.g., Impett et al., 2020; Meston & Buss, 2007). However, the correlates of extrinsic emotion regulation strategies in sexual context are unknown.

Second, research should use temporal emotion data to examine couples' coregulation of emotion during sexual conflict. Study 2 showed that the ebb and flow of a person's negative emotion (experience and behavior) during sexual conflict was related to their own and their partner's sexual well-being. These results invite questions about the influence of coregulatory emotion dynamics on sexual outcomes. According to Butler and Randall (2013), emotional coregulation refers to the "bidirectional linkage of oscillating emotional channels (subjective experience, expressive behavior, and autonomic physiology) between partners" that amplify and mute facets of emotional responding, resulting in a steady emotional state for each member of a couple. In contrast, co-dysregulation refers to processes by which couples' emotion dynamics

interact to create unbalanced or escalating emotional states (Reed et al., 2015). Future research could examine predictors of coregulation and co-dysregulation during couples' sexual conflict discussions. It is possible that such research could identify factors to help couples avoid escalation of negative emotion during sexual conflict and, in turn, experience better sexual well-being. Researchers could also apply analytic techniques to intensive time-series data (e.g., coupled linear oscillator models; Butler et al., 2017) to spur new discoveries in emotional flexibility and attractor patterns (i.e., the tendency for a couple to get "stuck" in a pattern of emotional responding; Lunkenheimer & Dishion, 2009) associated with couples' sexual adjustment. Together, insights gained from collecting and analyzing continuous emotion data from couples' social exchanges may help to refine couple-based interventions to promote sexual well-being.

Third, research on couples' regulation of positive emotion in sexual contexts is needed. In my review article (Chapter 2), I noted that emotion regulation research has focused primarily on strategies and abilities to downregulate negative emotion and that research examining the consequences of upregulating positive emotion, such as joy or happiness, among couples is exceedingly rare. Although the presence and expression of positive emotion facilitates relationship success (Gottman & Gottman, 2015), recent evidence suggests that upregulating emotions about sex may be linked with lower sexual well-being in some cases (Horne et al., 2021). Specifically, Horne and colleagues (2021) found that a person's amplification of sexual desire in the absence of genuine feelings of sexual desire was associated with lower sexual satisfaction for both members of the couple (Horne et al., 2021). Thus, determining whether and how regulating positive

emotion in sexual contexts helps or hinders couples' sexual relationship is a relevant future direction of research.

Finally, mechanisms for how emotion regulation influences sexual well-being should be explored in future research. Couples' communication, partner responsiveness, and intimacy are a sampling of interpersonal factors associated with both emotion regulation and sexual well-being (Bergeron et al., 2021; Byers, 2011; Shahar et al., 2019; Shrier & Blood, 2016). Consequently, I interpreted findings from Studies 1 and 2 as potentially due to links between emotion regulation and these interpersonal factors. In Study 2, for example, I found that an individual's slower downregulation of negative emotion during sexual conflict was cross-sectionally associated with lower sexual well-being for both members of the couple. Because negative emotion interferes with factors known to influence sexual well-being, such as communication (Dixon-Gordon et al., 2011; Low et al., 2019), I suggested that people who struggle more to downregulate during sexual conflict may communicate less effectively about sexual problems in their relationship and, in turn, experience lower sexual well-being. Although I based such interpretations upon theory and related research (Basson, 2003; Rosen & Bergeron, 2019), I am unaware of empirical evidence documenting *how* emotion regulation influences couples' sexual well-being. Thus, to advance theories of interpersonal emotion regulation, it is essential that future work test whether interpersonal factors, such as communication, responsiveness, and/or intimacy, mediate links between couples' emotion regulation and sexual outcomes.

5.3 Theoretical Implications

Theories of emotion regulation highlight its importance to interpersonal functioning (e.g., Gross & John, 2003; Snyder et al., 2006), yet almost no studies—prior to my dissertation—have used dyadic research designs to assess associations between emotion regulation and sexual outcomes among both members of romantic couples (see Chapter 2). Instead, dyadic studies of couples' emotion regulation have focused on how differences in regulation abilities and strategies impact, or are associated with, relationship outcomes (e.g., marriage duration or quality; Stephens et al., 2022). Thus, at a broad level, my dissertation advances knowledge of couples' emotion regulation by providing evidence of its associations with sexual well-being. Theoretically, my findings extend ability (e.g., Berking & Whitley, 2014; Gratz & Roemer, 2004) and strategy (e.g., Aldao et al., 2010; Gross, 2015) models of emotion regulation by showing their relevance to sexual relationships and provide support for more recent interpersonal models of emotion regulation applied to sexuality (e.g., Rosen & Bergeron, 2019). Below, I will discuss some key contributions of my research to the fields of emotion regulation and sexual well-being.

5.3.1 Gender Differences

Advancing knowledge of how gender influences associations between outcomes and couples' emotion regulation during conflict is one notable theoretical contribution of Study 2 (Chapter 4). As outlined in the discussion section of Chapter 4, current understanding of gender effects for couples' emotion regulation is based largely on data from a small sample of married, mixed-sex, couples that were recruited in the 1980s and used in multiple publications. In fact, it appears that 13 published studies are based on

data from this sample (see Brown et al., 2021). Whereas studies that used data from this sample found couples' relational outcomes depended more on women's emotion regulation during conflict than men's (e.g., Bloch et al., 2014; Gottman & Levenson, 1985; Gottman et al., 2002), I found no interaction effects for gender and emotion regulation on outcomes. One possibility for the lack of gender effects in Study 2 suggests that traditional views of women as the "emotional centers" of relationships (e.g., Gray, 1994) may be less relevant in the context of contemporary couples' sexual conflict discussions.

However, it should be noted that the null gender effects in Study 2 require replication. As I discussed in the limitations section above, it is possible that gender moderation may have emerged if I had greater power to detect these effects. It is also conceivable that gender effects may emerge in research testing associations between couples' regulatory strategies (versus practices or abilities) and outcomes. Indeed, there are well-documented gender differences in the selection and implementation of emotion regulation strategies (Goubet & Chrysikou, 2019; Nolen-Hoeksema & Aldao, 2011), which may influence outcomes. Although emotion regulation strategies were the independent variables in Study 1 of this dissertation, I treated gender as a distinguishing variable and not a moderator in the analyses for this study, in part because members of the couples were distinguishable based on their FSIAD status (and FSIAD status is inherently gendered). Put another way, the observed gender differences in Study 1 may have been a consequence of a participants' FSIAD status, which distinguished members of the couple, and not necessarily gender. Nonetheless, findings from Study 2 suggest that assumptions of gender differences in emotion regulation should be tested (e.g., via

indistinguishability tests; Gistelinck et al., 2018) and not assumed when conducting research of couples' emotion regulation.

5.3.2 Emotion Regulation and Sexual Well-Being

To date, Rosen and Bergeron's (2019) Interpersonal Emotion Regulation Model is the only theory of emotion regulation that makes specific claims regarding the role of emotion regulation in couples' sexual adjustment. Overall, I found support for the basic propositions of this model. In both clinical and community samples of couples (Studies 1 and 2), an individual's less effective emotion regulation was associated with their own and their partner's lower sexual well-being. However, there were two notable inconsistencies between results from Study 2 and assumptions of Rosen and Bergeron's (2019) model: first, when someone took longer to downregulate their negative emotional experience during sexual conflict, their partner reported higher dyadic sexual desire 12-months later; second, a person's slower downregulation of negative emotional behavior during sexual conflict similarly predicted their own higher dyadic sexual desire 12-months later.

Given that these unexpected results only emerged distally for sexual desire (see Chapter 4 for an interpretation of these results) and among community couples, frameworks of couples' emotion regulation and sexual well-being may need greater specificity regarding facets of sexual well-being (i.e., desire) and classes of couples (e.g., clinical versus community couples). Indeed, Rosen and Bergeron (2019) developed their model to conceptualize interpersonal factors involved in the development and maintenance of women's sexual dysfunction. Thus, it is possible that interpersonal emotion dynamics have differential associations with sexual desire among non clinical

samples. New theoretical assumptions may be required to generate more accurate expectations and better fit the preliminary evidence from Study 2, which showed slower downregulation of negative emotion during sexual conflict was distally associated with higher dyadic sexual desire among long-term community couples.

5.4 Clinical Implications

Difficulty managing negative emotion is an underlying vulnerability for myriad mental health concerns (Aldao et al., 2016; Gratz et al., 2015; Moses & Barlow, 2006). Accordingly, helping clients improve their emotion regulation skills is a core treatment target in several evidence-based protocols and transdiagnostic treatments (e.g., Barlow et al., 2017; Linehan, 1993). Although, as noted above, experimental and intervention studies examining the role of emotion regulation in sexual well-being are needed, the overall pattern of results from the current dissertation suggests that emotion regulation skills are a promising target for couples-based sex therapies. This recommendation is consistent with the view that improved emotion regulation is a common mechanism of change among numerous psychological treatments (Gratz et al., 2015).

In Chapter 2, I reviewed research on the relationship between mood and sexual well-being. I found strong evidence to suggest that the experience of negative emotion interferes with sexual adjustment. Studies 1 and 2 converge with this finding by showing that greater difficulties regulating negative emotion, greater use of less effective emotion regulation strategies, and slower downregulation of negative emotion during sexual conflict were cross-sectionally associated with lower sexual well-being. These results increase confidence in the use of interventions that target these processes in treatments for sexual problems. Thus, it is possible that clinicians who integrate emotion regulation

into case conceptualization and treatment may enhance outcomes for couples where declines in sexual well-being are the presenting problem.

For example, mindfulness based-therapy (MBT), is an established intervention for a variety of concerns (Khoury et al., 2013) and appears promising for the treatment of sexual dysfunction (c.f., Stephenson & Kerth, 2017). MBT improves functioning by teaching more adaptive regulation strategies and skills, such as acceptance and awareness of emotion, respectively (Gratz & Tull, 2010). Similarly, acceptance-based emotion regulation group therapy (ERGT; Gratz & Gunderson, 2006), improves emotion regulation abilities by teaching clients about the function of emotion, adaptive ways responding to emotion, and how to recognize, label, and differentiate between emotions. Acceptance-based EGRT has been shown to be particularly effective in improving clinical outcomes for clients with emotion regulation difficulties (Gratz et al., 2015) and holds promise for the treatment of sexual dysfunction (Nelson et al., 2019; Peterson et al., 2009).

Given that links between poor emotion regulation and low sexual well-being were common in the current dissertation, clinicians working with couples where one or both members of the couple present with poor emotion regulation abilities or strategies could integrate aspects of MBT and acceptance-based EGRT into treatment for couples aiming to improve or maintain their sexual relationship. For example, teaching clients about the function of emotion and how to overcome mood dependent behavior (e.g., by clarifying and highlighting values) could help clients endure, versus avoid, the threat of sexual conflict discussions and thereby promote their sexual well-being. Also, because positive emotion can enhance sexual well-being (see Chapter 2), increasing the frequency of

positive emotional experiences by teaching clients strategies to sustain positive emotion, such as savouring (Silton et al., 2020), is another regulatory strategy that could serve as a relevant target when treating sexual problems.

In Study 2, I found slower downregulation of negative emotion during sexual conflict was proximally linked with lower dyadic desire but, over time, predicted higher sexual desire for both partners. Given this counterintuitive result, clinicians might consider assessing for factors that are theorized to explain associations between emotion regulation and sexual desire. For example, Rosen and Bergeron (2019) propose intimacy as a pathway through which better emotion regulation may lead to better sexual adjustment for couples coping with sexual problems. Intimacy and emotional closeness, however, appear to have paradoxical links with sexual desire: on the one hand, there is evidence to suggest that higher levels of intimacy promote sexual desire (Murray et al., 2017; Štulhofer et al., 2014); on the other hand, theories and qualitative reports suggest that desire declines as intimacy increases (Ferreira et al., 2012; Sims & Meana, 2010). Because more effective emotion regulation is associated with higher levels of intimacy (Gross & John, 2003), clinicians could assess couples' intimacy style when working with clients who present with low desire as the focus of work. Couples whose intimacy is characterized by low autonomy and high enmeshment—a style known as fusional intimacy (Ferreira et al., 2015)—could benefit from developing targets in therapy that promote differentiation between partners (e.g., assertive communication, separate interests and social connections) concurrent with targets focused on building effective emotion regulation skills.

5.5 Conclusions

Differences in emotion regulation emerge as a result of, and shape, relationships (Barthel et al., 2018), yet research at the intersection of emotion regulation and sexual relationships is scarce. I addressed this research gap in the current dissertation by examining the sexual correlates of emotion regulation abilities, strategies, and practices in two samples of romantic couples using multiple methods. I provided the first empirical evidence that emotion regulation is associated with couples' adjustment to sexual problems as well as their sexual well-being, concurrently and over time. These findings support and extend theoretical models of emotion and emotion regulation into the sexual domain. Overall, findings suggest emotion regulation is a promising target for interventions that aim to promote couples' sexual well-being; however, more research is needed to better understand the link between emotion regulation and sexual desire, which appears to have divergent proximal and distal associations with downregulation of emotion during sexual conflict.

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