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A transdiagnostic approach to sexual distress and pleasure: The role of worry, rumination, and emotional regulation

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Abstract
Sexual distress, as well as sexual pleasure, are essential components of sexual health. Recently, associations between transdiagnostic factors such as worry and rumination and sexual distress and pleasure have been found. However, considering the adequacy of the transdiagnostic approach to explain and intervene in psychopathology and well-being, there is a need to address further sexual distress and pleasure and their relation to specific transdiagnostic factors. This paper aimed to explore a theory-driven model of sexual distress and sexual pleasure using multiple regression analysis with specific dimensions of repetitive negative thinking such as worry, rumination (brooding and reflection), and emotional regulation (emotion suppression and cognitive reappraisal) as predictors while controlling for emotional factors (anxiety and depression). The sample comprised 412 individuals in a monogamous relationship for at least a year. Results showed significant, positive, and moderate correlations between sexual distress and all emotional and transdiagnostic factors. For sexual pleasure, negative associations were found with depression and anxiety, worry, and brooding. Reflection was a significant predictor of sexual distress when emotional factors were controlled in the regression model. Depression was a significant predictor for both sexual distress and sexual pleasure. This study significantly contributes to our understanding of the complex relationship between transdiagnostic factors and sexual distress and pleasure, offering valuable insights that expand upon previous studies in this field and further advance our knowledge about sexual well-being.

Keywords Sexual distress · Sexual pleasure · Worry · Rumination · Emotional regulation · Transdiagnostic factors

Introduction

Sexual distress and sexual pleasure are central to understanding and establishing a diagnosis of sexual dysfunction (American Psychiatric Association, 2013). However, a robust body of empirical studies and comprehensive theoretical models empirically tested of these constructs are lacking. In this work, we propose applying the transdiagnostic approach to psychopathology in studies on sexual distress and pleasure due to this model's adequacy in explaining emotional maladjustment and well-being indicators (Dalgleish et al., 2020; Raposo et al., 2023). Recent research has shown that sexual problems fit a dimensional view of psychopathology – which focuses on aspects shared between clinical conditions – framing them in the spectrum of internalization. These results support the adequacy of the transdiagnostic approach to important constructs linked to sexual problems, distress and pleasure, which we will do in the present work. Specifically, we focus on three widely studied transdiagnostic processes – worry, rumination, and emotional regulation.

Sexual distress and sexual pleasure

Even when sexual function or response is impaired, a diagnosis is not feasible without sexual distress (American Psychiatric Association, 2013). Sexual distress is a psychological and emotional experience usually characterized by frustration and presents high comorbidity with depressive

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mood and anxiety (Ventus et al., 2017). These findings enhance the possibility of a theoretical model of emotional distress as being insightful in understanding sexual distress. Despite its centrality and clinical relevance, sexual distress about sexual function or response lacks a consensual and rigorous conceptual definition and a theoretical model that guides research and frames the identification of its main characteristics and relevant correlates, facilitating the identification of risk and maintenance factors that may lead to its development, increased severity, and resistance to therapeutic interventions. Therefore, despite important recent research that has established the vital role that sexual distress has as an indicator of people's sexual health in different health-related conditions (e.g., Pascoal et al., 2019; Pastoor et al., 2023; Saadedine et al., 2023; Tavares et al., 2022) and community samples (Dawson et al., 2023; Olthuis et al., 2023), significant gaps in the scarce research in this area need to be filled, namely establishing its correlates within a solid theoretical framework that, together with other theory-driven research that takes a transdiagnostic approach (Olthuis et al., 2023), help to expand knowledge in this field.

A related construct, also essential to the clinical diagnosis of sexual dysfunction, is sexual pleasure (World Association for Sexual Health, 2014), essentially defined as a physical and/or psychological enjoyment obtained through erotic experiences unaccompanied or with a partner (Gruskin et al., 2019). Its relation to positive emotions and subjective well-being enhances its representation as an essential indicator of sexual health and a fundamental sexual right, as advocated by the sexual pleasure declaration (World Association for Sexual Health, 2021). Despite this, sexual pleasure has been mostly ignored in scientific research, and there is a lack of an explanatory model or conceptual definition teste accepted consensually by the academic community (Laan et al., 2021). Most of the research in the field has been focused on a specific indicator of sexual pleasure (i.e., orgasm) which is insufficient to grasp the complexity of this construct, which is influenced by multiple factors such as the opportunity to experience sexual pleasure, and autonomy, self-esteem, empathy, and overall health as well as certain personal traits that may act as facilitating factors or as inhibitory factors (Laan et al., 2021; Werner et al., 2023). Given the significance of sexual pleasure for overall well-being, we employed a transdiagnostic approach in this study as it serves as an apt model for understanding (Liu et al., 2022).

The transdiagnostic approach

Diagnostic manuals classify mental disorders through a categorical perspective in which clinical diagnosis is established considering the presence of specific criteria. Consequently, interventions are criteria-focused and are very diversified and dispersed. Criticism of the categorical approach to mental disorders lies mainly in the lack of consideration for comorbidity and latent factors across different diagnostic frameworks (Dalgleish et al., 2020). Consequently, alternative dimensional approaches emerged, emphasizing the need to group nosological entities according to standard latent dimensions (e.g., Hierarchical Taxonomy of Psychopathology [HITOP]; Kotov et al., 2018). According to Pando et al., (2018), the transdiagnostic approach emerged from criticism and dissatisfaction with three interrelated factors: the diagnostic system, which focused on symptoms and respective criteria for diagnosis, lacks attention to underlying dimensions common to various disorders; the lack of acknowledgment regarding the existence of comorbidities and co-occurrence of more than one disorder as a common phenomenon derived from standard psychological processes in several disorders; and, the risk of promoting over-medicalization and over-diagnosing of individual adaptive characteristics (e.g., a person being shy perceived as a social phobia).

Considering a dimensional perspective, the transdiagnostic approach focuses on the underlying psychological processes that explain and maintain emotional distress while highlighting the importance of understanding and intervening in these latent processes common to various emotional disorders, such as sexual problems related to sexual function (Pascoal et al., 2020). This rationale aligns with recent studies that address emotional regulation difficulties when researching sexual functioning (Peixoto & Sousa, 2023) and sexual distress (Raposo et al., 2023). However, it has not been clarified whether emotion regulation affects two crucial factors for diagnosing sexual dysfunction: sexual distress or pleasure. Adopting the transdiagnostic approach, besides being beneficial to understanding clinical scenarios of high comorbidity, may influence the choice of therapy (Dalgleish et al., 2020). The current study focuses on specific mechanistically transdiagnostic factors: worry, rumination, and emotional regulation. These factors are defined as "processes that reflect a causal and functional mechanism of occurrence" and are causally related to a set of different categories of clinical diagnosis (Sauer-Zavala et al., 2017).

Worry and rumination

Among the mechanistically transdiagnostic processes, we may highlight worry and rumination as two types of persevere cognitions strongly associated with psychopathology (Everaert & Joormann, 2020). Worry and rumination can increase negative affect, anxiety and depression (Wahl et al., 2019). This confirms that both processes may be maladaptive forms of emotion regulation, an essential diagnostic factor explaining emotional disturbances (Aldao et al., 2010). Despite their similarities, worry and rumination present distinctive characteristics.

Worry can be defined as a cognitive process involving problem-solving that is activated when perceiving a possible threatening future event that may lead to an unwanted outcome (Borkovec et al., 1983). It is mainly characterized as a sequence of uncontrollable and speculative thoughts and/or imagery about the outcome of future events. Worry derives from the perception of danger and the subsequent need to cope with the possible threatening event; therefore, it can be perceived as adaptive. An example of adaptive worry in sexual health would be preventive and protective behaviors such as routine checkups, exams, and safe sex practices (Sweeny & Dooley, 2017).

However, worry can also be maladaptive. Excessive worry about unlikely events negatively impacts mental health, contributing to disorders such as generalized anxiety (Everaert & Joormann, 2020). Specifically, excessive worry is associated with restlessness, fatigue, difficulty concentrating, irritability and sleep disturbances, leading to interference with performance and a generally unpleasant emotional experience (Anyan et al., 2020). In the sexual health field, Barlow's most recent cognitive-affective model (Nobre & Barlow, 2023) highlights worry as a maladaptive coping strategy and constitutes a maintenance factor for sexual dysfunction. This is supported by a study by Pascoal et al., (2020) with a community sample that showed that worry can predict sexual distress (but not sexual pleasure). In the same study, another transdiagnostic process – rumination—also emerged as a significant predictor of sexual distress.

Like worry, rumination is characterized as a repetitive negative thinking pattern of response to distress and a hyper-reflective cognitive style, with passive, repetitive and persistent thoughts about past or present events that focus mainly on adverse events as well as their causes, consequences and the distress they cause, negatively affecting mood (Everaert & Joormann, 2020).

Research has suggested that rumination is associated with behavioral and cognitive avoidance, which leads to people being unable to solve their problems effectively, so there is no move to action to eliminate the cause of their distress (Wahl et al., 2019). In this sense, rumination is a response pattern to stressful events and, therefore, a cognitive emotion regulation strategy. However, it is a maladaptive emotion regulation strategy since people who use it show increased depressive symptoms after exposure to a stressful event (Zlomke & Hahn, 2010). This can be explained by the fact that rumination causes cognitive distortions in information processing, making it more challenging to implement adequate emotion regulation strategies, thus serving as a factor for maintaining a depressive mood (Dinis et al., 2011).

Rumination is divided into two dimensions, the first being brooding, which corresponds to the passive comparison of a given outcome with the desired outcome. This is considered the most maladaptive aspect since it is highly associated with depressive symptoms at present and in the long term (Cole et al., 2015). The other dimension, reflection, is associated with the attempt to gain insight into the source of distress and is associated with a rational and open look at the events, looking at both the positive and the negative aspects to obtain better insight (Newman & Nezlek, 2019). Pascoal et al., (2020) study showed that rumination significantly predicts both sexual distress and sexual pleasure. However, the authors overlooked the two dimensions of rumination, creating a gap in the complete comprehension of rumination's role in sexual distress and pleasure. The results by Pascoal et al., (2020) align with a recent study that revealed that repetitive negative thinking predicts poorer sexual functioning (Peixoto & Ribeiro, 2022) and although the latest is a promising finding, the study did not address the emotional components of sexual response—i.e., sexual distress and pleasure.

Based on the abovementioned gaps, we proposed clarifying the role of emotion regulation and repetitive negative thinking on sexual distress. Specifically, in this study, we focused on both dimensions of rumination: brooding and reflection, and used both sexual distress and sexual pleasure as outcome variables of interest.

Emotion regulation

Emotional states are known to determine human behavior, and emotion regulation plays a crucial role in explaining behaviors (Koole, 2009). Emotion regulation is defined by processes and strategies through which people try to redirect the spontaneous flow of their emotions, managing and controlling them (Zlomke & Hahn, 2010). These processes and strategies aim to modify and/or manage central emotions (e.g., anger), including discrete emotions, mood, stress, and positive or negative emotions (Koole, 2009).

The effects of emotion regulation can be recognized at the behavioral, physiological, cognitive and sentimental levels, which associate emotion regulation with essential outcomes related to mental health, physical health and relationship satisfaction (Koole, 2009; Zlomke & Hahn, 2010).

Emotional suppression and cognitive reappraisal are two emotional regulation processes (Suri et al., 2018). Emotion suppression inhibits expressive behavior of negative emotions and is associated with more negative social outcomes (Vater & Schröder-Abé, 2015). However, it also inhibits the expression of positive emotion (Gross & John, 2003) and may decrease social satisfaction and closeness between people in relationships (Vater & Schröder-Abé, 2015). In addition, it can create a sense of incongruence since the individual feels one thing but expresses another (Gross & John, 2003). People who suppress emotions tend to be more

ruminative, leading to more prolonged exposure to negative emotions and may develop depressive symptomatology (Everaert & Joormann, 2020).

Cognitive reappraisal is an antecedent-focused emotion regulation strategy that intervenes before emotional response tendencies have been fully formed. This can alter the entire emotional trajectory (Gross & John, 2003) and reduce the experience of the negative emotions and behaviors that could arise from it and its emotional impact and depressive levels and is, therefore, associated with more positive social outcomes such as emotional closeness (Everaert & Joormann, 2020).

Regarding sexual health, it should be noted that emotions are markedly interpersonal; emotion regulation is an essential predictor of interpersonal behavior and the quality of romantic relationships (Vater & Schröder-Abé, 2015). The relevance of studying emotion regulation has been highlighted in a recent study that established that high emotion suppression, an emotion regulation strategy, is linked to poorer mental health and worse sexual function (Fischer et al., 2023), but it did not include sexual distress or pleasure as relevant outcomes. Dube et al., (2020), in a recent scoping review of the literature, have pointed in this direction by confirming that difficulties in emotion regulation predict less sexual satisfaction and poorer sexual function. This finding, together with recent research that shows that difficulties in emotion regulation are linked to greater sexual distress (Raposo et al., 2023), paves the way to further consider emotion regulation as a putative correlate of sexual distress and pleasure.

Aim of this study

Sexual dysfunction, characterized by sexual distress and the absence of sexual pleasure, has a high rate of comorbidity with depression and anxiety (Laurent & Simons, 2009), which logically grounds its understanding on models that explain depression and anxiety. In this line, we will use the transdiagnostic approach to psychopathology as a theoretical reference because this approach recognizes comorbidity among clinical categories as an indicator of the need to study latent factors that are predictors of distress across different psychological clinical diagnostics and helps to understand positive emotional experiences. The purpose of the present crossectional quantitative online study was to explore the influence of worry, rumination (brooding and reflection) and emotion regulation (emotional suppression and cognitive reappraisal) on sexual distress and sexual pleasure while controlling the effect of anxiety and depression, therefore expanding on existing previous studies in this field (Fischer et al., 2023, Pascoal et al., 2020; Peixoto & Ribeiro, 2022).

Table 1 Sociodemographic characteristics of the sample

	n (%)
Gender	
Man	86 (20.9%)
Woman	321 (77.9%)
Non-Binary	2 (0.5%)
Agender	1 (0.2%)
Education Level	
9th Grade	13 (3.2%)
12th Grade	164 (39.8%)
Undergraduate	143 (34.7%)
Master´s Degree	68 (16.5%)
PhD	14 (3.4%)
Gender Identity	
Transgender	21 (5.1%)
Cisgender	376 (91.3%)
Sexual Orientation	
Heterosexual	358 (86.9%)
Gay	2 (0.5%)
Lesbian	10 (2.4%)
Bisexual	28 (6.8%)
Queer	3 (6.7%)
Indefinite	6 (1.5%)
Relationship Status	
Cohabitating	98 (24%)
Married	94 (22.8%)
Dating	209 (50.7%)

Methodology

Participants

The present study comprises 412 participants aged 18 to 68 ($M = 30.59$; $SD = 10.97$) whose relationships average 6.87 years ($SD = 7.39$). The sociodemographic characteristics of the sample are described in Table 1.

Procedure

Data were collected between October 2020 and September 2021. The recruitment was performed through an online survey elaborated on Qualtrics that was shared through social networks (snowball sampling like method). The present study was approved by the Ethical and Deontological Committee for Scientific Research of the School of Psychology and Life Sciences (CEDIC) of Lusófona University in Lisbon. Participants were given informed consent before the completion of the survey. General information about the study (objectives, contact details of the responsible researchers), criteria for participation, and

the voluntary nature of the participation were explained. To ensure the anonymity of the participants, the survey did not include any questions that could identify them, and participants' IP addresses and geolocation information were deleted from the database, which was protected by a password only known by the research team. To participate in this study, the following inclusion criteria were considered: 1) understand Portuguese, 2) be over 18 years old, and 3) be in a monogamous relationship for at least one year. This last criterion was adopted because the literature review and measures used were developed for monogamous relationships. In addition, being medicated with or taking psychotropic drugs was an exclusion criterion as these could mask the results.

Measures

Sociodemographic questionnaire

The sociodemographic questionnaire was elaborated within this study to collect general data about the participants (e.g., age, gender, education, gender identity and sexual orientation) and their relationship (e.g., relationship duration).

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983; Pais-Ribeiro et al., 2007)

The HADS measured anxiety and depression, considering how people felt in the past week. Items were answered on a 4-point Likert-type response scale, from 0 to 3 (each item has different scoring categories). The questionnaire comprises two subscales: anxiety (7 items, e.g., "*I feel tense or nervous*") and depression (7 items, e.g., "*I still feel pleasure in the things I used to enjoy*"). Higher scores on the subscales correspond to higher levels of anxiety and depression. In the present study, the Anxiety subscale had Cronbach's alpha of .80, and the Depression subscale had Cronbach's alpha of .68.

Penn State Worry Questionnaire – Abbreviated (PSWQ-A; Hopko et al., 2003; Jiménez-Ros et al., 2019)

This instrument is the shortened form of the Penn State Worry Questionnaire (Crittendon & Hopko, 2006) and aims primarily to measure the severity of worry regardless of its content. It consists of 8 items (e.g., "*Many situations worry me*"), with a 5-point Likert-type response scale ranging from 1 (not at all typical of me) to 5 (very typical of me). Higher scores indicate higher levels of worry. In the present study, the scale had Cronbach's alpha of .93.

Ruminative Responses Scale (RRQ-10; Treynor et al., 2003; Dinis et al., 2011)

The RRQ-10 is a self-report survey measuring the frequency of rumination in response to a depressed mood. Items were answered on a 4-point Likert-type response scale, ranging from 1 (almost never) to 4 (almost always). It comprises two subscales: brooding (5 items, e.g., "*Why can't I handle things better?*") and reflection (5 items, e.g., "*I analyze recent events to try to understand why I am depressed*). The higher the subscale score, the greater the use of brooding or reflection to respond to depressed mood. In the present sample, the brooding subscale had a Cronbach's alpha of .82, and the reflection subscale had a Cronbach's alpha of .78.

Emotional Regulation Questionnaire (ERQ; Gross & John, 2003; Vaz, 2009)

The ERQ is a self-report instrument that measures two dimensions of emotion regulation: Emotion suppression (4 items; e.g., "*When I am feeling positive emotion, I am careful not to express them*") and cognitive reappraisal (6 items; "*When I want to feel more of a positive emotion (such as joy or amusement) I change what I am thinking about*"). Items are answered on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). A higher score on the emotional suppression scale indicates a higher frequency of using suppression, and a higher score on the cognitive reappraisal scale indicates more frequency of using regulatory strategies. Cognitive reappraisal had a Cronbach's alpha of .87 and emotional suppression's alpha of .76.

Female Sexual Distress Scale-revised (FSDS-R; DeRogatis et al., 2008; version used in Pascoal et al., 2020)

The FSDS-R measures female sexual distress, but it has also been used for measuring male sexual distress. It consists of 13 items (e.g., "*How often have you felt frustrated by your sexual problems?*"), with a 5-point Likert-type response scale ranging from 0 (never) to 4 (always). Higher scores are indicative of more significant sexual distress. In the present study, we used Pascoal's translation of the scale (Pascoal et al., 2020). It presented a Cronbach's alpha of .95.

Sexual Pleasure Scale (SPS; Pascoal et al., 2016)

The SPS assesses the sexual pleasure obtained, considering sexual activity, sexual intercourse and sexual intimacy. It comprises 3 items, with a 7-point Likert-type response scale, ranging from 1 (not pleasurable) to 7 (very pleasurable). In the present study, the scale had a Cronbach's alpha of .93.

Data analysis

Data analysis was performed in the IBM SPSS, Version 26 (IBM, 2019). Subjects with missing data in our variables of interest were removed from the analyses. Initially, tests were done to identify the pattern of associations between the variables of interest. Pearson correlation analyses were performed between the variables of interest (i.e., worry, rumination [brooding and reflection], emotion regulation [emotional suppression and cognitive reappraisal], anxiety and depression and sexual distress and sexual pleasure). Furthermore, two hierarchical multiple regressions were conducted: one whose dependent variable was sexual distress and one whose dependent variable was sexual pleasure. These analyses aimed to identify predictors (among the transdiagnostic processes – worry, rumination [brooding and reflection] and emotional regulation [emotional suppression and cognitive reappraisal]) while controlling for the effect of anxiety and depression. For each regression model, anxiety and depression were entered as control variables, and only the variables of interest significantly correlated with the dependent variables were entered as independent variables.

Results

First, and regarding significant associations between the variables of interest (Table 2), sexual distress was associated with anxiety and depression, worry, brooding, reflection, and emotional suppression. These were positive and moderate, except for the association between sexual distress and emotional suppression, which was weak. Regarding sexual pleasure, we found statically significant associations with depression and anxiety, worry, brooding and reflection. All associations were negative and weak, except the association with depression, which was moderate.

Table 3 Multiple linear regression of sexual distress

	B	*SE*	β	*T*	*p*
Model 1: Emotional adjustment factors					
Anxiety	.45	.12	.21	3.70	< .001
Depression	.75	.16	.26	4.71	< .001
Model 2: Emotional and transdiagnostic factors					
Anxiety	.24	.15	.11	1.64	.101
Depression	.68	.16	.24	4.19	< .001
Worry	.03	.06	.04	.61	.542
Brooding	.03	.09	.02	.32	.752
Reflection	.17	.07	.15	2.45	.015
Emotional suppression	.00	.03	.00	.06	.953

Regarding regression analyses, anxiety and depression were introduced as control variables (emotional adjustment factors) in the multiple linear regression model concerning sexual distress. Considering the results concerning correlations, the variables worry, brooding, reflection and emotional suppression entered the model as predictors (transdiagnostic factors). Regarding the pattern of variance explained by the regression, we found that for sexual distress as an outcome, anxiety and depression (model 1 – emotional adjustment factors) explained 17% of the variance (adjusted $R^2 = 0.17$, $F = 34.27$, $p < 0.001$). The integration of the transdiagnostic variables (worry, brooding, reflection, and emotional suppression) in the model represented an increase in variance to 2% ($AR^2 = 0.02$, $AF = 3.01$, $p = 0.018$), explaining 19% of the variance in sexual distress (adjusted $R^2 = 0.19$, $F = 12.98$, $p < 0.001$; Table 3). The result of model 2 (emotional and transdiagnostic factors) suggested that reflection and depression were the only significant predictors of sexual distress after controlling for the effect of anxiety and depression. The results indicated that the higher the levels of reflection and depression, the higher the level of sexual distress.

Table 2 Correlations between the predictors (brooding, reflection, worry, cognitive reappraisal, emotional suppression, anxiety and depression) and the dependent variables (sexual distress and sexual pleasure)

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Brooding	2.3	.8	-								
2. Reflection	2.3	.8	.65***	-							
3. Worry	2.9	1.1	.65***	.53***	-						
4. Cognitive Reappraisal	4.3	1.4	-.05	.13**	-.02	-					
5. Emotional Suppression	3.3	1.4	.09*	.09*	.10*	.12**	-				
6. Anxiety	1.6	.5	.55***	.45***	.67***	-.06	.26***	-			
7. Depression	.9	.3	.41***	.34***	.45***	-.10*	.30***	.59***	-		
8. Sexual Distress	1.3	1.0	.30***	.31***	.31***	-.05	.12**	.36***	.38***	-	
9. Sexual Pleasure	6.3	1.3	-.22***	-.17***	-.20***	.08	-.07	-.21***	-.33***	-.47***	-

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

Table 4 Multiple linear regression of sexual pleasure

	B	*SE*	*β*	*t*	*p*
Model 1: Emotional adjustment factors					
Anxiety	-.06	.17	-.02	-.37	.714
Depression	-1.27	.23	-.32	-5.56	< .001
Model 2: Emotional and transdiagnostic factors					
Anxiety	.13	.21	.04	.59	.553
Depression	-1.23	.23	-.31	-5.24	< .001
Worry	-.04	.09	-.03	-.44	.661
Brooding	-.16	.12	-.09	-1.28	.203
Reflection	-.02	.10	-.01	-.18	.860

In the case of linear regression with sexual pleasure as an outcome, anxiety and depression were introduced as control variables (emotional adjustment factors) and worry, brooding and reflection as predictor variables (transdiagnostic factors). Anxiety and depression (model 1 – emotional factors) were found to explain 11% of the variance (adjusted $R^2 = 0.11$, $F = 41.66$, $p < 0.001$). Integration of the transdiagnostic variables (worry, brooding and reflection) represented a non-significant addition to the variance of sexual pleasure ($AR^2 = 0.01$, $AF = 1.13$, $p = 0.339$; adjusted $R^2 = 0.11$, $F = 15.12$, $p < 0.001$; Table 4). Only depression proved to be a significant predictor of sexual pleasure, with higher levels of depression being associated with lower levels of sexual pleasure.

Discussion

In the present study, we aimed to examine whether transdiagnostic processes such as worry, dimensions of rumination (brooding and reflection), and dimensions of emotional regulation (emotion suppression and cognitive reappraisal) would have an effect on sexual distress and sexual pleasure, controlling for emotional adjustment variables (anxiety and depression), to add to the existing literature on transdiagnostic factors linked to emotional distress and broadening its scope to sexual clinical relevant outcomes: sexual distress and sexual pleasure.

First, concerning the distribution of the variables of interest in our sample, our findings revealed low levels of worry, brooding, reflection, and cognitive reappraisal. In regards to the factors associated with the presence of emotional maladjustment (anxiety and depression), and taking into account the known cut-off points for the Portuguese population (Pais-Ribeiro et al., 2007), in none of the factors we obtained significantly relevant high scores or clinically relevant, which was expected in a community sample such as the current one.

While exploring the associations between the variables under study, we found results consistent with a previous study conducted by Pascoal et al., (2020) that equally found an association between rumination, sexual distress and sexual pleasure. However, our study offers new insights by establishing these associations with two specific dimensions of rumination: brooding and reflection. Specifically, while sexual distress was associated with both dimensions of rumination, sexual pleasure was only related to brooding as a specific dimension of the rumination construct. Nevertheless, regression analyses found that only reflection substantially influenced the prediction of sexual distress. In contrast, rumination constructs did not exhibit any effect on sexual pleasure. Reflection is linked to gaining insight into the source of distress by taking a rational and open-minded approach, considering both the positive and negative aspects of events. However, self-reflection can be mentally draining and face resistance, leading to cognitive traps, such as incessantly pondering unanswerable questions due to insufficient data. This process can evoke fear, helplessness, and anger (Lengelle et al., 2016). The relationship between reflection and mental health remains unclear, but it is essential to emphasize that reflection is not entirely harmless. Isolated or low levels of reflection may not pose problems, but when they persist or intensify, they could trigger more maladaptive processes (Bernstein et al., 2019). Current models fail to explain why some individuals with a particular combination of adaptive and maladaptive thoughts are susceptible to frequent reflection and associated mood symptoms while others are not. Furthermore, seemingly neutral or even adaptive thinking styles, like reflection, can become problematic concerning other dimensions (Bernstein et al., 2019). Considering our results, reflection can play a role in understanding and addressing the underlying causes or contributing factors of sexual distress.

Among factors of emotion regulation, we only found a weak association between emotional suppression and sexual distress, partially expected from a theoretical point of view. Considering the theoretical framework of emotional suppression, which advocates that this process causes emotional withdrawal in interpersonal relationships, it is expected to translate into interpersonal adverse emotional outcomes such

as the experience of sexual distress (Frost & Donovan, 2021; Vater & Schröder-Abé, 2015). Cognitive reappraisal may be adequate to eliminate the emotional costs of negative emotional activation and, due to its adaptive nature, may not be involved in the experience of sexual distress, thus reducing the impact on negative emotional experience. It is unknown whether emotional suppression can cause sexual distress or whether sexual distress and its' impact on relationships can trigger emotional suppression as a coping strategy (Gross & John, 2003) to deal with negative emotions linked to sexuality. This hypothesis of bidirectionality may explain our results because emotional suppression has a partially adaptive character. If it is triggered by sexual distress, it may be effective in preventing or mitigating it.

Pertaining to emotional adjustment factors (i.e., anxiety and depression), in line with previous studies (Forbes et al., 2017), our findings pointed to a relation between higher levels of anxiety and depression and higher levels of sexual distress and lower reported sexual pleasure. However, regression analyses suggested that only depression significantly predicted sexual distress and pleasure. This supports literature that takes a dimensional approach to sexual problems and includes them in the internalization spectrum (Forbes et al., 2017). The relationship between depression and sexual distress can be better understood by examining the unique characteristics of depression compared to anxiety. In cases where the depressive mood is a response to circumstances, it is expected that sexual response inhibition will also occur as a reaction to the adverse circumstances inducing the depressed mood. However, certain clinical depression states exhibit metabolic changes in the central nervous system that can lower the capacity for sexual excitation beyond the influence of current circumstances (Bancroft et al., 2003). The tripartite model of depression and anxiety, proposed by Watson et al., (1995), sheds light on this phenomenon. While depression and anxiety are characterized by high negative affect, depression is associated explicitly with anhedonia or low positive affect, whereas anxiety is linked to somatic arousal. When considering sexual dysfunction within this model, it is plausible that it shares a common basis of high negative affect observed in depression. Moreover, specific sexual disorders such as low sexual desire may align with the lack of pleasure-seeking seen in depression while in other cases, conditions like diminished arousal or dyspareunia may display resemblances to anxiety in terms of physiological arousal components (Laurent & Simons, 2009). Furthermore, the effect of anxious arousal on sexuality can vary, leading to either a reduction or enhancement of sexual desire and performance (Graham et al., 2004). To understand how depression impacts sexual functioning, it is crucial to consider the intricate interplay between psychological and physiological factors and the specific characteristics and origins of the depressive state. The role that depression plays in understanding sexual distress in the current study is in line with existing explanatory models of sexual dysfunction that accentuate the detrimental role of negative mood on sexual response (Nobre, 2023; Nobre & Barlow, 2023).

Concerning the factors explaining sexual distress, when controlling for the effect of anxiety and depression, only reflection, a component of rumination, emerges as a significant factor, appearing as an significant variable for understanding sexual distress. Unlike Pascoal et al.'s (2020) study, where worry also appeared as a significant variable, the present study did not retrieve similar results. Despite considering these cognitions of the preservative type (worry and rumination) as presenting common characteristics content-wise, since they are constant and repetitive, worry can further serve as an adaptive emotional regulation strategy by mobilizing the individual to solve problems (Sweeny & Dooley, 2017), which is not characteristic of rumination as it does not usually have an adaptive valence. In this sense, the results specify the type of perseverative cognition more adequately associated with sexual distress. This finding aligns with previous literature concerning the reflective dimension of rumination. Here, despite the predominantly adaptive nature that composes reflection, this factor mainly affects sexual distress as it demonstrates that characteristics of a more rational outlook on events arenot necessarily positive (Newman & Nezlek, 2019). It should be highlighted that although significant, the contribution of this factor is marginal, especially considering the impact of depression. This result supports the recommendation for further investigation using more robust methodologies and diverse samples.

In a similar vein, only depression shows an effect on sexual pleasure. Since depression is a risk factor for the development and maintenance of sexual dysfunction and sexual dysfunction is characterized by the experience of sexual distress and decreased pleasure (American Psychiatric Association, 2013), these results are in line with the literature that regularly and consistently demonstrates that there is substantial comorbidity between depression, and depressed mood states, and sexual dysfunction (Hald et al., 2019). We expected that emotional suppression would affect the final model of sexual distress, given its impact on interpersonal relationships and their outcomes, but this was not the case (Koole, 2009). We reinforce that the lack of results may be due to the type of emotion regulation measure applied since the measure applied was a trait emotion regulation measure. Considering that this study is conducted with a community sample, perhaps applying a measure of difficulties with emotion regulation while considering the specific role of worry and the dimensions of ruminations would have given different results. This possibility is reinforced by recent research

that has established that repetitive negative thinking is a mediator between difficulties in emotion regulation and sexual distress (Raposo et al., 2023). Taken together, the current results stress that outcomes of sexual activity should be approached using a mental health lenses.

Limitations and future research

In interpreting the findings of this study, it is essential to acknowledge certain limitations. Given its association with psychological distress and emotional maladjustment, difficulties with emotion regulation, i.e., the difficulties in applying strategies that regulate emotional states, may be the most appropriate dimension to understand the experience of sexual distress as recent research on emotion dysregulation and sexual function and satisfaction seem to indicate (Fischer et al., 2022). Using a different approach to emotion regulation may bring us a different pattern of results, as a recent study that looks at difficulties with emotion regulation strongly suggests (Raposo et al., 2023). The current study focused on effective strategies for emotion regulation for anticipated or stressful events despite their concurrent adverse effects. Despite the recent acknowledgement of the relevance of difficulties with emotion regulation in the study of sexual distress (Raposo et al., 2023), this factor was not addressed in the current study.

Furthermore, it is essential to recognize that the present study employed a crossectional design, which limits our ability to establish causality. To address this limitation and pave the way for more comprehensive investigations into the temporal relationships and potential causal pathways between emotion regulation, sexual distress, and other relevant variables, we propose some directions for future research. A longitudinal approach would provide monitoring changes over time and shed light on the dynamic nature of the association between emotion regulation and sexual well-being. By repeatedly assessing participants' strategies for regulating emotions and their experiences of sexual distress or pleasure at multiple time points, it is possible to discern patterns and potential causal connections.

The current sample presents high levels of emotional adjustment and low levels of distress which may mask the real contribution that some of the factors under study may have on clinical or subclinical samples. Therefore, studies with clinical samples with a formal diagnosis of sexual dysfunction would also help to clarify and specify a transdiagnostic model to understand sexual distress. Randomized controlled trials may further help establish causal relationships and provide insights into potential clinical interventions. By embracing these research methodologies and designs, future investigations can build upon our initial findings and offer a more comprehensive understanding of the relationships between emotion regulation, sexual distress, and other relevant variables.

Additionally, the study sample was not diverse, primarily consisting of individuals reporting high levels of sexual pleasure and relatively low levels of sexual distress, anxiety, and depression. This lack of variability may have constrained the detection of significant associations among the chosen variables, limiting the generalizability of our findings. Future studies should aim to include more diverse samples to enhance the external validity and increase the generalizability of the results.

Conclusion

This study provides valuable insights into the complex relationship between sexual distress, sexual pleasure, and transdiagnostic factors. The findings highlight the importance of considering specific dimensions within the transdiagnostic framework when exploring sexual distress. The significant correlations between sexual distress and emotional and transdiagnostic factors emphasize the interconnected nature of sexual health and psychopathology. Moreover, the negative associations between sexual pleasure and depression, anxiety, worry, and brooding shed light on the factors contributing to sexual well-being. The important role that depression plays in our models sustain the centrality of addressing sexual health outcomes a dimensional and transdiagnostic approach to mental health. The identification of reflection as a significant predictor of sexual distress, independent of emotional factors, underscores its role in understanding and addressing sexual distress in community samples. While our study does not provide specific clinical practice guidelines, it does offer valuable insights that can inform future studies regarding therapeutic approaches. Particularly noteworthy are our findings that elucidate the significant role of the reflective dimension of rumination in understanding sexual distress and outline the repercussions of depression on sexual pleasure. Eventhough our study was not developed with a clinical sample, it suggests that clinicians can consider these insights when assessing and working with individuals facing sexual distress and dimished pleasure. Therefore, our research suggests the importance of integrating these factors into clinical assessments and interventions for individuals dealing with sexual distress and sexual pleasure issues, with the potential for future research to refine its comprehension and possible integration in therapeutic approaches in this context. Overall, this research contributes to a deeper understanding of sexual health and paves the way for targeted interventions that address specific dimensions of transdiagnostic factors to promote sexual well-being.

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Data availability The datasets generated and analyzed during this investigation are available from the corresponding author upon reasonable request.

Declarations

Ethical approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethical and Deontological Committee for Scientific Research of the School of Psychology and Life Sciences (CEDIC) of Lusófona University in Lisbon.

Informed consent Informed consent was obtained from all participants included in the study.

Conflict of interest The authors have no conflicts of interest to declare.

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