# An Exploration of Dyadic Interpersonal Goals, Psychological Well-being, Sexual Distress, and Relationship and Sexual Satisfaction in Endometriosis Couples

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**Statement**

I declare that this research is my own work and that, to the best of my knowledge and belief, it does not contain material from published sources without proper acknowledgement, nor does it contain material which has been accepted for the award of any other higher degree or graduate diploma in any university.

Signed:

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## Abstract

Endometriosis affects women of reproductive age. Besides the physical limitations of the illness, such as dyspareunia and pelvic pain, it infiltrates other aspects of women's life inclusive of psychological difficulties, sexual difficulties, and relational distress. Despite the relational context of endometriosis, interpersonal goals have not been studied in couples living with endometriosis. Through a dyadic lens, the current study aimed to examine the role relationship goals play in psychological health, sexual and relationship satisfaction, and sexual distress for couples living with endometriosis. Utilising a cross-sectional design, 61 couples completed an online survey including measures of relationship satisfaction, sexual satisfaction, depressive, anxious, and stress symptoms, and sexual distress. The study results indicated that, for women, their own and their partners' relationship approach goals influenced their sexual satisfaction and their partners' relationship avoidance goals increased their sexual distress. For partners, their own relationship approach goals increased their relationship satisfaction and women's low sexual distress increased their sexual satisfaction. Relationship avoidance goals in both women and partners increased relationship satisfaction. Severe symptoms of depression and anxiety were evident for women and mild symptoms seen in their partners. High sexual distress was observed in both members of the couple. The study's findings implicate interpersonal goals as relevant to the relational and sexual experience of couples living with endometriosis. Furthermore, endometriosis negatively impacts on the couples' relationship, psychological, and sexual wellbeing. When treating women with endometriosis, the inclusion of partners and consideration of factors beyond the physical illness are crucial to the holistic management of endometriosis.

## Introduction

An estimated 5-15% of women globally live with endometriosis during their reproductive years (Pluchino et al., 2016). Endometriosis is characterised by the ectopic presence of endometrial-like tissue, typically lining the uterus, occurring in other areas outside the uterus (e.g. attached to bowel, pelvic cavity/ligaments), which responds to systemic hormonal changes causing dyspareunia, dysmenorrhoea, bleeding, scarring, persistent pelvic pain, and infertility (Hudson et al., 2016; Laganà, Sturlese, Retto, Sofo, & Triolo, 2013; Wahl et al., 2020). This debilitating condition elicits a remarkably negative impact on quality of life, psychological health, sexual intimacy and function, relationship quality, sexual satisfaction, employment, and social interaction (Fritzer et al., 2013; Hållstam, Stålnacke, Svensén, & Löfgren, 2018; Hudson et al., 2016). Shifting the focus solely from the biomedical management of endometriosis to understanding how it impacts the individual and couple interpersonally and psychologically will be beneficial in the management of the condition (Hummelshoj, De Graaff, Dunselman, & Vercellini, 2013). The current study investigated the prevalence of sexual distress in women living with endometriosis and their partners inclusive of relationship goals and the effect on psychological health and sexual and relationship satisfaction in couples living with endometriosis.

### Sexual Distress and Sexual Dysfunction

Sexual health is an essential aspect of physical health, general wellbeing, and quality of life (Seitz, Ucsnik, Kottmel, Bitzer, Teleky, & Löffler-Stastka, 2020). Women with symptomatic endometriosis commonly report a significant decline in physical health (Laganà et al., 2015), poor sexual health including pelvic pain and dyspareunia, which is known to contribute to significant sexual dysfunction, and

sexual distress (Facchin et al., 2015; Melis et al., 2015). Sexual distress has been characterised as emotional distress associated with sexual difficulties (Hendrickx, Gijs, & Enzlin, 2016). Furthermore, sexual distress manifests in negative feelings about an individuals' sexuality, which may include worry, anxiety, anger, guilt, low satisfaction, disappointment, and despair (Stephenson & Meston, 2010). Repeated exposure to sexual activities that elicit sexual pain causes an individual to experience sexual stimuli as painful as opposed to pleasurable and perceive sexual activity as aversive and distressing (Thomtén & Linton, 2013). Moreover, women with dyspareunia have fewer positive experiences with intercourse (Simonelli, Eleuteri, Petruccelli, & Rossi, 2014) and low genital arousal. These women exhibit an increase in sexual pain which leads to heightened anticipatory anxiety and distress associated with penetration (Dewitte, Van Lankveld, & Crombez, 2011). Sexual distress can therefore lead to avoidance of sexual activity, which not only impacts on sexual intimacy with their partners, but results in a further increase of dyspareunia, sexual dysfunction, and relationship breakdown (Fritzer et al., 2013; Hummelshoj et al., 2014). Not surprisingly, high sexual distress in women with sexual pain presentations have been linked to ongoing dyspareunia, depression, anxiety, fear, reduced sexual wellbeing, and reduced quality of life (Fritzer et al., 2013; Hogue, Rosen, Bockaj, Impett, & Muise 2019; Pazmany et al., 2014). However, some women living with endometriosis continue to engage in sex despite dyspareunia.

Sexual dysfunction includes difficulties with arousal, sexual desire, reduced genital arousal (e.g. lubrication), sexual pain, an inability to achieve vaginal penetration, fear of pain, and difficulties with orgasm (Pluchino et al., 2016). A recent systematic review conducted by McCool-Myers, Theurich, Zuelke, Knuttel, and Apfelbacher (2018) identified unemployment, low quality of life, chronic illness,

relationship difficulties, cultural and religious beliefs, stress, and feelings of guilt as significant predictors of sexual dysfunction in women. Furthermore, depression and anxiety have been hypothesised to share a bidirectional relationship with sexual function. That being, either depression and/or anxiety reduce sexual function and poor sexual function may be antecedents to depression and anxiety (Kalmbach, Pillai, Kingsberg, & Ciesla, 2015). Melis et al. (2015) posited that persistent fear of/and actual pain during and after intercourse increases the potential to develop other sexual disorders (e.g. low sexual desire).

Earlier research has elucidated sexual dysfunction as a prominent feature in women with endometriosis compared to non-affected women (Aerts et al., 2018; De Graaf, Van Lankveld, Smits, Van Beek, & Dunselman, 2016; Fritzer et al., 2013; Melis et al., 2015; Pluchino et al., 2016). Painful vaginal penetration is one of the most prominent symptoms of endometriosis and has been shown to be prevalent in almost 50% of women with endometriosis (De Graaf et al., 2013).

Previous studies investigating sexual function in women with endometriosis versus healthy controls have reported lower sexual function, particularly with sexual desire and pain (De Graaf et al., 2013; Melis et al., 2015). Thomtén and Linton (2013) argued that continuing to engage in sexual activity, despite dyspareunia, increases and maintains sexual dysfunction associated with low sexual desire, arousal (physiological and psychological), pain, and lubrication thereby reinforcing and maintaining sexual difficulties. In one study, Fritzer and colleagues (2013) found more than 60% of women with endometriosis experienced fear of and/or actual pain prior to and during intercourse, and more than 70% reportedhigh sexual distress. Interestingly, in a European study of endometriosis couples, partners described women with endometriosis to have less dyspareunia than the women reported

themselves (Hämmerli et al., 2018). These findings suggest a lack of communication between women with endometriosis and their partners about their sexual difficulties/dysfunction, which may reflect women's concerns about maintaining their relationships in the face of sexual difficulties. Furthermore, women with endometriosis who experience sexual dysfunction have lower rates in the frequency of intercourse, more feelings of guilt, and feel less feminine (Fritzer et al., 2013), consequently, having an impact on their mental health. Importantly, however, women with dyspareunia do experience some sexual stimuli as positive (DeWitte et al., 2011).

Moreover, there is a reluctance of women with endometriosis to initiate petting and oral sex due to fears that their partners will expect a progression to intercourse, which can be painful and/or frustrating (Hämmerli et al., 2018). Thomtén and Linton (2013) have suggested that women need to address possible causes of pain and subsequent negative affect in order to achieve a reduction in, and better management of, sexual pain and the development of healthier responses to sexual stimuli to minimise dysfunction and distress.

Nonetheless, sexual dysfunction and sexual distress are not restricted to dyspareunia associated with endometriosis alone. In fact, other aspects associated with the disease such as generalised non-sexual pelvic pain, previous surgery, staging of disease, coping strategies (Zarbo et al., 2018), and self-efficacy to manage the condition (Facchin et al., 2017) influence these. Supporting this view, a study of Italian women with endometriosis, with and without sexual distress, found that dyspareunia and persistent pain were not predictors of sexual distress (Zarbo et al., 2018). Rather, cognitions, beliefs, emotional appraisal, unhelpful ways of coping with endometriosis, and low relationship satisfaction may instigate and exacerbate

sexual distress, even when other factors such as severe pain and dysfunction are absent (Stephenson, Rellini, & Meston, 2013; Zarbo et al., 2018). These findings are consistent with the lack of correlations between sexual distress and sexual pain in an earlier study of women with sexual difficulties (Stephenson & Meston, 2010). Overall, the studies' results reinforce the concept that endometriosis is a complex disease state, with individual differences in the experience of endometriosis, requiring individualised treatment encompassing both biomedical and psychological input.

**Psychological Health**

It is not uncommon for women with endometriosis to experience misdiagnosis, and/or delayed diagnosis and subsequent treatment, in some cases exceeding ten years (Hudelist et al., 2012). Thus, there is a higher likelihood of developing impaired functioning and increased psychological distress (Evans, Fernandez, Olive, Payne, & Mikocka-Walus, 2019). Despite numerous studies identifying the delays in diagnosis and its consequences, this does not appear to be improving (Culley et al., 2013). A recent study investigating diagnostic delay in endometriosis identified a variety medical and psychosocial factors that contribute to these delays including menstrual cramps in adolescence, the normalisation of pain, and attitudes of healthcare professionals. The authors concluded that clinician education and public awareness is needed to decrease the long term-morbidity and complications associated with untreated endometriosis (Ghai, Jan, Shakir, Haines, & Kent, 2020). The mismanagement and trivialising of endometriosis by healthcare professionals itself can engender psychological distress in both women and their partners (Aerts et al., 2018), plus the stigma attached to menstrual problems (Culley et al., 2013). Moreover, being diagnosed with a chronic disease condition, with

varying treatment outcomes, can be a stressful time for women (Facchin et al., 2017). With consistent findings of mental health issues in women with endometriosis, the high prevalence of disability, tension, fatigue, and sleep disturbance detected may have further impacts on psychological wellbeing (Evans et al., 2019; Fourquet, Báez, Figueroa, Irairte, & Flores. 2011).

In various comparative studies of healthy women and women with endometriosis, up to 87% of those with endometriosis report significant psychopathology (Sepulcri & do Amaral, 2009). For example, dyspareunia, dysmenorrhea, and persistent pelvic pain are associated with clinically significant levels of depressive and anxious symptoms, rumination (Facchin et al., 2017), and escalation in psychological tension due to pain during intercourse (Fritzer et al., 2013). Similarly, women with deep dyspareunia, a prominent symptom of endometriosis, also report more depressive symptoms than women with superficial dyspareunia (Yong, Sadownik, & Brotto, 2015). Longitudinal studies have identified women with endometriosis are at higher risk of developing depressive and anxiety disorders compared to women without endometriosis (Chen et al., 2016). In addition, women with endometriosis who display low self-esteem and low emotional self-efficacy had even greater levels of depression and anxiety (Facchin et al., 2017). Likewise, significantly lower quality of life, higher depression, anxiety, and diminished ability to engage in work and daily life have been noted in women diagnosed with endometriosis (De Graaf et al., 2016; Fourquet et al., 2011). Depression is a factor in need of attention as it can exacerbate the perception of severe pain and consequent anguish (Laganà et al., 2015). Furthermore, infertility, poor body image, and somatisation are other features that evoke psychological distress in women with endometriosis (Laganà et al., 2015; Melis et al., 2015). In a

Canadian study of women with endometriosis and co-morbid superficial or deep dyspareunia, Wahl et al. (2020) reported that women with superficial dyspareunia were more likely to be have pathological worry about nulliparity as their ability to tolerate vaginal penetration was reduced. Researchers have argued that sexual pain is maintained by mental health issues including catastrophic thinking, fear, avoidance, and hypervigilance (McPeak et al., 2017; Thomtén & Linton, 2013).

Socially, endometriosis affects work capability and productivity (Fourquet et al., 2011), participation in education (Culley et al., 2013), engagement in daily activities, self-care, and social interactions (Hudson et al., 2016). The loss of household income and expense of treatment elevates stress and tension in couples living with endometriosis (Culley et al., 2017). According to Hållstam et al. (2018), women with endometriosis may become increasingly socially withdrawn as a result of their difficulties with mobility, access to restrooms, low energy levels, and the unpredictability of pain. In addition, endometriosis may impinge on religious, cultural beliefs, and practices particularly related to gender roles (e.g. not feeling like a 'real' woman), inadequacy as a spouse, and infertility, fuelling feelings of guilt and shame (Hudson et al., 2015). Consequently, depression, irritability, despair, isolation, loneliness, and anger become evident (Chauvet et al., 2018; Gilmour, Huntington, & Wilson, 2008).

Combined, women with endometriosis face psychological effects over and above their physical ill-health resulting in feelings of hopelessness, helplessness, and guilt (Butt & Chesla, 2007; Fritzer et al., 2013; Pazmany et al., 2014). However, Facchin et al. (2017) found that women in a stable romantic relationship reported lower levels of anxiety and depression. This suggests that partner support and relationship quality may mitigate the development and maintenance of psychological

illness. Moreover, women with sexual pain and sexual dysfunction who engage in psychological treatment report improvement in sexual function (Stephenson et al., 2013) however, outcomes of psychological treatment targeting depression and anxiety in women with endometriosis is limited. Understanding the psychological impacts of endometriosis is pivotal to the success of a multimodal treatment approach.

**Partners Experiences**

Partners of women diagnosed with endometriosis and other sexual pain presentations have reported feelings of frustration, helplessness, stress, and worry (Culley et al., 2017). Anger has also been expressed due to the exclusion of partners by healthcare professionals in treatment planning and subsequent care (Culley et al., 2017). However, partners who have been included in the decision-making of how to manage endometriosis, feel they have a supportive role within their relationship (Ameratunga, Flemming, Angstretra, Ng, & Sneddon, 2017). Regardless, partners are burdened by an increased demand to perform household chores, childrearing, and financial stress due to their partners reduced or unemployment status (Hudson et al., 2020). Poor sexual functioning and decreased sexual activity frequency, particularly vaginal intercourse, due to their partner's dyspareunia, intermittent vaginal bleeding, fatigue, and/or low mood have also been reported (Ameratunga et al., 2017; Culley et al., 2017; Pazmany et al., 2014; Pukall & Smith, 2014).

Partners' cognisance of inflicting pain during intercourse, negatively impact on their psychosexual health, and relationship satisfaction, which may foster avoidance of sexual activity (Hämmerli et al., 2018; Pazmany et al., 2014). Avoidance of sexual intimacy from the woman's partner may reinforce her symptoms of dyspareunia, her own avoidance of sexual activity, and inflate feelings

of rejection, shame, and guilt (Thomtén & Linton, 2013). Furthermore, partners have reported concealing their feelings from their partner to shield them from additional distress and negative affect while promoting positivity and optimism about the future and treatment options (Hudson et al., 2020). Partners also have difficulty with feelings of disappointment, envy, and distress with the prospect of not having children as a result of infertility and endometriosis (Culley et al., 2017; Hudson et al., 2020).

Conversely, other studies have found that negative responses about pain in male partners of women with sexual pain conditions continue to pursue intercourse with some showing minimal regard for their partners pain (Brauer, Lakeman, Van Lunsen, & Laan, 2014; Hämmerli et al., 2018) and maintain healthy sexual function (De Graaf et al., 2016). A partner's degree of compassion and concern may impact on the couple's relationship satisfaction (Van Niekerk, Schubert, & Matthewson, 2020). Moreover, male partners may underestimate the women's pain levels and fail to recognise pain-related cues during intercourse, which may be attributed to their own focus on sexual pleasure or preoccupation with frustration and anger (Rosen, Sadikaj, & Bergeron, 2015a). Furthermore, relationship conflict and arguments about infrequent sexual activity has been reported (Culley et al., 2017). However, some researchers have found that the experience of endometriosis has brought couples closer together and strengthened their relationship (Ameratunga et al., 2017; Culley, et al., 2017). The discrepancies between studies may be related to individuals valuing closeness outside of sexual intimacy and/or individual differences in the 'criteria' individuals use for evaluating relationship satisfaction.

The understanding of endometriosis as a chronic disease and the subsequent support required to assist women's physical and emotional needs together with

additional supports for their partners' needs (e.g. emotional support, child support) is crucial to assist couples to manage the burdens associated with endometriosis (Ameratunga et al., 2017; Hudson et al., 2020). Additionally, partners who validate each other's experiences improves emotion regulation, which contributes to a reduction in psychological distress in both partners (Rancourt, Rosen, Bergeron, & Nealis, 2016). In an attempt to further capture the intricacies of the effects of endometriosis within couples and what additional supports may be required, further dyadic research is warranted.

**Interpersonal Goals**

Close and intimate relationships are arguably the most important aspect of life satisfaction and wellbeing (Biswas-Diener & Diener, 2001), and relationship difficulties can be a significant contributor to psychological distress and reduced quality of life (Rosen, DeWitte, Merwin, & Bergeron, 2017; Kuster et al., 2017). An approach-avoidance theoretical framework of interpersonal goals, outlined by Gable (2006), posited that individuals behave in ways that either pursue positive outcomes (i.e. approach), such as fun and intimacy, or avoid negative outcomes (i.e. avoidance) such as guilt or conflict within relationships. It is important to note that avoidance does not equate to inactivity/non-engagement, rather, activity that leads to the avoidance of unwanted situations and/or feelings. Furthermore, approach goals are predominantly related to incentives and avoidance goals related to threat (Elliot, Gable, & Mapes, 2006). While approach and avoidance are distinctly different, they operate in parallel (Gable & Impett, 2012). Individuals that rate high on avoidance goals does not mean they will be rated low on approach goals. Individuals can have high and low approach and/or avoidance goals, which is dependent on their desired

outcome (Impett et al., 2010). Interpersonal goals have the potential to shape our cognitions, affect, and consequent actions (Elliot et al., 2006; Gable & Impett, 2012).

Applied to sexuality, interpersonal goals have a unique impact on the sexual, relationship, and psychological wellbeing of both partners, including sexual and relationship satisfaction (Impett et al., 2010; Rosen et al., 2017). An understanding of interpersonal goals is crucial to couples living with sexual pain as coping with sexual pain has a profound influence on relationship factors and partner responses (Rosen et al., 2012). In individuals with chronic pain, interpersonal goals have been linked to their experience of pain severity and psychological health (Karsdorp &Vlaeyen, 2011).

**Relationship Goals and Relationship Satisfaction**

Relationship satisfaction has been operationalised as an individuals' emotional experience that arise from their subjective judgement of their romantic relationship as either positive or negative (Lawrance & Byers, 1995). Relationship satisfaction is based on rewards (e.g. feeling cared for) and costs (e.g. mental effort to sustain relationship; Fallis, Rehman, Woody, & Purdon, 2016; Lawrance & Byers, 1995). Furthermore, relationship satisfaction is an essential part of an individuals' wellbeing (Lawrance & Byers, 1995).

Individuals may experience both high and low relationship approach and avoidance goals simultaneously. High relationship approach goals foster growth and enhance relationship satisfaction, feelings of physical and emotional intimacy, higher responsiveness to partner needs, and positive affect (Impett et al., 2010). Individuals with high relationship approach goals are attuned to seeking opportunities to experience positive outcomes (Kuster et al., 2017). High relationship approach goals also provide individuals with a sense of security within the relationship and

happiness (Kuster et al., 2017). In addition, high relationship approach goals may act as a buffer against other relationship difficulties such as dyspareunia (Rosen et al., 2017).

Equally, high relationship avoidance goals decrease relationship satisfaction, creates a disconnection from one's partner, and increases the probability of relationship breakdown (Impett et al., 2010). Further, individuals with high avoidance goals are less responsive to discussing situations/events/issues that may have a negative impact on their relationship (Kuster et al., 2017). Discrepancies in partner goals cause significant strain on the relationship (Hudson et al., 2016). Endometriosis poses a negative impact on relationships (e.g. separation; De Graaff et al., 2013), however, to date, there are no known studies that have evaluated relationship approach and avoidance goals in couples living with endometriosis and scant research on relationship satisfaction. The majority of literature addressing the role of relationship goals and relationship satisfaction is in women and their partners living with Provoked Vestibulodynia (PVD) and/or healthy couples.

Nonetheless, in community samples of dating couples, individuals high on relationship approach goals recorded higher daily relationship satisfaction as well as high relationship satisfaction over time. However, even though avoidance goals were not associated with daily relationship satisfaction, as relationship duration extended, relationship dissatisfaction became evident (Impett et al., 2010). In the second part of the same study, which included mixed sex and same sex couples, partners of individuals with high approach goals and positive affect also reported higher relationship satisfaction and positive affect. When both partners were high on approach goals, they reported feeling committed and close to their partners. The opposite was observed in partners of individuals high on avoidance goals with the

inclusion of thoughts about terminating the relationship. The authors concluded that, irrespective of one partner's high approach goals, the impact of the other partner's high avoidance goals significantly erodes the relationship quality as time passes.

Other studies in healthy samples have shown that high approach goals increase dyadic coping and communication between partners but high avoidance goals are associated with more relationship problems and a reluctance to disclose personal difficulties (e.g. work stress, worries) in fear that partners will reject them (Kuster et al., 2017). Kuster et al. hypothesised that individuals with higher avoidance goals may feel inept in managing relational difficulties and/or to support their partners emotionally as they fear disapproval and abandonment, hence minimal communication is exchanged between partners.

Only one study was found to investigate relationship approach and avoidance goals in the context of sexual pain. In a Canadian study by Rosen and colleagues (2017), relationship approach and avoidance goals, and relationship satisfaction was carried out in women with PVD and their partners. Women with higher relationship approach goals was associated with higher sexual satisfaction but not significantly in relationship satisfaction. However, when partners were high on relationship approach goals, this was associated with higher relationship satisfaction in both women and their partners as well as significantly lower depressive symptoms in partners. On the other hand, no significant association with relationship satisfaction was found in women or their partners with high relationship avoidance goals. The overarching results propose that relationship avoidance goals, by either partner, have a detrimental effect on relationship satisfaction, which parallel findings in healthy couples with high relationship avoidance goals (Impett et al., 2010).

Earlier studies examining relationship satisfaction in women and couples livings with sexual pain report high relationship satisfaction when their partners are perceived as more facilitative and supportive in response to their pain (Rosen, Bergeron, Sadikaj, Glowacka, Baxter, & Delise, 2014; Rosen, Muise, Bergeron, Delisle, & Baxter, 2015c) and demonstrate emotional empathy (Van Niekerk, et al., 2020). Additionally, partners also report higher relationship satisfaction when they themselves feel more receptive and encouraging with regards to the woman's pain (Rosen et al., 2015c). Higher relationship satisfaction in women with PVD exhibit less avoidance towards affectionate and sexual behaviour (Rosen et al., 2012) and increased receptivity towards intercourse (Rosen et al., 2014).

Conversely, significantly low relationship satisfaction has been noted in women with endometriosis particularly when endometriosis is considered by partners as the 'woman's problem' leaving women feeling isolated and misunderstood (Rossi et al., 2020). Relationship satisfaction is further impacted by poor sexual communication between partners living with sexual pain (Pazmany et al., 2014). Still, variability in relationship satisfaction in male partners of women with PVD is associated with poor estimation of their partners pain and dire consequences on the overall relationship (Rosen et al., 2015a). Furthermore, low relationship satisfaction may negatively impact quality of life (Giuliani et al., 2016), increase symptoms of depression (Rosen et al., 2014), and reduced sexual function (Rossi et al., 2020). Alternatively, other studies have not found any differences in relationship satisfaction between couples with sexual pain and healthy controls (Smith et al., 2014).

Inconsistencies among research findings may be attributed to pain perception and poor coping (Giuliana et al., 2016) or couples engaging in everyday activities

together, such as cooking dinner (Butt & Chelsea, 2007), intimacy, and partner empathy, serving as protective factors against relationship dissatisfaction in the presence of sexual pain (Van Niekerk et al., 2020).

In sum, relationship satisfaction has been implicated in psychological health, dyadic adjustment/coping, and quality of life. Furthermore, intimate relationships built primarily on avoidance goals, even by one partner, are vulnerable to relationship dissatisfaction and breakdown. It is therefore evident that for relationships to thrive and be fulfilling, both partners need to be invested in approach goals (Impett et al., 2010). Given the significant gap in empirical research in couples living with endometriosis, understanding relationship approach and avoidance goals can provide insight into how intimate relationships in these couples develop and are maintained. As it is unknown whether relationship goals vary for couples living with endometriosis versus couples with other sexual pain conditions, investigating interpersonal goals in women with endometriosis and their partners is critical.

**Relationship Goals and Sexual Satisfaction**

Sexual satisfaction has been conceptualised as an individual's emotional appraisal of their sexual relationship and fulfilment as either positive (i.e. high sexual satisfaction) or negative (i.e. low sexual satisfaction; Lawrance & Byers, 1995). Pascoal, Narciso, and Pereira (2014) argued that sexual satisfaction is underscored by a social exchange model. That being, an exchange of sexual rewards, such as orgasm and intimacy, and sexual costs, such as pain and negative affect (Byers & Cohen, 2017; Lawrance & Byers, 1995). Whereas, across the lifespan, high sexual satisfaction has been linked to general well-being and quality of life (Flynn et al., 2017; Heiman, Long, Smith, Fisher, Sand, & Rosen, 2011), low sexual satisfaction has been shown to impinge on sexual function and psychological health (Davidson,

Bell, LaChina, Holden, & Davis, 2009). Furthermore, a sense of wellbeing, relationship quality, partner empathy and responsiveness, and relationship satisfaction seem to positively influence sexual satisfaction even if frequency of sexual activity is limited (Bois, Bergeron, Rosen, Mayrand, & Brassard, 2016; Melis et al., 2015). Furthermore, while sexual satisfaction research in women with endometriosis has been scant, studies have revealed that lower sexual satisfaction is evident in these women compared to healthy controls (Giuliani et al., 2016; Montanari et al., 2013). Furthermore, one study has suggested that relationship goals influence sexual satisfaction in couples living with sexual pain (Rosen et al., 2017). With no known studies examining the role of how relationship goals influence sexual satisfaction in women with endometriosis, further research is warranted.

**Aims and Hypotheses**

Taken together, the literature above highlights the sequelae associated with sexual pain and endometriosis with different aspects of the disease contributing to the experience of relational satisfaction, sexual satisfaction, psychological wellbeing, and sexual distress. Overall, research in endometriosis to date has focused on qualitative studies of either the women diagnosed or their partner; with a dyadic and quantitative approach largely ignored. Furthermore, to our knowledge, relationship goals have not been investigated in couples living with endometriosis. The current study aims to take a dyadic approach, to examine the role relationship goals play in psychological health, sexual and relationship satisfaction, and sexual distress for couples living with endometriosis. It is hypothesised that relationship approach goals will be positively associated with relationship and sexual satisfaction in couples. It is also hypothesised that relationship approach goals will be negatively associated with levels of psychological and sexual distress.

# Method

## Participants

Participants were recruited via social media sites, gynaecology practices, and pelvic floor physiotherapy practices (see Appendix A). The inclusion criteria for women were being aged between 18 and 47 years to control for menopause, currently experiencing symptomatic endometriosis, and in a current romantic relationship. Inclusion criteria for partners was limited to being in a current relationship with a woman experiencing symptomatic endometriosis. Seventy-four women were eligible to participate. Ten women did not complete the online survey. Sixty-two partners completed the partner online survey. One partner's response was excluded as an incomplete dyad. The final sample comprised 61 couples (59 mixed-sex couples and two same-sex couples) who completed the survey with response rates of 86.49% for women with endometriosis and 84.72% for partners. The mean age for women was 29.82 years (*SD* = 6.25) and 31.64 years (*SD* = 7.60) for partners. The mean relationship duration was 5.87 years (*SD* = 5.44). Fifty-nine women reported a diagnosis of endometriosis post laparoscopic surgery and two women were awaiting laparoscopic surgery to confirm diagnosis. Fifty-six couples resided in Australia and five couples in the United States of America.

## Materials

Demographic information (i.e. age, relationship type and duration, education level, annual couple income) and stage of endometriosis and symptoms were gathered at the beginning of the survey (see Appendix B). Combining several questionnaires into a single survey increases the probability of capturing the nuances that may influence women with endometriosis and their partners interpersonal goals

and experience of sexual and relationship satisfaction (Stephenson, 2011). The test battery used in the survey comprised the seven questionnaires below.

**Relationship goals:** Based on the Rosen et al.'s (2017) study, an 8-item measure which assessed four approach and four avoidance goals was used. Participants responded to statements such as "I generally try to share many fun and meaningful experiences in my relationship with my partner" on a 7-point Likert scale ranging from 1 - not important at all to 7 - extremely important. Scores range from 4 - 28 for avoidance and 4 - 28 for approach goals. The mean for both relationship approach and relationship avoidance goals are calculated. Higher scores on the relationship approach goals show stronger approach goals towards positive outcomes while high scores on relationship avoidance goals indicate stronger goals to avoid negative outcomes.

**Sexual distress***:* The Female Sexual Distress Scale-Revised (FSDS-R; DeRogatis et al, 2008), a 13-item rating of distress related to sexual activity over the past month was used to assess sexual distress. Items included statements such as "sexually inadequate" where the participants responded on a 5-point Likert Scale ranging from never to always. Scores range from 0 – 52, with higher scores >11 indicating sexual distress. The FSDS-R was included in the partner survey as statements are gender neutral and the scale has been validated in male samples (Santos-Iglesias, Mohamed, Danko, & Walker, 2018).

**Psychological health:** The Depression, Anxiety, and Stress Scale–21 (DASS-21; Lovibond & Lovibond, 1995) is a 21-item questionnaire evaluating the presence and severity of depressive, anxious, and stress symptoms on a 4-point Likert scale in the past week with responses of 0 – did not apply to me at all to 3 – applied to me very much or most of the time. Scores range from 0 - 21 for each domain.

**Relationship satisfaction:** The Couples Satisfaction Index (CSI; Funk & Rogge, 2007), a 16-item scale measuring relationship satisfaction (e.g. our relationship is strong). Items have Likert scale responses with higher scores showing greater satisfaction. The Global Measure of Relationship Satisfaction (GMREL; Lawrance & Byers, 1995), a 7-point Likert scale measuring relationship satisfaction across five domains: bad-good, unpleasant-pleasant, negative-positive, unsatisfying-satisfying, and worthless-valuable. Scores ranged from five to 35 and higher scores indicated greater relationship satisfaction.

**Sexual satisfaction:** The Global Measure of Sexual Satisfaction (GMSEX; Lawrance & Byers, 1995) evaluates overall sexual satisfaction derived from subjective ratings of their sexual relationship on a 7-point Likert scale across five domains: bad-good, unpleasant-pleasant, negative-positive, unsatisfying-satisfying, and worthless-valuable. Scores ranged from five to 35, with high scores indicative of higher sexual satisfaction. The New Sexual Satisfaction Scale Short Form (NSSS; Stulhofer, Busko, & Brouillard, 2011) is a 12-item questionnaire evaluating sexual satisfaction over the past six months across two subscales of satisfaction – individually (e.g. the quality of my orgasms) and with their partner and associated behaviours (e.g. my partner's sexual creativity). Responses ranged from not at all satisfied to extremely satisfied.

## Procedure

The study was advertised as an online survey regarding endometriosis and intimacy, relationship satisfaction, quality of life, psychological health, sexual distress, sexual difficulties, and sexual satisfaction. Internet based research using convenience sampling is common, particularly when the targeted population is small and participants are difficult to access (Gosling, Vazire, Srivastava, & John, 2004).

Additionally, the utilisation of online surveys increase honesty when disclosing intimate information (Zarbo et al., 2018). Ethics approval was obtained from the University of Tasmania ‘s Social Sciences Human Research Ethics Committee (Ethics Ref No: H0017516).

Potential participants emailed the chief investigator expressing their interest to complete the survey. Each eligible participant and their partner were emailed a link to the survey and an individual numerical code (one for the women and one for her partner) that was required to complete the survey. Each member of the couple was instructed to complete the survey individually, with explicit instructions to not consult with their partner for answers while completing the survey. The information sheet outlined the purpose of the study, participation as voluntary with no stipend (e.g. movie tickets) provided. Participants could terminate their participation, without consequence, by closing the browser window. Contact details for the chief investigated were provided if the participant became distressed and required support. Completion and submission of the survey indicated consent. The survey took up to 45 minutes to complete.

**Data Analysis**

The current study used a cross sectional design and data was obtained in 2018 and 2019 as part of a larger research project. In line with previous studies in sexual pain conditions (Rosen et al., 2017), dyadic data analysis was guided by the Actor Partner Interdependence Model (APIM; Stas, Kenny, Mayer, & Loeys, 2018), which generates estimates of the effect of the actor (woman diagnosed, partner) and the partner effect (partner, woman diagnosed) on the outcome variables. AIPM assumes the data from each individual in the couple are not independent and therefore treats the dyad as a unit of analysis. The effects are estimated simultaneously while

controlling for each other. The two outcome scores for relationship satisfaction were standardised and analysed as an overall rating of relationship satisfaction. A standardised score was also generated across the two measures of sexual satisfaction. Potential confounding variables of age, relationship duration, symptom length, and psychological health were controlled for. Frequencies and means were calculated for level of education, household income, age, relationship status, and relationship duration. Tests of normality and homogeneity of variance were conducted and reported accordingly.

## Results

Descriptive statistics for women with endometriosis (referred to as women within the results section) are presented in Table 1 and dyadic descriptive statistics presented in Table 2. As shown in Table 1, the majority of sampled women reported either Stage I or Stage IV grading of endometriosis. Further, almost 80% of women reported no symptoms of menopause suggesting they fell within reproductive age. As seen in Table 2, most couples were married and living together. Most women completed either grade 12 and/or a vocational certificate whereas partners held a Bachelor degree.

### Demographic Characteristics and Outcome Variables

Bivariate correlations examining demographic characteristics and outcome variables revealed a small negative correlation between age and the anxiety subscale ($r_s$ = -.27, $p$ =.03), relationship approach goals ($r_s$ = -.32, $p$ =.01) and relationship avoidance ($r_s$ = -.26, $p$ =.04), and a medium negative correlation for duration of symptoms ($r_s$ = -..41, $p$ =.001) for women. A medium negative significant correlation was indicated between relationship length and relationship approach goals ($r_s$ = -.38,

$p$ =.003) for women. Partner demographic characteristics were not found to be significantly correlated with the outcome variables.

Table 1

*Descriptive Statistics for Women with Endometriosis*

| Characteristics | *M* (Range) or *N* | SD | % |
|---|---|---|---|
| Duration of endometriosis symptoms (years) | 11.79 (0-27) | 6.67 | |
| Staging/Grading of endometriosis | | | |
| I was never advised | 13 | | 21.3 |
| Unable to recall stage | 7 | | 11.5 |
| Minimal Grade or Stage I | 2 | | 36.1 |
| Mild Grade or Stage II | 6 | | 9.8 |
| Moderate Grade or Stage III | 13 | | 21.3 |
| Severe Grade or Stage IV | 20 | | 32.8 |
| Reproductive Stage | | | |
| No symptoms of perimenopause | 48 | | 78.7 |
| Symptoms of perimenopause | 5 | | 8.2 |
| Surgical/medication induced menopause | 8 | | 13.1 |
| Natural menopause | 0 | | 0 |

*N* = 61

**Bivariate Correlations for Couples and the Outcome Variables**

Bivariate correlations were conducted for all variables completed by women and their partners and are reported in Table 3. Within couples, a small statistically significant positive correlation was found in the depression subscale ($r_s$ = .26, $p$ <.05) and a medium positive correlation for sexual distress ($r_s$ = .32, $p$ <.05). A significant medium positive correlation was found for overall relationship satisfaction ($r_s$ = .44, $p$ <.01) however, no significant correlations were evident for relationship approach and relationship avoidance goals.

Table 2

*Descriptive Statistics of Couples*

| Variables | Women | | Partners | |
|---|---|---|---|---|
| | *M* (SD) | % | *M* (SD) | % |
| Age | 29.82 (6.25) | | 31.64 (7.60) | |
| Education Level | | | | |
| High school or below | 3 | 4.9 | 6 | 9.8 |
| Completed grade 12 | 15 | 24.6 | 13 | 21.3 |
| Vocational certificate | 15 | 24.6 | 13 | 21.3 |
| Bachelor degree | 14 | 23 | 19 | 31.1 |
| Postgraduate degree | 14 | 23 | 10 | 16.4 |
| Couples Relationship Status | | | | |
| Committed, living separately | 9 | 14.8 | | |
| Committed, living together | 24 | 39.3 | | |
| Married, living together | 28 | 45.9 | | |
| Couples Shared Annual Income | | | | |
| $0 - 19,999 | 4 | 6.6 | | |
| $20,000 – 39,000 | 1 | 1.6 | | |
| $40,000 - 59,000 | 7 | 11.5 | | |
| $60,000 – 79,000 | 7 | 11.5 | | |
| $80,000 and over | 37 | 60.7 | | |
| Declined to provide | 5 | 8.2 | | |
| Relationship Duration (Years) | 5.87 (5.44) | | | |

Women $N = 61$, Partner $N = 61$

In women, significantly large positive correlations were found between depression and anxiety ($r_s = .51$, $p < .05$) and anxiety and stress ($r_s = .69$, $p < .01$) suggesting that depression is highly associated with anxiety. Similarly, an increase in anxiety may be observed with an increase in stress. Depression was not associated

with sexual distress, relationship goals, relationship satisfaction, or sexual satisfaction. Anxiety was significantly and positively correlated with sexual satisfaction ($r_s = .32$, $p < .05$) but not with sexual distress, relationship goals, or relationship satisfaction. In addition, stress had a small significantly positive correlation with sexual satisfaction ($r_s = .26$, $p < .05$) and relationship avoidance goals ($r_s = .26$, $p < .05$). These imply that relationship avoidance goals may increase stress.

A large significant negative correlation was found between sexual distress and sexual satisfaction ($r_s = -.65$, $p < .01$) suggesting that women who have higher sexual distress experience a reduction in sexual satisfaction. Medium significantly positive correlations were identified for relationship approach goals ($r_s = .37$, $p < .01$) and sexual satisfaction implying that higher approach goals increase sexual satisfaction. There was also a small positive correlation between sexual satisfaction and relationship satisfaction ($r_s = .23$, $p < .05$) suggesting that relationship satisfaction increases the positive evaluation of sexual satisfaction. A small positive correlation with relationship satisfaction and relationship avoidance goals ($r_s = .26$, $p < .05$) was also found. A significantly small positive correlation was observed between relationship approach goals and relationship avoidance goals ($r_s = .29$, $p < .01$).

For partners, there was a medium statistically significant positive correlation between depression and anxiety ($r_s = .49$, $p < .01$), a large significant positive correlation between depression and stress ($r_s = .52$, $p < .01$), suggesting that higher levels of depression increase the anxiety and stress experienced by partners. A large statistically significant positive correlation between anxiety and stress ($r_s = .53$, $p < .01$) was also noted, indicating that as anxiety increases, so too does stress. Furthermore, depression and stress appeared to impact on sexual distress as shown by significant medium positive correlations between sexual distress and depression

($r_s$ = .39, $p$ <.01) and sexual distress and stress ($r_s$ = .36, $p$ <.01). Additionally, a medium negative correlation was found between sexual distress and relationship satisfaction ($r_s$ = -.47, $p$ <.01) suggesting that increased sexual distress has a negative impact on relationship satisfaction. A large significant negative correlation was identified between sexual distress and sexual satisfaction ($r_s$ = -.59, $p$ <.01) implying that partners sexual distress also reduced their sexual satisfaction. Similar to women, a small positive correlation for sexual satisfaction and relationship approach goals ($r_s$ = .26, $p$ <.05) was indicated in partners. These findings show relationship approach goals enhance sexual satisfaction. A significantly large positive correlation was found between relationship satisfaction and sexual satisfaction ($r_s$ = .54, $p$ <.01), implying that sexual satisfaction increases relationship satisfaction for partners. Large significantly positive correlations were identified between relationship approach goals and relationship satisfaction ($r_s$ = .56, $p$ <.01) and relationship avoidance goals and relationship satisfaction ($r_s$ = .52, $p$ <.01). A significant medium positive correlation was found between relationship approach and relationship avoidance goals ($r_s$ = .34., $p$ <.05) for partners.

Table 3

*Standardised Correlations among Women, Partner, and Couple's Outcome Variables*

| | Women | | Partner | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Measures | *M* | *SD* | *M* | *SD* | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
| 1. Depress. | 16.33 | 10.62 | 6.89 | 7.52 | **.26*** | .51** | .66** | -.18 | -.14 | -.18 | .08 | -.02 | -.05 | -.02 | -.10 | .15 |
| 2. Anxiety | 11.61 | 8.55 | 3.11 | 3.93 | .49** | **.15** | .69** | .09 | .14 | .10 | -.00 | .37** | .24 | .32* | .14 | .16 |
| 3. Stress | 20.72 | 9.85 | 10.49 | 7.78 | .52** | .53** | **.17** | -.01 | .03 | -.01 | -.04 | .31* | .19 | .26* | .13 | .26* |
| 4. CSI | 67.49 | 11.48 | 61.71 | 14.37 | .04 | .21 | -.07 | **.39**** | .84** | .96** | -.17 | .94* | .36** | .35** | .08 | .25* |
| 5. GMREL | 31.13 | 3.87 | 29.13 | 5.45 | -.01 | .25 | -.01 | .90** | **.43**** | .96** | -.08 | .19 | .26* | .23 | .24 | .29* |
| 6. RS | .21 | .81 | -.21 | 1.08 | -.03 | .26 | -.04 | .97** | .98** | **.44**** | -.13 | .26* | .31* | .23* | .16 | .26* |
| 7. FSDS | 29.92 | 10.75 | 14.05 | 10.31 | .39** | .21 | .36** | -.50** | -.39** | -.47** | **.32*** | -.62** | -.66** | -.67** | -.18 | .22 |
| 8. NSSS | 33.41 | 9.88 | 37.25 | 10.31 | .05 | .16 | -.12 | .49** | .35** | .43** | .58** | **.47**** | .86** | .95** | .37** | -.02 |
| 9. GMSEX | 21.97 | 8.50 | 21.50 | 8.29 | .13 | .30* | .03 | .60** | .55** | .58** | -.51** | .79** | **.39**** | .97** | .37** | -.04 |
| 10. SS | -.16 | 1.89 | .16 | 1.90 | .09 | .25 | -.05 | .58** | .48** | .54** | -.59** | .94** | .92** | **.45**** | .37** | -.03 |
| 11. RGAp | 24.85 | 3.63 | 23.05 | 4.06 | -.01 | .11 | -.07 | .54** | .53** | .24 | -.10 | .24 | .25 | .26* | **-.04** | .29* |
| 12.RGAv | 21.62 | 5.51 | 21.72 | 5.54 | -.02 | .03 | -.06 | .48** | .51** | .52** | -.18 | .17 | .28* | .23 | .34** | **.00** |

*Note*. Correlations above the bold diagonal apply to women, correlations below the bold diagonal apply to partners. Values on the bold diagonal identify correlations between women and partners. Depress = Depression, FSDS = Female Sexual Distress Scale, Relationship Satisfaction (RS) = Combined score for Couple Satisfaction Index (CSI) and Global Measure of Relationship Satisfaction (GMREL), Sexual Satisfaction (SS) = Combined score for (NSSS) and Global Measure of Sexual Satisfaction (GMSEX), RGAp = relationship approach goals, RGAv = relationship avoidance goals. * $p < .05$. ** $p < .01$.

A series of independent sample t-tests were conducted comparing women and partners mean scores for the outcome variables of depression, anxiety, stress, sexual distress, relationship approach and avoidance goals, relationship satisfaction, and sexual satisfaction, which are reported in Table 4. Women had statistically significant higher symptoms of depression, anxiety, and stress compared to partners. Significantly higher levels of sexual distress were also found in women. While women had significantly higher relationship approach goals versus partners, relationship avoidance goals were similar for both women and their partners.

Table 4

*Comparison of Outcome Variables for Women and Partners*

| | Women | Partner | | | 95% $CI_{diff}$ | | |
|---|---|---|---|---|---|---|---|
| Variables | Mean (SD) | Mean (SD) | (120) | *p* | *UL* | *LL* | Cohen's *d* |
| Depress | 16.33 (10.62) | 6.89 (7.52) | 5.67 | <.001* | 6.24 | 12.74 | 1.03 |
| Anxiety | 11.61 (8.55) | 3.11 (3.93) | 7.05 | <.001* | 6.10 | 10.87 | 1.23 |
| Stress | 20.72 (9.85) | 10.49 (7.78) | 6.37 | <.001* | 7.05 | 13.41 | 1.15 |
| Sex Dis | 29.92 (10.75) | 14.05 (10.31) | 8.32 | <.001* | 12.09 | 19.64 | 1.51 |
| RGAp | 6.21 (.91) | 5.76 (1.02) | 2.58 | .011* | 0.10 | 0.79 | 0.47 |
| RGAv | 5.40 (1.38) | 5.43 (1.38) | -0.10 | .922 | -0.52 | 0.47 | -.02 |
| RS | 0.43 (1.62) | -0.43 (2.17) | 2.45 | .016* | 0.16 | 1.54 | 0.44 |
| SS | -0.16 (1.89) | 0.16 (1.90) | -0.93 | .355 | -1.0 | 0.36 | -0.17 |

*Note*. CI = confidence interval diff = difference. *LL* = lower limit: *UL* = upper limit. Depress = depression, Sex Dis = sexual distress, RGAp = relationship approach goals, RGAv = relationship avoidance goals, RS = relationship satisfaction, SS = sexual satisfaction. * = significant value.

**Dyadic Analysis of Relationship Goals and Sexual Distress**

The role of own relationship goals (actor) and the effect of a partner's relationship goals (partner) on an individual's level of sexual distress was investigated and results are displayed in Table 5. Thirteen percent and 3% of the proportion of variance in women's and partners' sexual distress was accounted for by both partners' relationship goals. The partial intraclass correlation was statistically significant (ICC = .27, $p$ = .034, 95% CI [0, 0.51]), with a high (or low) rating of sexual distress for one member associated with their partner's high (or low) rating of sexual distress. Actor only effects were evident for the model of relationship goals and sexual distress. Statistically significant actor effects were found in the standardised model for women only for relationship approach goals, with women who report lower relationship approach goals reporting greater sexual distress (actor effect women = -.36, $p$ = .02; actor effect partner = -.11, $p$ = .52). Statistically significant actor effects were found in the standardised model for women only for relationship avoidance goals, with women who report higher relationship avoidance goals reporting greater sexual distress (actor effect women = .27, $p$ = .04; actor effect partner = -.11, $p$ = .50).

Table 5

*Actor and Partner Effects Examining the Role of Relationship Goals on Sexual Distress*

| Role | Effect | Std Est | 95% CI [lower, upper] | β (s) | *r* |
|---|---|---|---|---|---|
| Relationship Approach Goals | | | | | |
| Women | | | | | |
| | Actor | **-4.25*** | **[-7.44, 0.15]** | **-0.36** | **-0.23** |
| | Partner | 0.64 | [-1.87, 3.04] | 0.06 | 0.08 |
| | *k* | -0.38 | [-11.60, 9.91] | | |
| Partner | | | | | |
| | Actor | -1.09 | [-4.51, 2.05] | -.11 | -0.15 |
| | Partner | 0.42 | [-3.75, 3.38] | 0.04 | 0.01 |
| | *k* | -0.38 | [-11.57, 9.91] | | |
| Relationship Avoidance Goals | | | | | |
| Women | | | | | |
| | Actor | **2.11*** | **[0.04, 4.16]** | **0.27** | **0.11** |
| | Partner | 0.55 | [-1.44, 2.65] | 0.07 | 0.07 |
| | *k* | -0.13 | [-1.63, 0.64] | | |
| Partner | | | | | |
| | Actor | -0.80 | [-3.00, 1.68] | -0.11 | -0.14 |
| | Partner | -0.12 | [-3.09, 1.61] | 0.00 | 0.00 |
| | *k* | 0.18 | [-6.48, 7.72] | | |

*Note*: *N* = 61 women, 61 partners. Significant effects are in bold. CI = confidence interval. Std Est = standardised estimate. * p < .05. ** p <.01. *** p <.001.

**Dyadic Analysis of Relationship Goals and Relationship Satisfaction**

The role of own relationship approach and avoidance goals (actor) and the effect of a partner's relationship approach and avoidance goals (partner) on an individual's level of relationship satisfaction were investigated and results are displayed in Table 6. Twenty-seven percent and 48% of the proportion of variance in

women's and partners' relationship satisfaction was accounted for by both partners' relationship goals. Although a high (or low) rating of relationship satisfaction for one member was associated with their partner's high (or low) rating of relationship satisfaction, the partial intraclass correlation was nonsignificant (ICC = .22, p = .08, 95% CI [–0.06, 0.5]). Both actor and partner effects were indicated for the model of relationship approach goals and relationship satisfaction. Statistically significant actor effects were found in the standardised model for partners only, with partners who report higher approach goals reporting greater relationship satisfaction (actor effect women = .04, *p* = .81; actor effect partner = .51, *p* = .001). The partner effect for partner to women was statistically significant with higher partner relationship approach goals associated with greater relationship satisfaction for women (partner effect = .52, *p* = .001). The partner effect of women to partners was nonsignificant (partner effect = -.09, *p* = .51), indicating that partner's relationship satisfaction was not influenced by women's engagement in approach goals (see Figure 1). Actor only effects only were indicated for the model of relationship avoidance goals and relationship satisfaction. Statistically significant actor effects were found in the standardised model for partners only, with partners who report higher avoidance goals reporting greater relationship satisfaction (actor effect women = .19, *p* = .24; actor effect partner = .32, *p* = .01).

Table 6

*Actor and Partner Effects Examining the Role of Relationship Goals and Sexual Distress on Relationship Satisfaction*

| Role | Effect | Std Est | 95% CI [lower, upper] | β (s) | *r* |
|---|---|---|---|---|---|
| Relationship Approach Goals | | | | | |
| Women | | | | | |
| | Actor | 0.07 | [-0.44, 0.71] | 0.04 | 0.12 |
| | Partner | **0.83*** ** | **[0.36, 1.22]** | **0.56** | **0.48** |
| | *k* | 11.83 | [-41.03, 51.04] | | |
| Partner | | | | | |
| | Actor | **1.09*** ** | **[0.54, 1.60]** | **0.04** | **0.12** |
| | Partner | -0.20 | [-0.74, 0.47] | 0.51 | 0.48 |
| | *k* | -0.19 | [-0.84, 0.53] | | |
| Relationship Avoidance Goals | | | | | |
| Women | | | | | |
| | Actor | 0.22 | [-0.10, 0.67] | 0.19 | 0.14 |
| | Partner | -0.12 | [-0.46, 0.21] | -0.10 | 0.11 |
| | *k* | -1.65 | [-8.87, 8.30] | | |
| Partner | | | | | |
| | Actor | **0.50** ** | **[0.12, 0.90]** | **0.32** | **0.11** |
| | Partner | 0.07 | [-0.25, 0.51] | -0.06 | 0.17 |
| | *k* | 0.06 | [-0.26, 0.54] | | |
| Sexual Distress | | | | | |
| Women | | | | | |
| | Actor | -0.02 | [-0.05, 0.01] | -0.13 | -0.13 |
| | Partner | -0.01 | [-0.05, 0.04] | -0.04 | -0.04 |
| | *k* | 0.29 | [-7.41, 9.22] | | |
| Partner | | | | | |
| | Actor | **-0.06** ** | **[-0.12, -0.02]** | **-0.30** | **-0.30** |
| | Partner | -0.00 | [-0.04, 0.05] | -0.01 | -0.01 |
| | *k* | 0.03 | [-0.73, 0.99] | | |

*Note*: *N* = 61 women, 61 partners. Significant effects are in bold. CI = confidence interval. Std Est = standardised estimate. * p < .05. ** p <.01. *** p <.001.

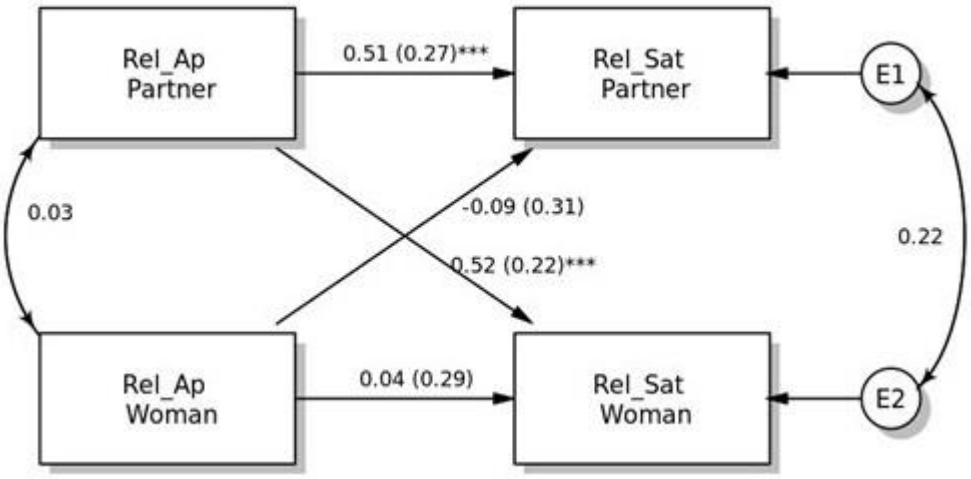


Figure 1. Standardized APIM model of relationship approach goals and relationship satisfaction. Rel_Ap: relationship approach goals; Rel_Sat: relationship satisfaction. *$p$ <.05, **$p$ <.01, and ***$p$ <.001.

**Dyadic Analysis of Relationship Goals and Sexual Satisfaction**

The role of own relationship approach and avoidance goals (actor) and the effect of a partner's relationship approach and avoidance goals (partner) on an individual's level of sexual satisfaction were investigated (see Table 7). Twenty-one percent and 9% of the proportion of variance in women's and partners' sexual satisfaction was accounted for by both partners' relationship goals. The partial intraclass correlation was statistically significant (ICC = .61, p = .001, 95% CI [0.33, 0.91]), with a high (or low) rating of sexual satisfaction for one member associated with their partner's high (or low) rating of sexual satisfaction. Actor only effects were indicated for the model of relationship approach goals and sexual satisfaction. Statistically significant actor effects were found in the standardised model for women only, with women who report higher relationship approach goals reporting greater

sexual satisfaction (actor effect women = .43, *p* = .004; actor effect partner = .20, *p* = .12). Partner only effects only were indicated for the model of relationship avoidance goals and sexual satisfaction with women reporting higher levels of sexual satisfaction when their partner engages in fewer relationship avoidance behaviours (partner effect women = -.14, *p* = .42; partner effect partner = -.28, *p* = .03).

**Dyadic Analysis of Sexual Distress and Relationship and Sexual Satisfaction**

The role of own sexual distress (actor) and the effect of a partner's sexual distress (partner) on an individual's level of relationship satisfaction was investigated and results are displayed in Table 6. Twenty-one percent and 9% of the proportion of variance in women's and partners' relationship satisfaction was accounted for by both partners' sexual distress. The partial intraclass correlation was statistically significant (ICC = .43, p = .011, 95% CI [0.15, 1.00]), with a high (or low) rating of relationship satisfaction for one member associated with their partner's high (or low) rating of relationship satisfaction. Actor only effects were evident for the model of sexual distress and relationship satisfaction. Statistically significant actor effects were found in the standardised model for partners only, with partners who report lower sexual distress reporting greater relationship satisfaction (actor effect women = -.13, *p* = .18; actor effect partner = -.30, *p* = .02). The role of own sexual distress (actor) and the effect of a partner's sexual distress (partner) on an individual's level of sexual satisfaction was investigated (Table 7). Forty-three percent and 30% of the proportion of variance in women's and partners' sexual satisfaction was accounted for by both partners' sexual distress. The partial intraclass correlation was statistically significant (ICC = .40, p = .008, 95% CI [0.11, 0.76]), with a high (or low) rating of sexual satisfaction for one member associated with their partner's high (or low) rating of sexual satisfaction.

Table 7

*Actor and Partner Effects Examining the Role of Relationship Goals and Sexual Distress on Sexual Satisfaction*

| Role | Effect | Std Est | 95% CI [lower, upper] | β (s) | *r* |
|---|---|---|---|---|---|
| Relationship Approach Goals | | | | | |
| Women | | | | | |
| | Actor | **0.90**** | **[0.24, 1.46]** | **0.43** | **0.34** |
| | Partner | -0.03 | [-0.44, 0.38] | -0.02 | -0.12 |
| | *k* | -0.03 | [-0.73, 0.63] | | |
| Partner | | | | | |
| | Actor | 0.37 | [-0.10, 0.85] | 0.20 | 0.25 |
| | Partner | 0.19 | [-0.42, 0.95] | 0.09 | 0.05 |
| | *k* | 0.52 | [-5.76, 8.77] | | |
| Relationship Avoidance Goals | | | | | |
| Women | | | | | |
| | Actor | -0.16 | [-0.51, 0.29] | -0.14 | 0.07 |
| | Partner | **-0.38*** | **[-0.73, -0.04]** | **-0.28** | **-0.25** |
| | *k* | -0.42 | [-1.78, -0.03] | | |
| Partner | | | | | |
| | Actor | 0.17 | [-0.22, 0.52] | 0.12 | 0.20 |
| | Partner | -0.20 | [-0.62, 0.34] | -0.12 | -0.12 |
| | *k* | -0.53 | [-5.99, 3.77] | | |
| Sexual Distress | | | | | |
| Women | | | | | |
| | Actor | **-0.11***** | **[-0.15, -0.08]** | **-0.65** | **-0.64** |
| | Partner | -0.00 | [-0.04, 0.04] | -0.02 | -0.02 |
| | *k* | 0.03 | [-0.27, 0.38] | | |
| Partner | | | | | |
| | Actor | **-0.08***** | **[-0.12, -0.04]** | **-0.41** | **-0.43** |
| | Partner | **-0.05**** | **[-0.09, -0.01]** | **-0.29** | **-0.32** |
| | *k* | 0.66 | [0.13, 2.04] | | |

*Note*: *N* = 61 women, 61 partners. Significant effects are in bold. CI = confidence interval. Std Est = standardised estimate. * p < .05. ** p <.01. *** p <.001.

Both actor and partner effects were indicated for the model of sexual distress and sexual satisfaction. Statistically significant actor effects were found in the standardised model for women and partners, with individuals reporting lower levels of sexual distress indicating greater sexual satisfaction (actor effect women = -.65, *p* = .001; actor effect partner = -.41, *p* = .001). The partner effect for women to partner was statistically significant with lower sexual distress associated with greater sexual satisfaction for the partner (woman partner effect = -.28, *p* = .01). The partner effect of partner to woman was nonsignificant (partner effect = -.02, *p* = .88), indicating that women's sexual satisfaction was not influenced by partner's sexual distress (see Figure 2).

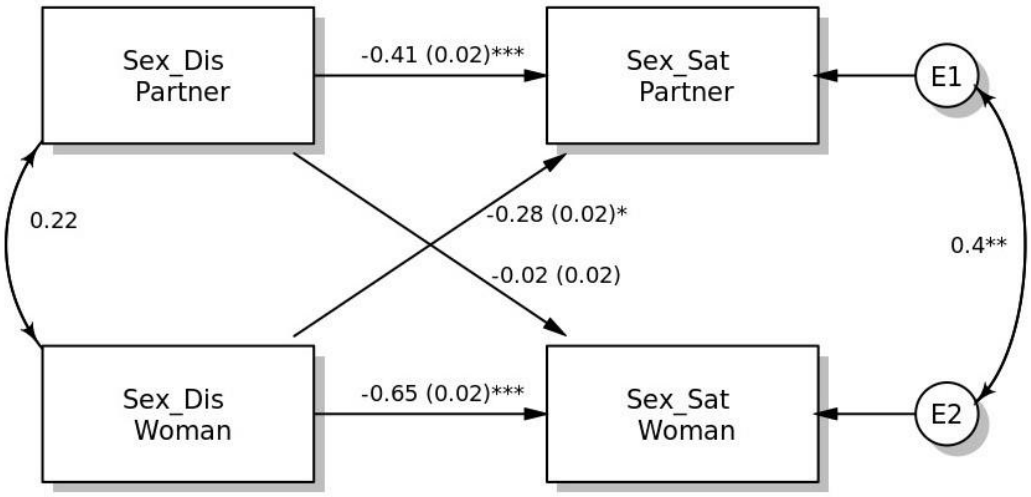


Figure 2. Standardized APIM model of sexual distress and sexual satisfaction. Sex_Dis: sexual distress; Sex_Sat: sexual satisfaction. *$p$ <.05, **$p$ <.01, and ***$p$ <.001.

# Discussion

Women with endometriosis and their partners experience significant difficulties, which extends past the confines of managing a chronic physical illness, by infiltrating the quality of romantic and social relationships, psychological heath, fertility, and ability to participate in tasks of daily living. The current study addressed the dearth of research exploring interpersonal goals and their impact on relationship and sexual satisfaction in couples living with endometriosis from a quantitative dyadic perspective. In addition, sexual distress and psychological health in both partners were also investigated, contributing to the existing body of evidence that has consistently found psychological and sexual distress as a prominent feature in women with endometriosis and other forms of persistent pelvic pain. The results from this study show relationship goals and sexual distress directly impact the evaluation of relationship and sexual satisfaction in couples living with endometriosis. Furthermore, both women with endometriosis and their partners experienced elevated psychological distress.

## Relationship Goals and Relationship and Sexual Satisfaction

Partial support was found for the hypothesis that relationship approach goals would be positively associated with relationship and sexual satisfaction in endometriosis couples. Despite women with endometriosis pursuing significantly more relationship approach goals than partners, women's relationship approach goals were not associated with relationship satisfaction but rather increased sexual satisfaction, highlighting the interplay of relationship satisfaction and sexual satisfaction for women (Brauer et al., 2014). This finding is consistent with women's relationship approach goals being unrelated to relationship satisfaction in the context of PVD (Rosen et al., 2017) and women with sexual pain having comparable

relationship satisfaction when compared with healthy controls (Smith et al., 2013). The finding that women's relationship satisfaction increased when their partner's engaged in higher approach goals parallels findings from earlier studies in sexual pain and community samples (Impett et al., 2010; Rosen et al., 2017) and aligns with Gable's (2006) approach-avoidance framework when applied to sexuality. Having a partner invested in the growth of the relationship, particularly with other stressors present (e.g. financial distress, maintaining the household; Hudson et al., 2020), appears to strengthen women with endometriosis level of relationship satisfaction. Moreover, male partners who validate partner experiences of pain increases relationship satisfaction in women (Leong, Cano, & Johansen, 2011). Additionally, dyadic coping in women with endometriosis enhances relationship satisfaction (Giuliana et al., 2016) which in turn increases quality of life, and general wellbeing (Stephenson et al., 2013).

Interestingly, relationship approach goals in women with endometriosis did not influence their own relationship satisfaction, a finding that is inconsistent with earlier research (Impett et al., 2010). This result implies that, for women with endometriosis, approach goals may be the focus of accommodating their partner's pursuit of positive experiences at the expense of their own. Placing greater emphasis on a partner's satisfaction may lead to dissatisfaction and negative affect (Hogue et al., 2019). However, relationship satisfaction in women with endometriosis, in the current study, was significantly higher than that of partners, irrespective of relationship approach goals. This suggests that other factors over and above relationship goals such as a facilitative partner, couple's emotion regulation, and sharing of daily responsibilities (Culley, et al., 2017; Rosen et al., 2015c; Smith et

al., 2013; Van Niekerk et al., 2020) may contribute to overall relationship satisfaction for women with endometriosis.

Unlike women with endometriosis, partner relationship satisfaction was found to be associated with relationship approach goals. While partners relationship approach goals positively impacted their own relationship satisfaction, which is consistent with previous research with sexual pain partners and healthy controls (Impett et al., 2010; Rosen et al., 2017), the women with endometriosis approach goals had no influence on their partners relationship satisfaction. This could be explained by partners viewing themselves as accommodating, empathetic, hopeful about the future, and more efficient at managing relational strain while ignoring the efforts of their partners (Hudson et al., 2020; Kuster et al., 2017; Rosen et al., 2015c). A partner may also have a self-interest in gaining positive experiences and rewards within the relationship irrespective of the goals of the woman with endometriosis (Gable, 2006).

Moreover, in this study, partners also reported significantly lower relationship satisfaction than women. Although sexual function was not assessed in the current study, DeWitte and Mayer (2018) posited that low sexual satisfaction and sexual dysfunction in partners has a negative impact on relationship quality and adjustment resulting in unsatisfactory relationship outcomes. In contrast, male partners of women with vulvar pain have equivalent relationship satisfaction compared to healthy controls, even though erectile difficulties and low sexual satisfaction were reported (Smith & Pukall, 2014). The lower relationship satisfaction observed in partners may be attributed to their low relationship approach goals and evident psychological distress (Impett et al., 2010). Differences in study outcomes with partners of women with sexual pain elucidates the need to incorporate partners in

future research to grow the small body of evidence that already exists. In addition to encouraging relationship approach goals from both women with endometriosis and their partners, the validation of partner experiences, providing them with practical and emotional support, and enhancing intimacy may act as leverage to increase partners relationship satisfaction (Bois et al., 2016; Rancourt et al., 2016). Further research is required to understand protective factors and ways partners build and maintain their relationship satisfaction in endometriosis couples.

On the other hand, relationship avoidance goals were associated with higher relationship satisfaction in both members of the couple. Additionally, partners' own relationship avoidance goals increased their relationship satisfaction. In this case, and contrary to expectations, engaging in relationship avoidant behaviours had a positive impact on the evaluation of relationship satisfaction. This is contrary to studies in healthy couples and couples living with sexual pain that have typically found relationship avoidance goals to be associated with relationship difficulties and low satisfaction (Impett et al, 2010; Kuster et al., 2017). However, in community samples, short-term relationship satisfaction has been reported as high despite the presence of relationship avoidance goals (Impett et al., 2010). With no other studies that have investigated relationship avoidance goals in couples with endometriosis, a comparative explanation of this finding is not possible. A potential explanation may be that couples who actively avoid conflict, disagreements, and any event/situations that could potentially harm their relationship view their relationships more positively. Couples may conceptualise their persistent avoidant behaviour (e.g. avoiding discussions about relationship issues) as relationship enhancing rather than ruining (e.g. thoughts of terminating the relationship). In addition, couples may minimise the negative effects that the avoidant behaviour is having on their relationship as a means

of coping with the complexities that endometriosis bestows on both the woman and her partner. This encompasses avoidance of potentially feeling rejected, insecure, lonely, and disappointed (Gable, 2006). There is also a possibility that the ongoing cognitive effort of maintaining relationship avoidance goals (e.g. hypervigilance towards situations that endanger their relationship) could in fact manifest as mild to severe symptoms of psychological distress, as seen in the current study, rather than reports of low relationship satisfaction.

Relationship approach goals were found to be positively associated with sexual satisfaction in women with endometriosis. More specifically, those who had higher relationship approach goals had higher sexual satisfaction, which is in line with previous research in women with sexual pain disorders (Rosen et al., 2017). These results indicate that women with endometriosis may be more sexually responsive and experience sexual activity as more pleasurable and fulfilling when partners are interested in growing intimacy and fun in their relationships outside of the bedroom. In fact, the results support the argument that most women place a greater emphasis on relational factors when evaluating sexual satisfaction (Velten & Margraf, 2017). Although relationship avoidance goals were not correlated with sexual satisfaction, women with endometriosis experienced lower sexual satisfaction if their partner had high relationship avoidance goals. These findings parallel those of Rosen et al. (2017) who also found that partners of women with PVD with higher relationship avoidance goals, reduced the women's sexual satisfaction. Given that relationship avoidance goals typically have a negative impact on relationship satisfaction (Impett et al., 2010), it is plausible to consider that a partner's focus on mitigating negative relational outcomes (e.g. conflict) may diminish the sexual satisfaction of women living with endometriosis.

Inconsistent with previous studies in partners of women with sexual pain (Rosen et al., 2017), the sexual satisfaction of the partners in the current endometriosis sample was not influenced by their own or the woman's relationship approach goals, despite a positive correlation between relationship approach goals and sexual satisfaction. Similarly, the pursuit of relationship avoidance goals by both women and partners had no effect on partner's sexual satisfaction, which corresponds with the lack of correlation between relationship avoidance goals and sexual satisfaction observed in partners in this study and earlier research (Rosen et al., 2017). These findings show that the efforts of both members of the couple to avoid disruption or adverse effects on the relationship, such as sharing, building intimacy, and maintaining the relationship apart from sexual activity do not necessarily factor in the partners' evaluation of sexual satisfaction. Earlier research in both partners of women with endometriosis and women with dyspareunia have linked prominent features, for example, low sexual activity frequency, frequent arguments, interrupted sexual intercourse due to pain, sex avoidance, and sexual dysfunction to reduced sexual satisfaction (Culley et al., 2017; Hämmerli et al., 2018).

As relational difficulties have the potential to intensify the physical and psychological symptoms experienced by women with sexual pain (Rosen et al., 2014a), perception of partners as responsive, understanding, and caring can improve pain, psychological symptoms, and increase relationship and sexual satisfaction (Impett et al., 2010; Rosen et al., 2014a; Rosen et al., 2015c). The inclusion and increase of relationship approach goals that are non-sexual couple activities is vital in fostering relationship cohesion, intimacy, and satisfaction (Butt & Chesla, 2007; Smith & Pukall, 2014). Additionally, disclosure of sexual likes/dislikes and positive

affect increases relationship and sexual satisfaction (Impett et al., 2010; Rehman Rellini, & Fallis, 2011). Therefore, clinicians are encouraged to identify relationship goals and assist couples in developing approach goals while minimising avoidance goals to enhance their relationships. Clinicians also need to facilitate open communication about relationship and sexual difficulties. Partners can play a critical role in supporting women to manage symptoms, while working together as a 'team' (Culley et al., 2017). Exhibiting empathy, maintaining communication, addressing pain management, and joint decision-making regarding treatment improves relationship quality for both members of the couple (Ameratunga et al., 2017; Bois et al., 2016; Hudson et al., 2020). Given the interpersonal factors related to endometriosis (e.g. relational breakdown, sexual dysfunction in both partners; Aerts et al., 2018; De Graaf et al., 2016; Rossi et al., 2020), an emphasises on the importance of recognising the crucial role partners play in helping women with endometriosis in managing the condition and including them in the multimodal treatment of endometriosis is essential.

The current study's results implicate interpersonal goals as a factor impacting couples living with endometriosis and sets the stage for future research that explores interpersonal goals in endometriosis couples. With an evident absence in the literature regarding relationship goals and relationship and sexual satisfaction in endometriosis couples, it would be important to replicate this study's findings. Future research could also incorporate longitudinal studies in endometriosis couples, to examine the pattern of relationship goals and its effects on relationship and sexual satisfaction (e.g. decline, maintained) over time. Notably, interpersonal goals may change regularly depending on the emphasis placed on the desired outcome (Impett et al., 2010). Therefore, in order to grasp the impact of relationship approach and

avoidance goals on relationship and sexual satisfaction as the length of relationships extends, longitudinal studies in couples living with endometriosis is warranted. Incorporating measures, such as emotional intimacy, to help identify and understand other factors influencing the couple's relational and sexual satisfaction will be most beneficial. With this additional knowledge, clinicians may be better prepared at targeting specific factors to bolster relationship quality, relationship and sexual satisfaction, and wellbeing in couples living with endometriosis. Crucially, the improvement of sexual and relationship satisfaction has a remarkable effect on quality of life and life satisfaction (Giuliani et al., 2016; Velten & Margraf, 2017).

**Relationship Goals, Sexual Distress and Relationship and Sexual Satisfaction**

For the second hypothesis, it was predicted that relationship approach goals would be negatively associated with levels of psychological and sexual distress. This was partially supported. In the current study, women with endometriosis were found to have high sexual distress, which replicates findings from previous studies that identified remarkably high sexual distress in women with dyspareunia (Bois et al., 2016; Pazmany et al., 2014). The results lend support to the notion that endometriosis negatively impacts on women's sexuality and associated anguish (Fritzer et al., 2013). Furthermore, women with endometriosis who had lower approach goals and higher avoidance goals experienced high sexual distress. Moreover, women's own higher sexual distress lead to lower sexual satisfaction. Combined, these findings may be attributed to women with endometriosis engaging in painful and unwanted sexual activity, despite dyspareunia, as a means of obliging their partner's sexual needs, maintaining their relationships, and increasing intimacy while avoiding conflict, rejection, disappointing their partner, and relationship breakdown/separation (Brauer et al., 2014; Butt & Chesla, 2007; Hämmerli et al.,

2018; Hogue et al., 2019; Hummelshoj et al., 2014). A lack of communication about sexual difficulties and dyspareunia may also potentially contribute to women's sexual distress (Hämmerli et al., 2018). Likewise, unmanaged psychological distress and poor coping contributes to sexual distress, increased dyspareunia, and poor sexual function (Stephenson et al., 2013; Thomtén and Linton, 2013). Alternatively, women with endometriosis with low sexual distress and higher sexual satisfaction may approach sexuality more positively as a means of enhancing sexual intimacy and connection with their partner (Hogue et al., 2019).

High sexual distress was also evident for partners in the current sample. To date, no known studies have explicitly measured sexual distress (quantitively) in partners of women with endometriosis, but the mean level of sexual distress was comparable to partners of women with vulvodynia (Bois et al., 2016). Disparate to women with endometriosis, relationship approach and avoidance goals did not influence partners' sexual distress. However, partners with low sexual distress had high relationship and sexual satisfaction. When women with endometriosis sexual distress was lower, sexual satisfaction increased. In cases where women's sexual distress is high, partners cognisant of inflicting pain on their partner to fulfill their own sexual needs can experience elevated negative cognitions about sexual activity thereby minimising their experience of sexual pleasure and sexual intimacy (Corsini-Munt et al., 2020; Rosen, et al., 2015; Thomtén & Linton, 2013). Consequently, an increase in sexual distress, a decrease in satisfaction and, in some cases, a reduction in sexual function is observed (Rosen et al., 2014b).

Indeed, with the intimate nature of sexual pain and sexual difficulties that accompany endometriosis (Facchin et al., 2017; De Graaf et al., 2013), detrimental impacts on relational and sexual satisfaction become evident in romantic

relationships. Dyspareunia, persistent pelvic pain, sexual dysfunction, maladaptive cognitions, and unhelpful coping are said to contribute to sexual distress (Zarbo et al., 2018). Repeated exposure to painful sexual encounters attributes to immense discomfort, fear of pain, and sex avoidance, which adds to sexual distress (Thomtén & Linton, 2013). Avoidance of sexual intercourse due to sexual pain reduces the immediate anxiety associated with experiencing pain but, in the long term, maintains dyspareunia, distress, and anxiety (DeWitte et al., 2011). Likewise, affection and sensual exchanges between partners are avoided by women with endometriosis in fear that they may lead to unwanted sexual interactions (Bernays et al., 2020) and to circumvent having to reject partners' sexual advances (Vannier et al., 2017). Sexual distress therefore impinges on the sexuality of women with endometriosis, couples' sexual intimacy, and sexual satisfaction.

Previous research has shown a multimodal approach has positively aided both women and their partners in managing dyspareunia and associated sexual difficulties (Brotto et al., 2015). Consultation with various clinicians (e.g. psychologists, sexologists, gynaecologists) who can assist women with endometriosis and their partners to reduce/manage pain, identify ways to increase intimacy, and increase sex positive attitudes will be valuable. The incorporation of psychosexual therapy (e.g. sensate focus therapy) is pivotal to reducing sexual distress by reigniting intimacy without the imminent fear of experiencing sexual pain and gradually building up to sexual activity that is fulfilling and pleasurable for both partners (Weiner & Avery-Clark, 2014). Encouraging affection between partners (e.g. hugging, kissing, holding hands), with the emphasis of no expectation of intercourse, reduces distress while fostering and maintaining intimacy, closeness, higher relationship and sexual satisfaction (Vannier et al., 2017), and reducing negative affect (Debrot, Schoebi,

Perrez, & Horn, 2013). Improving the couples' sexual communication and open disclosure about pain and the effects of endometriosis on both partners mitigates sexual distress (Bois et al., 2016; Smith & Pukall, 2014). Finally, expanding the couples' sexual repertoire to include non-painful sexual activity (e.g. oral sex, mutual masturbation) and incorporating diverse sexual positions that minimises pain and maximises pleasure, can facilitate a reduction in sexual distress and harness sexual wellbeing (Bernays et al., 2020).

**Psychological Well-Being**

Women with endometriosis in the current sample reported depressive and anxious symptoms within the extremely severe range (Lovibond & Lovibond, 1995) compared to partners who reported mild symptoms of depression and anxiety. Interestingly, past research has not found increased psychological distress in partners of women with dyspareunia and/or any difference to healthy controls (Pazmany et al., 2014). This may be attributed to the low relationship approach goals seen in partners, which negatively impacts on positive affect (Impett et al., 2010). Nonetheless, the elevated psychological distress in women with endometriosis is consistent with De Graaf et al. (2016), Facchin et al. (2017), Laganà et al. (2015), and Yong et al. (2015) who also found significant levels of depressive and anxious symptoms in women with endometriosis and/or dyspareunia. Ongoing psychological distress and relationship avoidance goals increases and maintains the perception of dyspareunia as intense and unmanageable (Karsdorp & Vlaeyen, 2011; Laganà et al., 2015; McPeak et al., 2017).

The high levels of psychological distress observed in this study elucidates the psychological toll that endometriosis and its associated difficulties has on women. As prolonged depressive and anxious symptoms are known to erode the quality of

intimate relationships (Facchin et al., 2017), reduce quality of life, increase social isolation (De Graaf et al., 2016; Hållstam et al., 2018) and, left untreated, may result in debilitating effects (Evans et al., 2019), it is crucial that psychosocial aspects of both partners are considered and addressed.

Psychological interventions such as group therapy, mindfulness, and cognitive behavioural therapy have been shown as effective treatment modalities in assisting women with sexual pain conditions in actively managing associated psychological distress (Facchin et al., 2017; Hållstam et al., 2018; Zhoa, Wu, Zhou, Wang, Zhu, & Chen, 2012). Including treatment that builds emotional self-efficacy and self-esteem can not only reduce psychological distress but also improve coping and management of pain (Facchin et al., 2017). Careful considerations of religion and culture need to be included as ignorance may inhibit treatment efficacy (Melis et al., 2015). Importantly, stable relationships also reduce depressive and anxious symptoms (Facchin et al., 2017). However, robust clinical trials evaluating different treatment modalities for partners and/or couples living with endometriosis is lacking. Therefore, future research may consider evaluating diverse psychosexual interventions to improve psychological health in women with endometriosis and their partners.

Endometriosis has been typically overlooked, mismanaged, and treatment limited to hormonal and/or surgical management causing great distress for women with endometriosis and partners (Aerts et al., 2018; Culley et al., 2013; Culley et al., 2017; Evans et al., 2019; Hudelist et al., 2012). Past studies have found that doctors rarely ask their patients about or treat sexual difficulties as it is not considered a priority and they find it confronting/embarrassing (Butt & Chesla, 2007; Seitz et al., 2020). Given the far-reaching consequences of endometriosis, it is of utmost

importance that healthcare professionals (e.g. general practitioners, surgeons, gynaecologists, psychologists), are taught how to address sensitive issues for example, difficulties with sex and psychological distress, in order to provide a holistic approach to treatment. Healthcare professionals are encouraged to build on their knowledge of sexual pain and associated disease states, such as endometriosis, to acknowledge and understand the complexities of sexuality and implications it has on couples living with sexual pain (Hummelshoj et al., 2014). That is, the social, relational, cultural, and psychological elements that are affected and, at times, severely impaired. Couples with endometriosis whose healthcare providers initiate dialogues about associated issues, such as dyspareunia, are often relieved and feel understood (Butt & Chesla, 2007). With the contributions that partners make to assist women with endometriosis in managing their daily living (e.g. pain management), it is crucial that they are included in all aspects of disease management. Failing to understand the biopsychosocial and cultural aspects, leaves women with endometriosis gravely unmanaged and partners, should they wish to be involved, excluded and isolated from the treatment process.

**Limitations and Strengths**

There are limitations worth noting. As a cross-sectional study design was used, this limits the ability to identify temporal relationships between endometriosis and interpersonal goals, sexual distress, and psychological health. Future research can consider longitudinal studies to evaluate this. The study used self-reported data for analysis. While this elevates the risk of response and recall bias (Vannier et al., 2017), variables of sexual distress, psychological distress, and sexual and relationship goals are inherently subjective making alternate methods impractical. In addition, an online study was used and reliant on self-reported endometriosis

diagnosis and stage rather than a documented diagnosis by an examining healthcare professional. Despite including both mixed and same sex couples, same sex couples were few thereby impeding the generalisability of outcomes to diverse couples. The, advertising used “woman” as participants. This may have excluded the recruitment and participation of gender non-binary persons and transmen in the study. The inclusion of more non-heterosexual couples in future research may offer a more balanced insight into how couples of different sexual orientation and gender experience endometriosis. The inclusion of a qualitative component in the study may have enriched the understanding of endometriosis from both an individual and couple’s perspective over and above the standard quantitative measures used (Chauvet et al., 2018). Future research may include a mixed model design to examine additional factors that influence the experience of endometriosis that questionnaires fail to capture. Finally, no groups of either healthy couples or couples with other sexual pain was included. Therefore, no comparisons could be made.

The current study has a number of strengths. The study’s inclusion of women with endometriosis and their partners provides insight into the impact of endometriosis on each person’s psychological and sexual wellbeing. It is the first known study to have examined interpersonal goals and subsequent implications on sexual and relationship satisfaction in couples living with endometriosis. This allowed a more nuanced inspection of the relational dynamics in couples living with endometriosis. It is unlikely that nonresponse error would have impacted the results given the small proportion of participants who did not complete the survey in full. The study also used well validated measures that were generalisable across gender due to gender neutral language and/or validation of measures in both males and females. Finally, none of the women with endometriosis surveyed in the current

sample were naturally menopausal, which meant the population most affected by endometriosis (i.e. women of reproductive age) was captured.

**Conclusion**

To our knowledge, this is the first study to investigate interpersonal goals in couples living with endometriosis and one of only a few studies examining co-morbid sexual distress and psychological health in women with endometriosis and their partners. Relationship approach and avoidance goals were implicated in women with endometriosis and partners' sexual and relationship satisfaction. For women with endometriosis, their partners' relationship approach goals fostered increased sexual satisfaction and high relationship avoidance goals increased sexual distress. Neither relationship approach nor avoidance goals influenced the partners' sexual satisfaction, but relationship approach goals increased their relationship satisfaction, while partners' low sexual distress also increased their own sexual satisfaction. Relationship avoidance goals were associated with high relationship satisfaction in women with endometriosis and partners. Both members experienced elevated psychological and sexual distress, which highlights the impact endometriosis has on the couple. Given the inter-relational nature of endometriosis, partners who validate their partners' experience can play a crucial role in the acceptance and management of this benign condition and should be included in treatment processes.

## References

Aerts, L., Grangier, L., Streuli, I., Dällenbach, P., Marci, R., Wenger, J., & Plunchino, N. (2-18). Psychosocial impact of endometriosis: From co-morbidity to intervention. *Best Practice & Research Clinical Obstetrics and Gynaecology, 50,* 2-10. doi:10.1016/j.bpobgyn.2018.01.008

Ameratunga, D., Flemming, T., Angstretra, D., Ng, S., & Sneddon, A. (2017). Exploring the impact of endometriosis on partners. *Journal of Obstetrics and Gynaecology Research, 43,* 1048-1053. doi:10.1111/jog.13325

Bernays, V., Schwartz, A. K., Gearedts, K., Rauchfuss, M., Wölfer, M. M., Haeberlin, F., . . . Leeners, B. (2020). Qualitative and quantitative aspects of sex life in the context of endometriosis: A multicentre case control study. *Reproductive Biomedicine Online*, *40,* 296-304. doi:10.1016/j.rbmo.2019.10.015

Biswas-Diener, R., & Diener, E. (2001). Making the best of a bad situation: Satisfaction in the slums of Calcutta. *Social Indicators Research*, *55,* 329-352. doi:10.1023/A:1010905029386

Bois, K., Bergeron, S., Rosen, N., Mayrand, M., & Brassard, A. (2016). Intimacy, sexual satisfaction, and sexual distress in vulvodynia couples: An observational study. *Health Psychology, 35*, 531-540. doi:10.1037/hea0000289

Brauer, M., Lakeman, M., van Lunsen, R., & Laan, E. (2014). Predictors of task-persistent and fear-avoiding behaviours in women with sexual pain disorders. *Journal of Sexual Medicine, 11,* 3051-3063. doi:10.1111/jsm.12697

Brotto, L. A., Yong, P., Smith, K. B., & Sandowik, L. A. (2015). Impact of a multidisciplinary vulvodynia program on sexual functioning and dyspareunia. *Journal of Sexual Medicine, 12,* 238-247. doi:10.1111/jsm.12718

Butt, F. S., & Chesla, C. (2007). Relational patterns of couples living with chronic pelvic pain from endometriosis. *Qualitative Health Research*, *17*, 571-585. doi:10.1177/1049732307299907

Byers, E. S., & Cohen, J. N. (2017). Validation of the interpersonal exchange model of sexual satisfaction with women in a same-sex relationship. *Psychology of Women Quarterly*, *4*, 32-45. doi:10.1177/03616844316679655

Chen, l., Hsu, J., Huang, K., Bai, Y., Su, T., Li, C., . . . Chen, M. (2016). Risk of developing major depression and anxiety disorders among women with endometriosis: A longitudinal follow-up study. *Journal of Affective disorders*, *190*, 282-285. doi:10.1016/j.jad.2015.10.030

Chauvet, P., Guiguet-Auclair, C., Comptour, A., Denouël, A., Gerbaud, L., Canis, m., & Bourdel, N. (2018). Feelings and expectations in endometriosis: Analysis of open comments from a cohort of endometriosis patients. *Journal of Gynecology, Obstetrics and Human Reproduction*, *47*, 281-287. doi:10.1016/j.jogoh.2018.05.010

Corsini-Munt, S., Bergeron, S., Rosen, N. O. (2020). Self-focused reasons for having sex: Associations between sexual goals and women's pain and sexual and psychological well-being for couples coping with provoked vestibulodynia. *Journal of Sexual Medicine*, *17*, 975-984. doi:10.1016/j.jsxm.2020.01.017

Culley, L., Law, C., Hudson, N., Denny, E., Mitchell, H., Baumgarten, M., & Raine-Fenning, N. (2013). The social and psychological impact of endometriosis on women's lives: A critical narrative review. *Human Reproduction Update*, *19*, 625-639. doi:10.1093/humupd/dmt027

Culley, L., Law, C., Hudson, N., Mitchell, H., Denny, E., & Raine-Fenning, N. (2017). A qualitative study of the impact of endometriosis on male partners. *Human Reproduction, 32*, 1667-1673. doi:10.1093/humrep/dex221

Davidson, S. L., Bell, R. J., LaChina, M., Holden, S. L., & Davis, S. R. (2009). The relationship between self-reported sexual satisfaction and general well-being in women. *Journal of Sexual Medicine, 6*, 2690-2697. doi:10.1111/j.1743-6109.2009.01406.x

Debrot, A., Schoebi, D., Perrez, M., & Horn, A. B. (2013). Touch as an interpersonal emotion regulation process in couples' daily lives: The mediating role of psychological intimacy. *Personality and Social Psychology Bulletin, 39*, 1373-1385. doi:10.1177/0146167213497592

DeGraaff, A. A., Hooghe, T. M., Dunselman, G. A., J., Dirksen, C. D., Hummelshoj, L., WERF EndoCost Consortium, & Simoens, S. (2013). The significant effect of endometriosis on physical, mental and social wellbeing: Results from an international cross-sectional survey. *Human Reproduction, 28*, 2677-2685. doi:10.1093/hunrep/det284

DeGraaf, A. A., Van Lankveld, J., Smits, L. J., Van Beek, J. J., & Dunselman, G. A. J. (2016). Dyspareunia and depressive symptoms are associated with impaired sexual functioning in women with endometriosis, whereas sexual functioning in their male partners is not affected. *Human Reproduction, 31*, 2577-2586. doi:10.1093/humrep/dew215

DeRogatis, L. R., Clayton, A., Lewis-D'Agostino, D., Wunderlich, G., & Fu, Y. (2008). Validation of the Female Sexual Distress Scale-Revised for assessing distress in women with hypoactive sexual desire disorder. *Journal of Sex & Marital Therapy, 5*, 357-364. doi:10.1111/j.1743-6109.2007.00672.x

DeWitte, M., & Mayer, A. (2018). Exploring the link between daily relationship quality, sexual desire, and sexual activity in couples. *Archives of Sexual Behaviour*, *47*, 1675-1686. doi:10.1007/s10508-018-1175-x

DeWitte, M., Van Lankveld, J., & Crombez, G. (2011). Understanding sexual pain: A cognitive-motivational account. *Pain*, *152*, 251-253. doi:10.1016/j.pain.2010.10.051

Elliott, A. J., Gable, S. L., & Mapes, R. R. (2006). Approach and avoidance motivation in the social domain. *Personality & Social Psychology Bulletin*, *32*, 378-391. doi:10.1177/0146167205282153

Evans, S., Fernandez, S., Olive, L., Payne, L. A., & Mikocka-Walus, A. (2019). Psychological and mind-body interventions for endometriosis: A systematic review. *Journal of Psychosomatic Research*, *124*, 1-11. doi:10.1016/j.jpsychores.2019.109756

Facchin, F., Barbara, G., Dridi, D., Alberico, D., Buggio, L., Somigliana, E., . . . Vercellini, P. (2017). Mental health in women with endometriosis: Searching for predictors of psychological distress. *Human Reproduction*, *32*, 1855-1861. doi:10.1093/humrep/dex249

Facchin, F., Barbara, G., Saita, E., Erzegovesi, E., Martoni, R. M., & Vercellini, P. (2015). Impact of endometriosis on quality of life and mental health: Pelvic pain makes a difference. *Human Reproduction*, *36*, 135-141. doi:10.3109/0167482X.2015.1074173

Fallis, E. E., Rehman, U.S., Woody, E. Z., & Purdon, C. (2016). The longitudinal association of relationship satisfaction and sexual satisfaction in long-term relationships. *Journal of Family Psychology*, *30*, 822-831. doi:10.1037/fam0000205

Flynn, K. E., Lin, L., Bruner, D. W., Cyranowski, J. M., Hahn, E. A., Jeffery, D. D., . . . Weinfurt, K. P. (2016). Sexual satisfaction and the importance of sexual health to quality of life, throughout the life course of U.S. adults. *Journal of Sexual Medicine, 13,* 1642-1650. doi:10.1016/j.sxm.2016.08.011

Fourquet, J., Báez, L., Figueroa, M., Irairte, R. I., & Flores, I. (2011). Quantification of the impact of endometriosis symptoms on health-related quality of life and work productivity. *Fertility and Sterility, 96,* 107-112. doi:10/1016/j.fertnstert.2011.04.095

Fritzer, N., Haas, D., Oppelt, P., St. Renner, D., Hornung, D., Wölfer, M., . . . Hudelist, G. (2013). More than just bad sex: Sexual dysfunction and distress in patients with endometriosis. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 169,* 392-396. doi:10.1016/j.ejogrb.2013.04.001

Funk, J. L. & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the Couples Satisfaction Index. *Journal of Family Psychology, 21*, 572-583. doi:10.1037/0893-3200.21.4.572

Gable, S. L. (2006). Approach and avoidance social motives and goals. *Journal of Personality, 74,* 175-222. doi:10.1111/j.1467-6494.2005.00373.x.

Gable, S. l., & Impett, E. A. (2012). Approach and avoidance and close relationships. *Social and Personality Psychology Compass, 6,* 95-108. doi:10.1111/j.1751-9004.2011.00405.x

Ghai, V., Jan, H., Shakir, F., Haines, P. & Kent, A. (2020). Diagnostic delay for superficial and deep endometriosis in the United Kingdom, *Journal of Obstetrics and Gynaecology, 40,* 83-89. doi:10.1080/01443615.2019.1603217

Gilmour, J., Huntington, A., & Wilson, H. (2008). The impact of endometriosis on work and social participation. *International Journal of Nursing Practice, 14,* 443-338. doi:10.1111/j.1440-172X.2008.00718.x.

Giuliani, M., Cosmi, V., Pierleoni, L., Recine, A., Pieroni, M., Ticino, A., . . . Simonelli, C. (2016). Quality of life and sexual satisfaction in women suffering from endometriosis: An Italian preliminary study. *Sexologies*, *25*, e12-e19. doi:10.1016/j.sexol.2015.03.004

Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about internet questionnaires. *American Psychologist, 59,* 93–104. Retrieved from https://oce-ovid-com.ezproxy.utas.edu.au/article/00000487-200402000-00003/HTML

Hållstam, A., Stålnacke, B. M., Svensén, C., & Löfgren, M. (2018). Living with painful endometriosis – a struggle for coherence. A qualitative study. *Sexual & Reproductive Healthcare, 17,* 97-102. doi:10.1016/j.srhc.2018.06.002

Hämmerli, S., Schwartz, A. S. K., Geraedts, K., Imesch, P., Rauchfuss, M., Wölfer, M. M., . . . Leeners, B. (2018). Does endometriosis affect sexual activity and satisfaction of the male partner? A comparison of partners from women diagnosed with endometriosis and controls. *Journal of Sexual Medicine, 15,* 853-865. doi:10.1016/j.jsxm.2018/.03.087

Heiman, J. R., Long, J. S., Smith, S. N., Fisher, W. A., Sand, M. S., & Rosen, R. C. (2011). Sexual satisfaction and relationship happiness in midlife and older couples in five countries. *Archives of Sexual Behavior, 40,* 741-753. doi:10.1007/s10508-010-9703-3

Hendrickx, l., Gijs, L., & Enzlin, P. (2016). Sexual difficulties and associated sexual distress in Flanders (Belgium): A representative population-based survey

study. *Journal of Sexual Medicine*, *13*, 650-688. doi:10.1016/j.jsxm.2016.01.014

Hogue, J. V., Rosen, N. O., Bockaj, A., Impett, E. A., & Muise, A. (2019). Sexual communal motivation in couples coping with low sexual interest/desire" Associations with sexual well-being and sexual goals. *PLoS ONE*, *14*, e0219768. doi:10.1037/journal.pone.0219768

Hudelist, G., Fritzer, N., Thomas, A., Niehues, C., Oppelt, P., Haas, D., . . . Salzer, H. (2012). Diagnostic delay for endometriosis in Austria and Germany: Causes and possible consequences. *Human Reproduction, 27*, 3412-3416. doi:10.1093/humrep/des316

Hudson, N., Culley, L., Law, C., Mitchell, H., Denny, E., & Raine-Fenning, N. (2016). 'We need to change the mission statement of the marriage': Biographical disruptions, appraisals and revisions among couples living with endometriosis. *Sociology of Health and Illness*, 38, 721-735. doi:10.1111/1467-9566.12392

Hudson, N., Law, C., Culley, L., Mitchell, H., Denny, E., Norton, W., & Raine-Fenning, N. (in press). Men chronic illness, and healthwork: Accounts from male partners of women with endometriosis. *Sociology of Health & Illness*. doi:10.1111/1467-9566.13144

Hummelshoj, L., De Graaff, A., Dunselman, G., & Vercellini, P. (2013). Let's talk about sex and endometriosis. *Journal of Family Planning and Reproductive Healthcare, 40*, 8-10. doi:10.1136/jfprhc-2012-100530

Impett, E. A., Gordon, A. M., Kogan, A., Oveis, C., Gable, S. L., & Keltner, D. (2010). Moving toward more perfect unions: Daily and long-term consequences of approach and avoidance goals in romantic relationships. *Journal of Personality and Social Psychology*, *99*, 948-963. doi:10.1037/a0020271

Kalmbach, D.A.,Pillai, V.,Kingsberg, S.A.,& Ciesla, J.A.(2015). The transaction between depression and anxiety symptoms and sexual functioning: A prospective study of premenopausal, healthy women. *Archives of Sexual Behaviour, 4*, 1635-1649. doi:117/s10508-014-0381-4

Karsdorp, P. A., & Vlaeyen, J. W. (2011). Goals matter: Both achievement and pain-avoidance goals are associated with pain severity and disability in patients with low back pain and upper extremity pain. *Pain*, *152*, 1382-1390. doi:10.1016//j.pain.2011.02.018

Kuster, M., Backes, S., Brandstätter, V., Nussbeck, F. W., Bradbury, T. N., Sutter-Stickel, D., & Bodenmann, G. (2017). Approach-avoidance goals and relationship problems, communication of stress, and dyadic coping in couples. *Motivation and Emotion, 41*, 578-590. doi:10.1007/s11031-017-9629

Laganà, A. S., Condemi, I., Retto, G., Muscatello, M. R., Bruno, A., Zoccali, R. A., . . . Cedro, C. (2015). Analysis of psychopathological comorbidity behind the common symptoms and signs of endometriosis. *European Journal of Obstetrics, Gynecology and Reproductive Biology*, *195*, 30-33. doi:10.1016/j.ejogrb.2015.08.015

Laganà, A. S., Sturlese, E., Retto,G., Sofo, V., & Triolo, O. (2013). Interplay between misplaced Müllerian-derived stem cells and peritoneal immune

dysregulation in the pathogenesis of endometriosis. *Obstetrics & Gynaecology International*, *2013*, 1-20. doi:10.1155/2013/527041

Lawrance, K., & Byers, E.S. (1995). Sexual satisfaction in long-term heterosexual relationships: The interpersonal exchange model of sexual satisfaction. *Personal Relationships*, *2*, 267-285. doi:10.1111/j.1475-6811.1995.tb00092.x

Leong, L. E. M., Cano, A., & Johansen, A. B. (2011). Sequential and base rate analysis of emotional validation and invalidation in chronic pain couples: patient gender matters. *Journal of Pain*, *12*, 1140-1448. doi:10.1016/j.jpain.2011.04.004

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*, 335-343. doi:10.1016//0005-7967(94)00075-U

McCool-Myers, M., Theurich, M., Zuelke, A., Knuttel, H., & Apfelbacher, C. (2018). Predictors of female sexual dysfunction: A systematic review and qualitative analysis through gender inequality paradigms. *BMC Women's Health*, *18*, 1-15. doi:10.1186/s12905-018-0602-4

McPeak, A. E., Allaire, C., Williams, C., Albert, A., Lisonkova, S., & Yong, P. J. (2017). Pain catastrophising and pain health related quality of life in endometriosis. *Clinical Journal of Pain*, *34*, 349-356. doi:10.1097/AJP0000000000000539

Melis, I., Litta, P., Nappi, L., Agus, M., Melis, G. B., & Angioni, S. (2015). Sexual function in women with deep endometriosis: Correlation with quality of life, intensity of pain, depression, anxiety, and body image. *International Journal of Sexual Health*, *27*, 175-185. doi:10.1080/19317611.2014.952394

Montanari, G., Di Donato, N., Benfenati, A., Giovanadi, G., Zannoni, L., Vicenzi, C., . . . Seracchioli, R. (2013). Women with deep infiltrating endometriosis: Sexual satisfaction, desire, orgasm, and pelvic problem interference with sex. *Journal of Sexual Medicine, 10,* 1559-1566. doi:10.1111/jsm.12133

Pascoal, P. M., Narciso, I. D. B., & Pereira, N. M. (2014). What is sexual satisfaction? Thematic analysis of lay people's definitions. *Journal of Sex Research, 5*, 22-30. doi:10.1080/00224499.2013.815149

Pazmany, E., Bergeron, S., Verhaeghe, J., Van Oudenhove, L., & Enzlin, P. (2014). Sexual communication, dyadic adjustment, and psychosexual wellbeing in premenopausal women with self-reported dyspareunia and their partners: A controlled study. *Journal of Sexual Medicine, f,* 1786-1797. doi:10.1111/jsm12518

Pluchino, N., Wenger, J. M., Petignat, P., Tal, R., Bolmont, M., Taylor, H. S., & Bianchi-Demicheli, F. (2016). Sexual function in endometriosis patients and their partners: Effect of the disease and consequences of treatment. *Human Reproduction Update, 22*, 762-774. doi:10.1093/humupd/dmw031

Rancourt, K. M., Rosen, N. O., Bergeron, S., & Nealis, L. J. (2016). Talking about sex when sex is painful: Dyadic sexual communication is associated with women's pain, and couples' sexual and psychological outcomes in provoked vestibulodynia. *Archives of Sexual Behaviour, 45,* 1933-1944. doi:10.1007/s10508-015-0670-6

Rehman, U. S., Rellini, A. H., & Fallis, E. (2011). The importance of sexual self-disclosure to sexual satisfaction and functioning in committed relationships. *Journal of Sexual Medicine, 8,* 3108-3115. doi:10.1111/j.1743/6109.2011.02439.x

Rosen, N. O., Bergeron, S., Glowacka, M., Delisle, I., & Baxter, M. L. (2012). Harmful or helpful: Perceived solicitous and facilitative partner responses are differentially associated with pain and sexual satisfaction in women with provoked vestibulodynia. *Journal of Sexual Medicine, 9,* 2351-2360. doi:10.1111/j.1743-6109.2012.02851.x

Rosen, N. O., Bergeron, S., Sadikaj, G., Glowacka, M., Baxter, M., & Delise, I. (2014a). Relationship satisfaction moderates the association between male partner responses and depression in women with vulvodynia: A dyadic daily diary study. *Pain, 155,* 1374-1383. doi:10.1016/j.pain.2014.04.017

Rosen, N. O., Bergeron, S., Sadikaj, G., Glowacka, M., Baxter, M., Delise, I., & Baxter, M. (2014b). Impact of male partner responses on sexual function in women with vulvodynia and their partners: A dyadic daily experience study. *Health Psychology, 33,* 823-831. doi:10.1037/s0034550

Rosen, N. O., Dewitte, M., Merwin, K., & Bergeron, S. (2017). Interpersonal goals and well-being in couples coping with genito-pelvic pain. *Archives of Sexual Behavior, 46*, 2007-2019. doi:10.1007/s10508-016-0877-1

Rosen, N. O., Muise, A., Bergeron, S., Impett, E. A., & Bourdreau, G. K. (2015b). Approach and avoidance sexual goals in couples with provoked vestibulodynia: Associations with sexual, relational, and psychological well-being. *Journal of Sexual Medicine, 12*, 1281-1290. doi:10.1111/jsm/12948

Rosen, N. O., Muise, A., Bergeron, S., Delisle, I., & Baxter, M. (2015c). Daily associations between partner responses and sexual and relationship satisfaction in couples coping with provoked vestibulodynia. *Journal of Sexual Medicine, 12*, 1028-1039. doi:10.1111/jsm.12840

Rosen, N., Rancourt, K. M., Corsini-Munt, S., & Bergeron, S. (2014b). Beyond a "woman's problem": The role of relationship processes in female genital pain. *Current Sexual Health Reports, 6,* 1-10. doi:10.1007/s11930-013-0006-2

Rosen, N. O., Sadikaj, G., & Bergeron, S. (2015a). Within-person variability in relationship satisfaction moderates partners' pain estimation in vulvodynia couples. *Pain, 156,* 703-710. doi:10.1097/j.pain.0000000000000101

Rossi, V., Viozzi, E., Tripoli, F., Popora, M. G., Simonelli, C., & Nimbi, F. M., (2020). Endometriosis, sexuality and satisfaction: A pilot study on women with and without infertility. *Sexologies*, *29*, e63-e69. doi:10.1016/j.sexol.2020.01.006

Sanchez, D. T., Moss-Racusin, C. A., Phelan, J. E., & Crocker, J. (2011). Relationship contingency and sexual motivation in women: Implications for sexual satisfaction. *Archives of Sexual Behavior*, *40*, 99-110. doi:10.1007/s10508-009-9593-4

Sánchez-Fuentes, M. M., Santo-Iglesias, P., & Sierra, J. C. (2014). A systematic review of sexual satisfaction. *International Journal of Clinical and Health Psychology*, *14*, 67-75. doi:10.1016/S1697-2600(14)70038-9

Santos-Iglesias, P., Mohamed, B., Danko, A., & Walker, L. M. (2018). Psychometric validation of the female sexual distress scale in male samples. *Archives of Sexual Behaviour, 47,* 1733-1743. doi:10.1007/s10508-018-1146-2

Seitz, T., Ucsnik, L., Kottmel, A., Bitzer, J., Teleky,B., & Löffler-Stastka, H. (2020). Let us integrate sexual health – do psychiatrists integrate sexual health in patient management? *Archives of Women's Mental Health*, *23*, 527-534. doi:10.1007/s00737-019-0106-9

Sepulcri R. D., & do Amaral, V. F. (2009). Depressive symptoms, anxiety, and quality of life in women with pelvic endometriosis. *European Journal of Obstetrics, Gynecology and Reproductive Biology*, *142*, 53-56. doi:10.1016/j.ejogrb.2008.09.003

Simonelli, C., Eleuteri, S., Petruccelli, P., & Rossi, R. (2014). Female sexual pain disorders: Dyspareunia and vaginismus. *Current Opinion in Psychiatry*, *6*, 406-412. doi:10.1097/YCO.0000000000000098

Smith, K. B., & Pukall, C. F. (2014). Sexual function, relationship adjustment, and the relational impact of pain in male partners of women with provoked vulvar pain. *Journal of Sexual Medicine, 11*, 1283-1293. doi:10.111/jsm.12484

Smith, K. B., Pukall, C. F., & Chamberlain, S. M. (2013). Sexual and relationship satisfaction and vestibular pain sensitivity among women with provoked vestibulodynia. *Journal of Sexual Medicine*, *10*, 2009-2023. doi:10.1111/jsm.12213

Stas, L., Kenny, D. A., Mayer, A., & Loeys, T. (2018). Giving dyadic data analysis away: A user-friendly app for actor–partner interdependence models. *Personal Relationships, 25*, 103-119. doi:10.1111/pere.12230

Stephenson, K. R., Ahrold, T. K., & Meston, C. M. (2011). The association between sexual motives and sexual satisfaction: Gender differences and categorical comparisons. *Archives of Sexual Behaviour*, *40*, 607-618. doi:10.1007/s10508-010-9674-4

Stephenson, K. R., & Meston, C. M. (2010). Differentiating components of sexual well-being in women: Are sexual satisfaction and sexual distress independent constructs? *Journal of Sexual Medicine*, *7*, 2458-2468. doi:10.1111/j.1743-6109.2020.02958.x

Stephenson, K. R., Rellini, A. H., & Meston, C. M. (2013). Relationship satisfaction as a predictor of treatment response during cognitive behavioural sex therapy. *Archives of Sexual Behaviour, 42*, 143-152. doi:10.1007/s10508-012-9961-3

Štulhofer, A., Buško, V., & Brouillard, P. (2011). The new sexual satisfaction scale and its short form. *Handbook of Sexuality-Related Measures* 530-532. doi:10.4324/9781315881089

Sutherland, O. (2012). Qualitative analysis of heterosexual women's experience of sexual pain and discomfort. *Journal of Sex & Marital Therapy, 38*, 223–244. doi:10.1080/0092623X.2011.606880

Thomtén, J, & Linton, S. J. (2013). A psychological view of sexual pain among women: Applying the fear-avoidance model. *Women's Health*, *9*, 251-263. doi:10.2217/WHE.13.19

Van Niekerk, L., Schubert, E., & Matthewson, M. (2020). Emotional intimacy, empathic concern, and relationship satisfaction in women with endometriosis and their partners. Journal of Psychosomatic Obstetrics and Gynecology. doi:10.1080/0167482X.2020.1774547

Vannier, S. A., Rosen, N. O., Mackinnon, S. P., & Bergeron, S. (2017). Maintaining affection despite pain: Daily associations between physical affection and sexual and relationship well-being in women with genito-pelvic pain. *Archives of Sexual Behaviour*, *46*, 2012-2031. doi:10.107/s10508-016-0820-5

Velten, J., & Margraf, J. (2017). Satisfaction guaranteed? How individual, partner, and relationship factors impact sexual satisfaction within partnerships. *PLoS ONE, 12*, e0172855. doi:10.1371/journal.pone.017855

Wahl, K. J., Orr, N. L., Lisonek, M., Noga, H., Bedaiwy, M. A., Williams, . . . Yong, P. J. (2020). Deep dyspareunia, superficial dyspareunia, and infertility concerns

among women with endometriosis: A cross-sectional study. *Journal of Sexual Medicine, 8*, 274-281. doi:10.1016/j.esxm.2020.01.002

Weiner, L., & Avery-Clark, C. (2014). Sensate focus: Clarifying the Masters and Johnson's model. *Sexual and Relationship Therapy, 29*, 307-319. doi:10.1080/14681994.2014.892920

Yong, P. J., Sadownik, L., & Brotto, L. A. (2015). Concurrent deep-superficial dyspareunia: Prevalence, associations, and outcomes in a multidisciplinary vulvodynia program. *Journal of Sexual Medicine*, *12*, 219-227. doi:10.1111/jsm.12729

Yong, P. J., Williams, C., Bodmer-Roy, S., Ezeigwe, C., Zhu, S., Arion, K., . . . Allaire, C. (2018). Prospective cohort of deep dyspareunia in an interdisciplinary setting. *Journal of Sexual Medicine*, *15*, 1765-1775. doi:10.1016/jsxm.2018.10.005

Zarbo, C., Brugnera, Compare, A., Secomandi, R., Candelora, I., Malandrino, C., . . . Frigerlo, L. (2018). Negative metacognition beliefs predict sexual distress over and above pain in women with endometriosis. *Archives of women's Mental Health*, *22*, 575-582. doi:10.1007/s00737-018-0928-9

Zhoa, Wu, Zhou, Wang, Zhu, & Chen, 2012. Effects of progressive muscle relaxation training on anxiety, depression and quality of life of endometriosis: Patients under gonodatrophin-releasing hormone agonist therapy. *European Journal of Obstetrics, Gynaecology, and Reproductive Biology*, *162*, 211-215. doi:10.1016/j.ejogrb.2012.02.029

**Appendix A**

Survey Advertisement

The Impact of Endometriosis and Persistent Pelvic Pain on Intimacy and Relationship Wellbeing in Couples

Do you experience symptoms of endometriosis or persistent pelvic pain (e.g., Vaginismus, Vulvodynia, Interstitial Cystitis, Vestibulodynia, Painful Bladder Syndrome)?

Are you currently in a relationship?

Are you 18 to 47 years of age?

If you have answered YES to the questions above, we would like to invite you and your partner to participate in online research currently being conducted by researchers at the University of Tasmania. This research focuses on the emotional and physical intimacy and relationship wellbeing in couples living with endometriosis and persistent pelvic pain. We are also interested in understanding how much information regarding their symptoms and treatment of endometriosis and persistent pelvic pain women choose to disclose to their partners. This information can be used to guide recommendations for effective treatment by medical or allied health practitioners and ultimately improve care for women diagnosed with persistent pelvic pain. If you are interested in participating, please email Dr Leesa Van Niekerk at Leesa.VanNiekerk@utas.edu.au and provide a separate email contact for yourself and your partner (with their permission) and you will each be sent a link to the survey and a confidential entry code. Alternatively, you can request a paper copy of the survey by contacting Dr Van Niekerk on (03) 6226 6645.

This research has been approved by the University of Tasmania Human Research Ethics (Tasmania) Network (H0017516).

**Appendix B**

Demographic Questionnaire

1. Please indicate your age in Years. Your answer must be between 18 and 47
2. Please enter your residential postcode. Your answer must be between 1000 and 9999
3. Please indicate your highest level of academic attainment based on the following options

    High school or below TCE or equivalent (e.g., completed Year 12)

    Vocational certification (e.g., carpentry, child care)

    Bachelor Degree

    Postgraduate Degree

    I would prefer not to provide this information

    Other

4. Please indicate your current relationship status according to the following options:

    Casual Relationship

    Committed, Living Together

    Committed, Living Separately

    Married, Living Together

    Married, Living Separately

    Other

5. Please indicate the approximate length of your current relationship.
6. Please estimate your annual income as a COUPLE

    $0 - 19,999

    $20,000 - 39,000

    $40,000 - 59,000

    $60,000 - 79,000

    $80,000 and over

    I would prefer not to provide this information

7. Please indicate which diagnostic procedure(s) have been used to confirm your diagnosis of endometriosis. You may select more than one option:

    My diagnosis has not been confirmed

    Pelvic examination

    Abdominal Ultrasound

Transvaginal Ultrasound

Surgical Laparoscopy

Other:

8. Please indicate the duration you have experienced symptoms of endometriosis.

9. Please indicate the staging (or grading) system for your diagnosis of endometriosis:

I have never been advised of stage/grade of my endometriosis

I have been told but I am not able to remember the stage/grade of my endometriosis Minimal/Grade or Stage I

Mild/Grade or Stage II

Moderate/Grade or Stage III

Severe/Grade or Stage IV

10. During the last four (4) weeks, Please indicate if you have experienced any of the following symptoms:

I have not experienced any of these symptoms of endometriosis in the last 4 weeks Dysmenorrhea (painful periods)

Lower back pain (when not menstruating)

Abdominal pain (when not menstruating)

Pelvic pain

Pain during sexual intercourse

Pain after sexual intercourse

Pain associated with bowel movements

Pain associated with urination

Menorrhagia (heavy periods)

Menometrorrhagia (bleeding between periods)

Difficulty conceiving

Fatigue

Diarrhoea

Constipation

Bloating

Nausea

Other:

11. During the last four (4) weeks, please indicate how distressing you have found the individual symptoms listed on a scale of 0 (Not Distressing) to 3 (Extremely

Distressing). 12. In the field below, please record any treatment you are Currently receiving to manage your endometriosis-related symptoms. This may include things such as medications (prescribed/over-the-counter), surgical interventions, hormonal interventions, specialists (e.g., gynaecologist, surgeon, physiotherapist, psychologist), acupuncture, Chinese/herbal medicine etc. If you are not currently engaging in any treatment, please write Not Applicable.

13. In addition to your Endometriosis, have you EVER been diagnosed with any of the following Persistent Pelvic Pain conditions? Please check any that apply.

Interstitial Cystitis (CIS)

Painful Bladder Syndrome (PBS)

Pudendal Neuralgia

Neuropathic Pain

Fibromyalgia

Vulvodynia

Vestibulodynia

Vaginismus

Polycystic ovary syndrome

I have not been diagnosed with any other persistent pelvic pain conditions