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The applicability of mindfulness on Sexual Satisfaction, a study with couples transitioning to parenthood

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APPLICABILITY OF MINDFULNESS ON SEXUAL SATISFACTION, A STUDY WITH COUPLES TRANSITIONING TO PARENTHOOD

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Resumo

A transição para a parentalidade representa uma fase complexa e significativa da vida, caracterizada por várias mudanças e o surgimento de novos desafios. Este estudo tem como objetivo investigar o impacto do mindfulness traço na satisfação sexual do casal, bem como explorar o papel de potenciais mediadores do funcionamento sexual e do distress sexual. Quanto aos métodos de pesquisa, este estudo utiliza uma metodologia quantitativa, com a utilização do Modelo de Interdependência do Ator-Parceiro (APIM) para a recolha e análise da interdependência entre indivíduos e parceiros. Além disso, foi também utilizado um teste de mediação para atender às questões de investigação propostas – Hipótese 1, maior nível de mindfulness traço no pós-parto (i.e., 3 meses pós-parto) estaria associado a uma maior satisfação sexual para o indivíduo e para o seu parceiro; Hipótese 2, a relação entre mindfulness traço e satisfação sexual dos novos pais seria mediada pelo funcionamento sexual; Hipótese 3, a relação entre mindfulness traço e a satisfação sexual dos novos pais seria mediada pelo distress sexual. A amostra final é constituída por um total de 161 casais. Os principais resultados indicam que os membros do casal são afetados de modo distinto: a relação entre o mindfulness traço e a satisfação sexual é mediada pelo funcionamento sexual nos homens, enquanto nas mulheres é mediada pelo distress sexual. Os resultados indicam ainda que mindfulness traço afeta significativamente o indivíduo, não tendo um efeito significativo no parceiro. O presente estudo oferece *insights* valiosos para fins de investigação científica, bem como para a prática clínica, no sentido de melhorar o apoio aos casais nesta fase de transição.

Palavras-chave: Mindfulness Traço, Satisfação Sexual, Função Sexual, Distress Sexual, APIM, Parentalidade, Casais

Abstract

The transition to parenthood represents a complex and significant phase of life, characterized by various changes and the emergence of new challenges. This study aimed to investigate the impact of trait mindfulness on couple's sexual satisfaction. Additionally, it aimed to explore the role of sexual function and sexual distress. Regarding the research methods, this study is based on a quantitative methodology, that used the Actor-Partner Interdependence Model (APIM) to collect and analyse the interdependence between individuals and partners. For this investigation, a mediating test was used to provide a statistical framework for testing the hypothesis proposed - Hypothesis 1, greater mindfulness at postpartum (i.e., 3-months postpartum) would be associated with greater sexual satisfaction for both the individual and the partner; Hypothesis 2, the link between trait mindfulness and new parents' sexual satisfaction would be mediated by sexual function; Hypothesis 3, the link between trait mindfulness and new parents' sexual satisfaction would be mediated by sexual distress. The final sample consisted of 161 couple's. The main results indicate that members of the couple are affected in distinct ways: the relationship between trait mindfulness and sexual satisfaction is mediated by sexual functioning in men, while in women, it is mediated by sexual distress. Furthermore, the results demonstrate that trait mindfulness significantly affects the individual, having no significant effect on the partner. The current study provides valuable insights for scientific research and clinical practice to better support couples during this critical life phase.
Keywords: Trait Mindfulness, Sexual Satisfaction, Sexual Function, Sexual Distress, APIM, Parenthood, Couples

Résumé

La transition vers la parentalité représente une phase complexe et significative de la vie, caractérisée par de nombreux changements et l'apparition de nouveaux défis. Cette étude vise à examiner l'impact du trait de mindfulness sur la satisfaction sexuelle du couple, ainsi qu'à explorer le rôle potentiel de la fonction sexuelle et de la détresse sexuelle en tant que médiateurs importants du bien-être sexuel entre le trait de pleine conscience et la satisfaction sexuelle. En ce qui concerne les méthodes de recherche, cette étude utilize une méthodologie quantitative, qui comprend l'utilisation du Modèle d'interdépendance de l'Acteur-Partenaire (APIM) pour recueillir et analyser l'interdépendance entre les individus et leurs partenaires. De plus, un test de médiation a été utilisé pour répondre aux hypothesis proposées : hypothèse 1, un niveau plus élevé de trait de mindfulness après la naissance de l'enfant (i.e., 3 mois après la naissance) serait associé à une plus grande satisfaction sexuelle pour l'individu et son partenaire ; hypothèse 2, la relation entre trait de mindfulness et la satisfaction sexuelle des nouveaux parents serait médiée par le fonctionnement sexuel ; hypothèse 3, la relation entre trait de mindfulness et la satisfaction sexuelle des nouveaux parents serait médiée par la détresse sexuelle. En ce qui concerne l'échantillon final, il se composait de 161 couples au total. Les principaux résultats indiquent que les membres du couple sont affectés de manière distincte, la relation entre le trait de mindfulness influence la satisfaction sexuelle ne réduisant la détresse sexuelle chez les femmes, et que le trait de mindfulness et la satisfaction sexuelle étant médiée par le fonctionnement sexuel chez les hommes, tandis que le trait de mindfulness influence la satisfaction sexuelle en réduisant la détresse sexuelle chez les femmes, et que le trait de pleine conscience n'a d'effet significantif que sur l'individu, n'ayant pas d'effet significantif sur le partenaire. Ainsi, la présente étude contribue à une meilleure compréhension de la relation entre les variables utilsées, trois mois après l'accouchement, et offre des perspectives précieuses à des fins de recherche scientifique et de pratique clinique afin de mieux soutenir les couples pendant cette phase critique de transition de leur vie.

Monts-clés: Trait Mindfulness (Pleine conscience), Satisfaction Sexuelle, Fonction sexuelle, Détresse sexuelle, APIM, Parentalité, Couples

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Introduction

The transition to parenthood is a unique and challenging time for couples. During the postpartum period, couples undergo psychological, physical, and sociocultural changes, which may have a strong impact on the couple's quality of life, physical and mental health (Abdool, Thakar & Sultan, 2009). As well as their relationship quality and stability, once couples move from being a couple to parents of an infant and stress can often increase as they have to balance multiple new tasks and learn how to coparent together (Leavitt et al., 2016) to nurture their child. LeMasters (1975) added that each partner might also feel deprived from appreciating the focused attention of the other as they have childcare duties. Prior research indicates that this is a particularly vulnerable period to feelings of discontent for the mother and the father due to the weight of new emotional, physical and material needs. (Pacey, 2004). Furthermore, during the transition to parenthood, couples can experience considerable disruptions to their sexual well-being, an essential component of a healthy romantic relationship (Rosen, et al., 2021).

The World Health Organization (WHO; 2015) defines sexual well-being as fundamental for the well-being and for physical and emotional health of individuals, couples, families and, ultimately, for the social and economic development of communities and countries. Sexual well-being is defined by the WHO as a state of physical, emotional, mental and social well-being related to sexuality, not only the absence of diseases or dysfunctions (WHO, 2006), thus including aspects such as sexual satisfaction, sexual functioning, and low or absent levels of sexual distress. According to Diamond and Huebner (2012), a satisfying sexual relationship can enrich connection and intimacy between individuals and help them cope with stress, with direct and indirect effects on physical and mental health. Sexual satisfaction, in addition to being an important indicator of sexual well-being, is also strongly associated with the satisfaction of relationships (Pascoal et al., 2013). Sexual satisfaction is conceptualized as the outcome of a subjective evaluation of the positive and negative aspects of an individual's sexual experiences (Byers & Demmons, 1999; DeLamater et al., 2008; Lawrance & Byers, 1995; MacNeil & Byers, 2009). A qualitative study indicated the existence of two major domains that categorize sexual satisfaction: personal sexual well-being and dyadic processes. The participants' responses to "*How would you define sexual satisfaction?*' revealed the importance of pleasure, desire and excitement as a mutual experience (Pascoal, et al., 2014). Thus, there was a link between personal well-being and

dyadic processes, which suggests that sexual satisfaction within intimate relationships is a two-dimensional concept where personal and relational dimensions are linked to each other.

Sexual functioning is also a key component of sexual well-being that incorporates aspects such as sexual desire, arousal, orgasm, and satisfaction. It is associated with positive physical and mental outcomes (Quintana & Rivera, 2013). In opposition, sexual dysfunction encompasses problems in sexual functioning that cause clinically significant distress to the individual (Boyer, 2014). Some theoretical models of human sexual response are useful to understand the concept of sexual functioning. For instance, in the Masters and Johnson model, the cycle of human sexual response is represented in four phases: (1) arousal phase, (2) plateau phase, (3) orgasm phase and (4) resolution phase. (Pines, 1968). However, the sample collected by Masters and Johnson consisted of a group of women who volunteered to be observed in a lab setting. Thus, the elaboration of the classic model of human sexual response was, according to Tiefer, in 1991, based on a small subgroup of women. (Basson, 2000). To address this problem Basson proposed a model that considers female sexual functioning as a circular relationship between sexuality and satisfaction, contrary to the linear relationship proposed by the Masters and Johnson model. In Basson's model, psychological and social dimensions were introduced, such as emotional intimacy, emotional satisfaction, sexual desire, and physical satisfaction (Kammerer-Doak & Rogers, 2008). DeLamater & Karraker (2009) suggested that sexual functioning is influenced by the interaction between biological, psychological, and social context factors, implying that sexual functioning is influenced by characteristics of the individual, but also by the characteristics of the partner, because sexual behaviour most often occurs in an interpersonal context (McCabe et al., 2010).

Sexual distress refers to the experience of negative emotional states and responses related to one's sexuality (e.g., frustrated, bothered, unhappy; DeRogatis et al., 2008). Studies that examine both cross-sectional and longitudinal data have found a positive association between higher levels of anxiety and depression symptoms and a greater likelihood of experiencing sexual distress and function problems in couples during the transition to parenthood (Tavares et al., 2023).

Sexual well-being in the postpartum period

The postpartum period can be challenging for couples' sexual well-being, and studies indicate that the early postpartum period (i.e., around 3-months postpartum) is a particularly vulnerable time, given that higher sexual distress at 3 months postpartum is associated with

increased odds of having moderate sexual function problems across the transition. (Dawson et al., 2020). Dyadic longitudinal studies revealed significant declines in mothers' and partners' sexual function between pregnancy and 3-months postpartum and significant improvements from 3- to 12-months postpartum. Mothers' sexual distress also increased between pregnancy and 3-months postpartum and decreased thereafter, whereas partner's sexual distress remained stable (Dawson et al., 2021). Many sexual concerns are prevalent during the postpartum period. Many new parents report lack of time or energy for sex, desire discrepancies between partners, poorer body image (Schlagintweit, et al., 2016), concomitant urinary tract infections (Yeniel & Petri, 2014) and other non-sexual concerns that affect sexuality, such as fatigue, responsibility (Montemurro and Siefken, 2012) and stress due to parenting (Leavitt, et al., 2017). However, although changes to sexual function across the transition to parenthood are commonly reported by new parents (Fitzpatrick et al., 2021), they might not be perceived as difficult, and even if they are, these may not be considered a sexual dysfunction. Given how common sexual function problems are during the perinatal period, referring to these changes (e.g., differences in sexual desire) as sexual dysfunction may be unfitting, as the term *dysfunction* pathologizes what might be a common experience for new parent couples (Fitzpatrick et al., 2021; Tavares et al., 2022).

Multiple studies evidence the major impact of postpartum stress on sexual satisfaction (Ahlborg et al. 2005; Bodenmann et al. 2007; Mickelson and Joseph, 2012; Tavares, et al. 2019). Past investigation also indicates that the partners' parenting stress may influence the emotional state of the other member of the couple (Thompson & Bolger, 1999). However, Chelom and Leavitt (2016) point that the mother's stress can have especially more weight on the couples' sexual satisfaction, which researchers suggest that happens due to the role of the mother in parenthood being socially viewed as more intense and self-sacrificing than the role of the father (Cowan and Cowan 2000; Hays 1998; Hauser 2015). Because of social encouragement that women face during their transition to motherhood to do intensive mothering (Montemurro and Siefken, 2012), sexual satisfaction may become less of a priority (Leavitt et al., 2016). Based on research conducted in the field, mothers who experience higher levels of fatigue three months after giving birth are at a greater risk of developing moderate to severe sexual function problems over time (Dawson et al., 2020). In addition, women experience substantial changes in their appearance, for example changes in their weight, skin condition, hair and nails, and although these fluctuations are expected, women might not adapt to them positively (Pascoal et al, 2019), leading to their perception of

attractiveness, body image, and sexual desire to negatively change after becoming mothers. In fact, many women view their body after the birth of the child as a project that needs to be worked on and controlled in order to get back to how it was pre-pregnancy (Hodgkinson et al., 2014), suggesting a discontent with their postpartum body image.

According to prior cross-sectional studies of females, the most common sexual problem during the postpartum period is related to pain (Abdool, Thakar & Sultan, 2009). Kammerer-Doak, and colleagues (2008) suggest that female sexual problems are also frequently related to desire and orgasm. Often these problems do not find solution with pharmaceutical agents, since the simple increase in clitoral and vaginal flow of blood, which can be stimulated with the use of medication, usually does not result in better desire, arousal or orgasm, due to the complexity of the interaction between psychological, physical and social factors involving sexual response. Medical treatments alone are sometimes insufficient in helping couples achieve a satisfying sexual life because habitually, medical treatments are directed at a specific sexual dysfunction and fail to address the larger biopsychosocial issues (McCabe et al., 2010). Hence, there needs to be alternative answers that considers this biopsychosocial approach, such as mindfulness.

Mindfulness and sexual well-being

Scientific evidence supports the role of mindfulness in improving global psychological well-being including a decrease in cognitive distractions related to body and performance, decreased depression and anxiety, and improved genital self-image, relationship satisfaction, interoceptive awareness, self-compassion, and self-acceptance (Arora & Brotto, 2017). Research indicates that higher levels of trait mindfulness are also associated with greater sexual satisfaction (Fincham, 2022), higher sexual function and lower levels of sexual distress, (Sood et al., 2022). According to Fincham (2022), individuals who are more mindful in their daily lives are more likely to be mindful in their relationships, contributing to sexual satisfaction over time.

Mindfulness cultivates intentional attention to the present moment, in a non-judgmental attitude (Shapiro, et al., 2006) thus it may have an impact on the reduction of significant cognitive biases, which are commonly on par with sexual difficulties. Moreover, mindfulness is associated with a greater capacity to regulate attention, better emotion regulation, and higher awareness to body sensations (Hölzel et al., 2011), which might help individuals to feel more present and to be more involved in physiological sensations during

sexual activity (Pepping, Cronin & Lyons, 2018). Prior research suggests that by being more attentive to present-moment sensations, a key mindfulness skill, women may be more attuned to subtle increases in genital response that can lead in improved self-reported of arousal, contributing to a greater concordance between genital and subjective sexual arousal. (Brotto, 2013).

In fact, mindfulness-based interventions have emerged as a treatment option with positive results in sexual dysfunctions highly related to psychological factors such as distraction, anxiety, negative body image, self-criticism, and high judgment during sexual activity (Arora & Brotto, 2017). Masters and Johnson (1970) report that the greatest indicator of sexual problems occurs due to the anxiety experienced in relation to sexual performance, which occurs due to the focus of attention on thoughts directed to perception about one's appearance and abilities. These authors (1970) and Barlow (1986) developed the concept of *spectatoring* to define the process that occurs when the individual inspects and monitors their performance during sexual activity, rather than being involved in sensory aspects of sexual experience. Barlow (1986) considers the causal model during sexual functioning and points that deficits in sexual functioning due to inhibition of arousal are caused when there is an inability to adequately decode erotic cues that are essential for arousal. When this happens, sexual performance cues activate performance worries, which cause a shift in attention from the gratifying properties of arousal to the threatening consequences of sexual failure. Sexual viewers are distracted by thoughts about their own performance, with cognitive interference that disrupts the normal flow of sexual functioning and can inhibit sexual arousal and orgasm (Dove, Wiederman, 2000). Overall, studies results support an association between cognitive distraction and decreased sexual well-being. Thus, mindfulness can be very beneficial because it is associated with increased sexual satisfaction via low cognitive distraction (Newcombe & Weaver, 2016).

In addition, because mindfulness is associated with increased emotion regulation, it can be used as a coping mechanism to help individuals respond adaptively to individual factors that might compromise sexual satisfaction and cause sexual distress, such as anxiety (Leavitt, Lefkowitz & Waterman, 2019), self-criticism, low self-esteem, anxiety about performance, discomfort with intimacy, and sexual inhibition (McCabe, et al., 2010; Sanchez-Fuentes et al., 2014; Pepping et al., 2018). The practice of slowing down thoughts and paying attention to them can help individuals to better process interpersonal interactions and respond to them more intentionally (Boorstein, 1996), which permits more positive behaviours instead

of reactive or impulsive negative responses (Pepping et al., 2018), leading to less exaggerated or suppressed sexual concerns or behaviours (Pepping et al., 2018) which is ultimately beneficial to one's sexual experiences.

Furthermore, an integrative review study found that emotion regulation strategies, such as mindfulness, were effective in improving pain management in the postpartum period (Srisopa et al., 2021), thus it can be useful to minimize physical discomfort, an important aspect of sexual distress. Besides the priorly described benefits of mindfulness skills to improve several domains of sexual response and decrease sexual distress, a meta-analysis indicates that trait mindfulness has been associated with relationship satisfaction (McGill et al., 2016). Khaddouma, Gordon and Bolden (2015) suggest that, according to their findings, increased sexual satisfaction may be one mechanism through which they contribute to relationship satisfaction, due to individuals' tendencies to notice internal and external experiences, but resist critical evaluation of their increased satisfaction with their sexual relationship.

Aim of the current study

This study aimed to improve the understanding of the effects of trait mindfulness on couples' sexual satisfaction across the transition to parenthood. Furthermore, it seeks to comprehend if the relationship between trait mindfulness and sexual satisfaction is mediated by sexual function and sexual distress, in order to better understand the mechanisms by which trait mindfulness may be associated with sexual satisfaction, even though these are likely multifactorial as suggested by Brotto (2013). The current study contributes to expand the literature on the relationship between trait mindfulness and sexual satisfaction, particularly during a challenging period for couples' sexual well-being such as the postpartum.

We hypothesized that based on prior research (Kappen et al., 2018), that found evidence that trait mindfulness of one partner can have beneficial outcomes for the other partner, Hypothesis 1) greater mindfulness at postpartum (i.e., 3-months postpartum) would be associated with greater sexual satisfaction for both the individual and the partner; Hypothesis 2) the link between trait mindfulness and new parents' sexual satisfaction would be mediated by sexual function; Hypothesis 3) the link between trait mindfulness and new parents' sexual satisfaction would be mediated by sexual distress.

Methodology

Participants

The sample was part of a larger study focused on sexual well-being of new parents during the transition to parenthood. The larger study followed first-time parents over time from pregnancy to 1-year postpartum, recruiting them during pregnancy from June 2019 to April 2021. For the purpose of this study, we included couples who responded to the 3-months postpartum survey. Our sample consisted of 161 couples, which amounts to 322 participants with equal number of women and men, who at the time of data collection were in an intimate relationship and had their first child three months prior to responding to the survey.

To be eligible for the study, couples need to (a) be in a committed romantic relationship with each other for at least six months (at the time of study entry); (b) be at least 18 years of age; and (c) be able to read and write in Portuguese; (d) being parents to their first child. Participants who self-reported were currently suffering from a severe unmanaged medical or psychiatric illness were ineligible for the study. One hundred and sixty-one couples were eligible to be included in the current analyses. All participants who gave birth described their gender/sex as woman/female and all partners self-identified as man/male; that being the case, we refer to these participants collectively as "women" and "men", respectively. Participants ranged in age from 20 to 47 years old (mothers: $M = 30.16$, $SD = 4.44$; fathers: $M = 31.89$, $SD = 4.69$) and were in a relationship for an average of 8 years (M=94.3months, range=6–262 months, SD=55.3 months). The majority of couples (72.7%) were married or common-law, and 26.7% of couples were dating. All participants were currently in a mixed-gender/sex relationship, although the study was inclusive of couples of all genders and identities. Most mothers (90.7%) and fathers (93.2%) identified as exclusively heterosexual, and only one mother identified as predominantly lesbian. Around 66% of mothers and 48% of fathers had some form of higher education, 27% of mothers and 37% of fathers completed 12 years of education, and 6% of mothers and 12% of fathers completed 9 years of education, and one father completed 6 years of education. 54% of couples have a monthly household income of €1679 or less.

Procedures

Participants were recruited either in-person during their routine appointments at a large obstetrics outpatient unit in Portugal (81%) or via community (i.e., hospital bulletin

boards, pregnancy-related services) or online advertisements (19%), as part of a larger study on couples' relationships during the transition to parenthood (Tavares et al., 2022). Participants recruited through advertisements completed all materials online. For in-person recruitment, participants were recruited through gynaecologists' referral and those who were interested and eligible were invited to speak to the study coordinator (either in person or via telephone) who described the aims and procedures of the study and confirmed eligibility. Couples were invited to complete the surveys online, which were separately sent to each partners' e-mail address. There were no significant differences in demographic characteristics or in the variables included in the analyses between participants who were recruited in-person or online. All individuals gave informed consent online before accessing the first survey. Data were obtained from both couple members at four time-points, two pre- and two postnatal: 20-week pregnancy (T1, baseline), 32-week pregnancy (T2), 3 months postpartum (T3), and 6 months postpartum (T4); couple members were given 4 weeks to complete each survey. In the current study, we focus only on those couples who completed the 3-months postpartum, survey. After participation of both couple members, then each couple was compensated with a 10€ voucher at every other time-point of the study. The study was approved by the ethical review boards at the Faculty of Psychology and Educational Sciences at the University of Porto and at the Centro Materno-Infantil do Norte.

Measures

Sexual satisfaction

Sexual satisfaction was assessed using the Global Measure of Sexual Satisfaction (GMSEX; Lawrance & Byers, 1995; Pascoal, et al., 2013) which measures an individual's overall sexual satisfaction in the context of an intimate relationship. Participants rated their current sexual satisfaction on a Likert-type scale from 1 to 7 (e.g., unpleasant-pleasant), Total scores range from 5 to 35, with higher scores indicating greater sexual satisfaction. The instrument has demonstrated good validity and reliability in general samples as well as in postpartum samples of couples. In terms of reliability, the Portuguese version of GMSEX has shown evidence of validity and reliability, including in postpartum samples (GMSEX; Lawrance & Byers, 1995; Pascoal et al., 2013; Tavares et al. 2023). In the current study, the measure showed excellent internal consistency (α_{women}=.95; α_{men}=.97).

Sexual functioning

Sexual functioning of women and men was evaluated using the Female Sexual Functioning Index (FSFI) and the International Index of Erectile Function (IIEF) (Rosen, et al., 1997; Gomes & Nobre, 2012;), respectively. The well-validated FSFI (Rosen, et al., 1997) consists of 19 items that assess various domains of sexual function, such as desire, arousal, lubrication, orgasm, satisfaction, and pain. These measures encompass various items, such as: "Over the past 4 weeks, how often did you feel sexually aroused ("turned on") during sexual activity or intercourse?". As per current recommendations, women and men indicating no sexual activity in the preceding 4 weeks (14% of women and 16% of men) did not receive a total score for that time-point to prevent artificially low scores, which would indicate the absence of sexual activity rather than sexual difficulties (Meston et al., 2020; Meyer-Bahlburg & Dolezal, 2007). The items are assessed on a 6-point Likert-type scale from 1 (Almost never or never) to 6 (Almost always or always), with lower results on the FSFI indicating poorer sexual function. The total score ranges from 7.2 to 36. It was validated for the Portuguese population by Pedro Pechorro, António Diniz, Sara Almeida and Rui Vieira (2022). The instrument has good internal consistency and can effectively differentiate a clinical sample from a non-clinical sample (Pechorro, Diniz, Vieira & Almeida, 2022).

Male sexual functioning was assessed using the 15-item IIEF, a widely used self-report questionnaire, which has high consistency, clinical and statistical robustness and good discriminatory diagnostic properties in the Portuguese version (Gomes & Nobre, 2012). This instrument assesses five dimensions of sexual function: Erectile Function (6 items), Orgasmic Function (2 items), Sexual Desire (2 items), Satisfaction in Coitus (3 items) and Global Satisfaction (2 items). An example item is: "*When you had sexual stimulation or sexual intercourse, how many times did you feel orgasmic or climaxed?*". The items are assessed on a 5-point Likert-type scale from 1 (almost never or never) to 5 (almost always or always). IIEF total scores range from 15 to 75, with lower scores indicating poorer sexual function.

Both the FSFI and the IIEF have previously demonstrated strong psychometric properties (Rosen et al., 1997, 2000) and have been used to assess sexual function in pregnant and postpartum samples (Dawson et al., 2021). In the current sample, both measures showed excellent internal consistency (α_{women}=.98. for the FSFI; α_{men}=.96. for the IIEF).

In both the FSFI and the IIEF, a total score was not assigned to individuals who reported no sexual activity in the last 4 weeks (items scored as 0) because this would attribute a low total score that is due to the lack of sexual activity and not due to sexual functioning

problems, following the recommendation of current guidelines (Meston et al., 2020; Meyer-Bahlburg & Dolezal, 2007). This eliminated 31 cases in the FSFI and 38 cases in the IIEF. To ensure comparability of gender-specific path coefficients, we initially standardized scores (with the formula: x –2 x (75/34) because sexual functioning scales for male and female measured had distinct ranges. This approach guaranteed that the predictors shared the same metric.

Sexual Distress

Sexual distress was assessed using the Portuguese version of the 13-item Sexual Distress Scale - Revised (SDS-R) (Derogatis et al., 2008). The SDS-R is used to evaluate distress relative to one's sex life in the preceding 4 weeks, (e.g., "How often did you feel distressed about your sex life?"). The participants rate their answers on a 5 points scale that ranges from 0 (never) to 4 (always), with higher scores indicating higher sexual distress. The total score ranges from 0 to 52. All of the items are gender and sex neutral, meaning that they do not concern any gender or sex specific characteristic. This instrument has demonstrated good validity and reliability and has been used in postpartum samples (Tavares et al., 2023). In the current sample, both measures showed excellent internal consistency (α_{women}=.95; α_{men}=.94).

Mindfulness

Mindfulness was evaluated using the widely used 15-item Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2008; Gregory and Gouveia, 2011), which assesses one's tendency to be mindful in daily life, in the domain of thoughts, experiences, and actions. In the current study, this instrument was used to measure the general tendency to be mindful in daily life, as it has been used in previous studies (Quintana & Rivera, 2012). An example item is: "I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted". The items employ a 5-point Likert-type scale from 1 (never or very rarely true) to 5 (very often or always true), with lower scores indicating lower levels of mindfulness. The total score ranges from 15 to 75, with higher scores indicating someone who is more mindful in their everyday life.

In the current sample, both measures showed good internal consistency (α_{women}=.72; α_{men}=.77).

Data Analysis

The data for this research was coded and analysed using the statistical analysis software IBM SPSS Statistics 26, a widely recognized and utilized tool in the research field. We conducted mediation analyses according to the Actor Partner Interdependence Model (APIM). A mediation analysis allows the investigator to comprehend the process that produces the effect. This is valuable because it gives a more functional insight of the relationships among variables, rather than a descriptive understanding (Preacher & Hayes, 2004).Preacher & Hayes, 2004).

The APIM can be defined as a "model of dyadic relationships that integrates a conceptual view of interdependence with the appropriate statistical techniques for measuring and testing it" (Cook & Kenny, 2005, p.101). The dyadic model (i.e., APIM) can estimate the extent to which the independent variable of a person influences their score on the dependent variable, known as the actor effect; it can also estimate the extent to which the independent variable of a person influences the dependent variable of his or her partner, also denominated as partner effect.

In the current study, to test hypothesis 1, a dyadic structural model (APIM) was developed, which includes both actor and partner effects. The same process was used to test hypothesis 2, only replacing the preceding mediator by sexual distress. Dyads were treated as distinguishable (i.e., dyad members were differentiated by gender).

To proceed with this analysis, we verified if, for every dyad included in the study, both members had totally responded to the questionnaires. For the dyads that did not meet this recruitment were excluded.

All predictor variables were grand-mean centred before being included in the analysis, as recommended for APIM.

A variable was determined to be a mediator if three conditions were met: (1) it was significantly associated with the independent variable; (2) it predicted the outcome variable; and (3) when both the independent variable and the mediator proposed were included in the model, the association between the independent variable and the outcome variable became non-significant (full mediation) or the odds ratio shift closer to non-significance (partial mediation), as advocate by previous studies (Kite, et al., 2018). In the current study, we followed four steps to determine if sexual function (in the first model) and sexual distress (in the second model) were mediators: (1) if trait mindfulness was significantly associated with sexual satisfaction; (2) sexual function/sexual distress were associated with trait mindfulness;

(3) sexual function/sexual distress were associated with sexual satisfaction; and (4) when both trait mindfulness and sexual function/sexual distress were included in the model, the association between trait mindfulness and sexual satisfaction became non-significant or closer to non-significance.

Results

Descriptives and Correlations

Dyadic descriptive statistics and zero-order correlations among variables are reported in Table 1. In relation to individual effects: In the women's group, we found significant correlations between all the variables analysed, except between mindfulness and sexual function. In this group, distress was negatively related to all the variables. All the other variables had a positive relationship. Regarding the male group, In the male group, besides the marginal significance previously discussed between trait mindfulness and sexual functioning, trait mindfulness on males does not correlate significantly with any other variable. Similarly, to the other group, all variables are negatively correlated with distress, and all remaining relationships are positive.

Regarding intersubject correlations, we verified that, to our surprise, individual trait mindfulness has no significant effect on the other member of the dyad. Additionally, has expected every other variable is interdependent with distress correlating negatively with all outcomes.

Table 1. Zero-Order Correlations, Means, and Standard Deviations for Men's and Women's Trait Mindfulness, Sexual Satisfaction, Sexual Function, Sexual Distress

	1	2	3	4	5	6	7	8
1. Mindfulness female	--	**.237***	.135	**-235***	.025	.085	.034	-.152
2. Sexual satisfaction female		--	**.550****	**-.374****	.045	**.410****	**.336****	**-.391****
3. Sexual Function female			--	**-.638****	-.001	**.379****	**.458****	**-.385****
4. Distress female				--	-.013	**-.267***	**-.251***	**.347****
5. Mindfulness male					--	.127	.173	-.106
6. Sexual Satisfaction male						--	**.655****	**-.581****
7. Sexual Function male							--	**-.509****
8. Distress male								--
Mean	50.6584	28.5093	53.3654	10.6398	48.8137	27.6770	65.4146	7.0683
Standard Deviation	7.38842	5.81390	15.15318	10.15046	6.09632	6.42709	8.43386	7.62162

Note. N = 322
*p < .01; ** p < .001

In summary, despite most of our results being according to what we anticipated, we were surprised to see that trait mindfulness does not correlate with the large majority of the outcomes. However, we must point out that the fact that the zero-order analysis does not show

a significant correlation between the variables may, in fact, be an indication that there is a mediator involved. While it is true that the lack of a significant correlation suggests that there is no strong direct relationship between the variables, it does not exclude the possibility that here may still be an indirect relationship mediated by a third variable. In the literature, for example, Preacher and Hayes (2004) defend this exact premiss, and suggest that, in such cases, mediation analysis may be appropriate to test the indirect relationship.

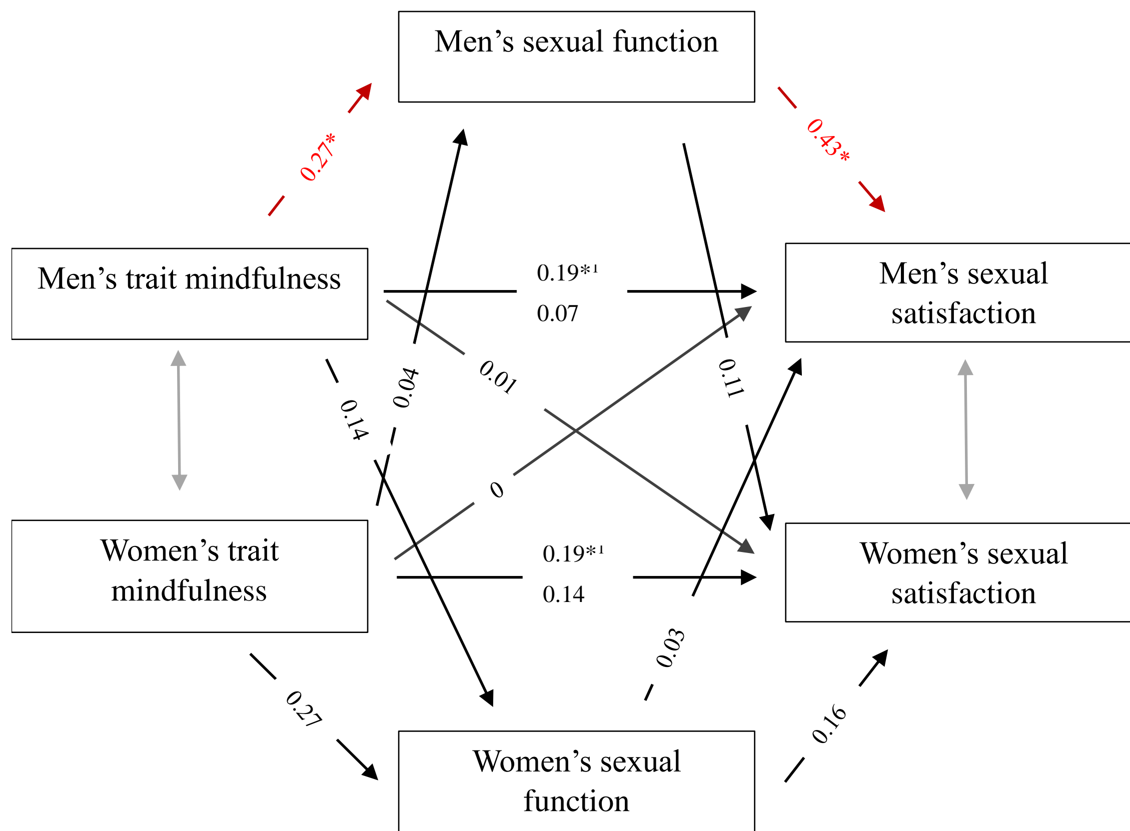
Mediation analysis

Hypothesis 1) Sexual functioning model

To test hypothesis 1, a dyadic structural model (APIM) was developed, which includes both actor and partner effects, using sexual functioning as a mediator. Results demonstrated that in the sexual functioning model, the direct effect of trait mindfulness on sexual satisfaction emerged as a significant actor effect for both male ($\beta = .1868$, $t[116] = 2.505$, $p = .014$) and female participants ($\beta = .1917$, $t[116] = 3.287$, $p = .001$). However, significant actor effects were only found in the relationship between mindfulness and sexual functioning in the male group ($\beta = .2628$, $t[116] = 2.481$, $p = .015$).

For this model, the mediation analysis showed that only the indirect actor-actor effect between trait mindfulness and sexual satisfaction was statistically significant, for male participants. These results suggest that, for men exclusively, the relationship between their trait mindfulness and sexual satisfaction is totally mediated by their own sexual functioning; this pathway explains approximately 61.1% of the total effect (Fig. 1).

Figure 1. Mediation analysis results for hypothesis 1. including a, b & c pathways, for both actor and partner effects.



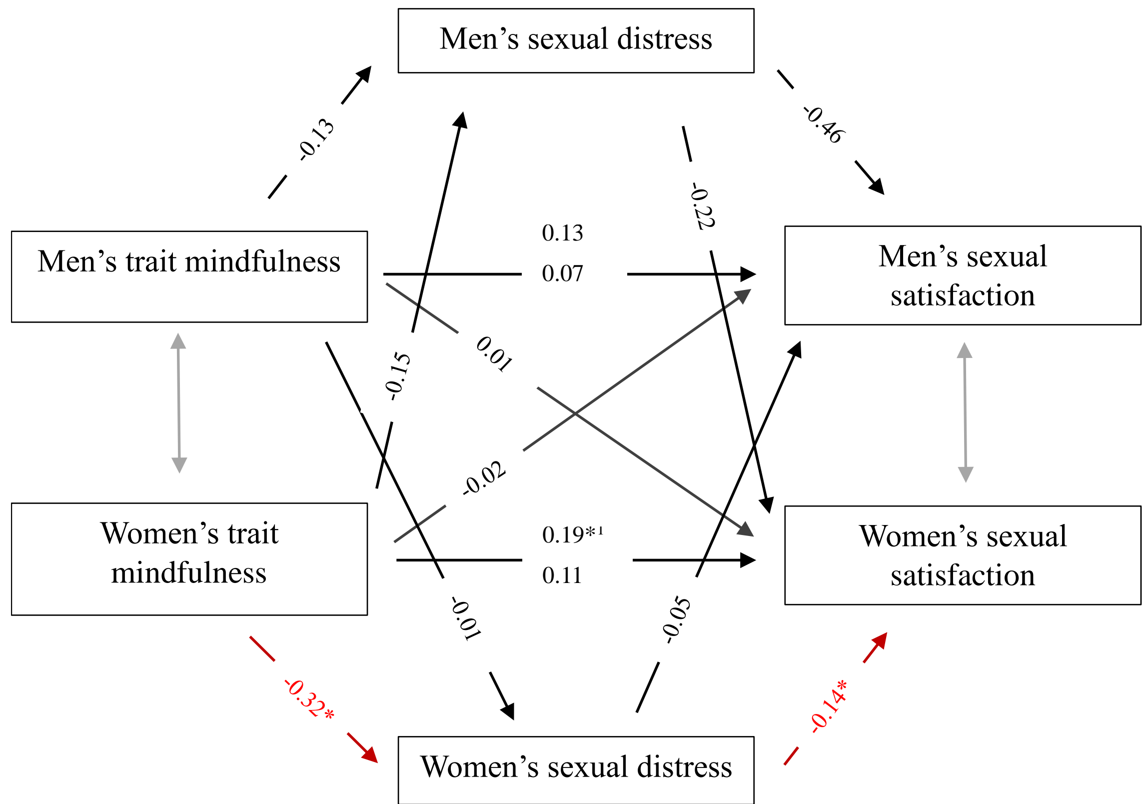
*p < .05; *¹ pathway c before inclusion of the mediator.

Hypothesis 2) Sexual distress model

The same process was used to test hypothesis 2, only replacing the preceding mediator, sexual functioning, with sexual distress. Results demonstrated that in the sexual distress model, trait mindfulness revealed significant direct actor effects on both sexual satisfaction (β = .1856, t[158] = 1.591, p = .003) and sexual distress (β = -.3225, t[158] = -3.036, p = .003), on female participants only. No partner effects were statically significant on ether model.

The results suggest that only female-actor-actor indirect effect was statistically significant, and that sexual distress completely mediated the effects of trait mindfulness on sexual satisfaction, representing 40.73% of the total effect, but only in women.

Figure 2. Mediation analysis results for hypothesis 2. including a, b & c pathways, for both actor and partner effects.



*p < .05; *[1] pathway c before inclusion of the mediator.

Discussion

The current study followed a large cohort of first-time parent couples at 3 months postpartum and revealed that greater trait mindfulness is linked with greater sexual satisfaction for both men and women. In spite of that, we observed two different trajectories: for men, the results indicate that sexual function totally mediates the relationship between trait mindfulness and sexual satisfaction, whereas for women this relationship is totally mediated by sexual distress, instead. These main findings suggest that men and women might have unique psychological experiences and challenges related to their sexual well-being, and that mindfulness contribute might differ from men to women. In fact, the results of the current study are consistent with findings from previous studies. Fitzpatrick and colleagues (2021) found that after childbirth, the prevalence of mothers and fathers who report sexual function problems has been found to have a similar pattern in men and women. On the other hand, according to their findings, sexual distress prevalence rates suggest that sexual distress is

problem a lot more common among women after birth giving, since approximately one in two women compared to only one in ten men indicate having this issue. It seems coherent that, since women seem to tend to be more susceptible to experience more distress, they may also be more prone to focus on negative thoughts and emotions and trait mindfulness can be important to reduce the intensity of emotional discomfort. Nevertheless, it is important to reflect and mention that, although we obtained complete mediation on the sexual distress model, the calculated Mediation Index of 29.51%. Indeed, we observed a complete mediation, as the direct effects between mindfulness and sexual satisfaction became non-significant at a 95% confidence interval when introducing the mediator. However, the total effect explained by the sexual distress mediator is relatively low, which probably indicates that there may be other factors that are possible mediators between these variables that were not included in this study.

In addition to these conclusions, we also observed that trait mindfulness significantly affects the individual's sexual satisfaction, but not the partner's sexual satisfaction. In other words, trait mindfulness seems to have a direct effect on the individual itself, but not a significant partner link. These results are surprising given the findings of previous research that indicates that sexual satisfaction is perceived as mutual experience (Pascoal et al., 2014). To date, and to our knowledge, there is very limited analysis exploring the differential effects of trait mindfulness on individuals and partner's sexual satisfaction. The available past investigation on mindfulness and sexual satisfaction primarily focuses on the overall impact on individual or couple's sexual experiences without specifically differentiating between the two. Therefore, we will speculate on the possible factors that may explain the results observed. The reason why, according to the findings of the current study, trait mindfulness significantly affects an individual's sexual satisfaction but not their partner's may possibly be due to trait mindfulness being focused on the individual. To elaborate and clarify, the capacity to be mindful (e.g., being present in the moment, having a non-judgmental awareness) can enhance the individual's ability to connect with their own sensations, emotions, thoughts, desires during sexual activity or experiences (Fleuryl, et al., 2019). Given that sexual satisfaction is a subjective experience influenced by personal factors, including one's own mindset (Bőthe et al., 2017), this ability to be fully engaged during sexual activities, may contribute to a greater sense of pleasure and sexual satisfaction of the individual. Finally, while this capacity to be mindful positively influence their own sexual satisfaction, it might not directly have an impact on their partner's sexual satisfaction, since sexual satisfaction is a

complex construct that encompasses multiple factors, including communication and shared experiences (Lopes, 2012) between partners - interpersonal dynamics that trait mindfulness might not have a direct effect on, hence not influencing significantly the partner's sexual satisfaction.

It is however important to consider that this explanation is based on logical reasoning based on limited information, and that further research is needed to fully understand the specific mechanisms and dynamics involved in the relationship between trait mindfulness and sexual satisfaction on a personal and dyadic level.

The current findings further validate the importance of mindfulness training, that existing investigation supports. For instance, a mindfulness-based group psychoeducational intervention that aimed at sexual arousal disorder in women (Brotto, et al., 2008) demonstrated that the intervention had beneficial effects on sexual desire and sexual distress and that the participants indicated that mindfulness was the most effective component of the treatment. Besides, according to the findings of another study, that explored the role of sexual mindfulness in sexual and relation wellbeing and self-esteem, the advantage of teaching sexual mindfulness skills (remaining mindful during sex, in particular) was also corroborated, contributing to the idea that if intended as useful, the therapist may consider helping clients develop mindfulness skills to use during sexual experiences, because maintaining mindfulness within a sexual experience may not be as simple as improving mindfulness skills within a daily context, so it may be more beneficial to have a more specific focus on mindfulness in sexual situations and help couples that feel unsatisfied with their sex lives (Leavitt, Lefkowitz & Waterman, 2019).

The implications of this study are significant to both investigation and clinical purposes. The results obtained through the mediation analysis conducted can be very useful to define guidelines to plan interventions that target the mediating variables – sexual function and sexual distress - in order to change the outcome (MacKinnon, Fairchild & Fritz, 2007). Furthermore, acknowledging gender differences in this context can lead to a more comprehensive and personalized understanding of the benefits of mindfulness on sexual health and well-being for both men and women. By addressing these differences, Mindfulness-based interventions can be tailored to meet the specific needs of men and women, ultimately promoting sexual well-being and satisfaction for all individuals.

Role of health care professionals during the neonatal period

Considering that during the postpartum period there are often changes in sexual functioning (Abdool, Thakar & Sultan, 2009), it is particularly important to have increased attention regarding sexual distress, as this is a period of particular vulnerability for sexual problems to arise. Given that concerns with the newborn and embarrassment to address issues related to the experience of sexuality may be reasons that prevent new parents to search for help in this domain, it is necessary that health professionals be attentive and prepared to address this issues, since sexual distress can have a detrimental effect on quality of life, given is impact on emotional well-being, physical and social. (Abdool, Thakar & Sultan, 2009). For example, in a study conducted by Barret et al. (2000) with women who gave birth for the first time, it was concluded that more than 80% of the participants experienced at least one problem in the field of sexuality during the first three months after birth, and 64% reported maintaining problems six months after birth. Of these women, only 15% reported having addressed this problem with a health professional. Identifying who experience sexual distress is fundamental to help them with appropriate resources that could help minimize sexual and relationship problems (Vannier & Rosen, 2017). The clinician should adopt a comprehensive biopsychosocial anamnesis in order to identify the predisposing, precipitating, maintaining, and contextual factors responsible for the problem (McCabe et al., 2010), in order to plan the best possible intervention.

Limitations and Future Directions

As previously mentioned, there are several reasons why we consider the APIM as the most suitable for this analysis. However, this model assumes non-interdependence between couple members in the variables under investigation, and it is important to note that, as reported in Table 1, only the trait mindfulness variable showed independence between the couple members. Despite this, we opted to maintain this model of analysis because none of the identified dependencies obtained a coefficient higher than 0.5. In other words, these correlations between inter-subject dependence of variables are weak or low, indicating that changes in one variable are associated with minimal changes in the other member's variables. We consider that this limitation does not outweigh the benefits of maintaining the APIM for understanding the phenomenon under study. Therefore, it is important to consider that the observed dependencies between variables in the APIM may lead to slightly higher margins of error than initially calculated. Data was obtained during the pandemic in Portugal, a period of

time that had a significant impact on the functioning of couples worldwide, due to various reasons (e.g., home confinement, health concerns). These circumstances may have had a profound influence on the way that couples lived their romantic relationships that may have had a significant impact in romantic relationships. We consider it is valuable for future research to gather data during a more normative period, characterized by fewer external stressors and disruptions, in order to gain insights about the typical dynamics of romantic relationships. Additionally, the cross-sectional nature of the analyses, focusing on a single time point, prevents a comprehensive understanding of whether mindfulness provides long-term protection against decreases in sexual satisfaction, considering the mediation identified. This limitation precludes the examination of mindfulness as a potential safeguard over time, highlighting the need for future research employing longitudinal designs to investigate the sustained effects of mindfulness on sexual satisfaction and its mediating processes.

Conclusion

This study provides evidence that trait mindfulness affects couples' sexual satisfaction during the transition to parenthood following different courses (i.e., sexual function, sexual distress) for specific subsamples of the population. We identified that for men, trait mindfulness has effects on their sexual satisfaction through sexual function, whereas on women, trait mindfulness has effects on their sexual satisfaction through sexual distress. Research about the effects of trait mindfulness on sexual satisfaction is still evolving, and there are not yet definitive conclusions, however results from this study refine knowledge about the effects of trait mindfulness on sexual satisfaction and the heterogeneity of these effects on couples' sexual function and sexual distress across pregnancy and postpartum, which contribute to better evaluation and treatment during such a critical life transition.

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