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Trait hedonic capacity correlates with sexual pleasure and motives for sexualized drug use in young adults

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Abstract
Although pleasure is a primary motivator for sexual activity, research into the mechanisms facilitating pleasurable sexual experiences is limited. The present research adopts a self-regulatory perspective on sexual pleasure, investigating individuals' capacity to shield hedonic activities from distracting thoughts (*trait hedonic capacity*) as a correlate of sexual pleasure and sexualized drug use. Study 1 ($N=247$) demonstrates that young adults with higher trait hedonic capacity experience more sexual pleasure and are less prone to cognitive distraction during partnered sexual activities. Pre-registered Study 2 replicates these findings while accounting for demand effects ($N=182$, $n=86$). Expanding on these findings, pre-registered Study 3 ($N=903$) shows that young adults with lower trait hedonic capacity are more inclined to use alcohol as a means of coping with cognitive distraction during sexual activity. Exploratory moderation analyses suggest that this is particularly true for women and individuals with higher levels of stress. In summary, low trait hedonic capacity is associated with lower sexual pleasure and a tendency to use alcohol with the motivation to cope with distracting thoughts during partnered sexual activity.

Keywords Sexual pleasure · Self-regulation · Cognitive distraction · Sexualized drug use · Individual differences

Introduction

Worldwide people are having less sex. Large-scale longitudinal studies conducted globally indicate that individuals are currently less sexually active compared to the past two decades (Beutel et al., 2018; Burghardt et al., 2020; Herbenick et al., 2022; Kontula, 2015; Twenge et al., 2017a). Despite being relatively small, this trend warrants scientific investigation and explanation, considering that sexual activity serves various important functions on both individual and interpersonal levels. For instance, sex reduces stress (Ein-Dor & Hirschberger, 2012), helps falling asleep (Oesterling et al., 2023), boosts the immune system (Charnetski & Brennan, 2004), and enhances the emotional connection between couples (Dewitte & Mayer, 2018; Gadassi et al., 2016; Muise et al., 2014).

In addition to these significant functions, sex can also simply be pleasurable. While motives for engaging in sex are diverse and can vary based on gender, relationship context, sexual orientation, and cultures, sexual pleasure is consistently cited as one of the primary reasons for becoming sexually active (Birnbaum, 2010; Hatfield et al., 2010; Meston & Buss, 2007; Meston & Stanton, 2017; Wamoyi et al., 2011). For instance, in a recent study of 229 women in a relationship who identified as lesbian, bisexual, queer or questioning, it was found that the predominant reasons for sexual activity across these different sexual orientations were pleasure, physical attraction, and emotional attachment (Wood et al., 2014).

Despite being a commonly named driver for having sex sexual pleasure has long been neglected in politics, health interventions, and research alike (Ford et al., 2019; Laan et al., 2021). As a result, we have only limited understanding of the mechanisms that allow people to have pleasurable sexual experiences—including self-regulatory processes. The present research aims to address this gap by bridging research on self-regulation and sexual functioning. We

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argue that sexual pleasure is linked to individuals' ability to shield hedonic activities from *intrusive thoughts*, which encompass thoughts related to long-term goals or values that disrupt a hedonic activity (e.g., thoughts about duties during leisure time). Recent research indicates that individuals vary in their capacity to shield hedonic activities, and these differences in *trait hedonic capacity* are positively associated with affective well-being, life satisfaction, and mental health (Bernecker & Becker, 2021). By integrating this research with studies on cognitive factors in sexual functioning (e.g., Newcombe & Weaver, 2016), our aim was to investigate whether people with higher trait hedonic capacity experience greater sexual pleasure and are less prone to distraction by conflicting thoughts. In line with previous work, we define sexual pleasure as "physical and/or psychological satisfaction and enjoyment derived from solitary or shared erotic experiences" (Ford et al., 2019, p. 218). Furthermore, we aimed to investigate whether individuals with low trait hedonic capacity, who are presumed to experience more cognitive distraction during sex, exhibit a greater inclination to use substances before or during sexual activity as a means to cope with distracting thoughts. Considering that sexualized drug use poses significant risks to health and safety (Guerra et al., 2020), understanding the motives driving substance use in this context is crucial. We hypothesize that the downregulation of cognitive distraction may serve as one such motive, particularly among individuals low in trait hedonic capacity (Becker & Bernecker, 2024).

Trait hedonic capacity and gender differences

Individuals indulge in eating tasty food, taking walks in nature, practicing yoga, and engaging in sexual activity to experience the pleasurable affective states these activities offer (Bernecker & Becker, 2021; Papies et al., 2008). However, the pursuit of immediate pleasure is not always successful; individuals sometimes fail to attain the positive affective states they seek. One major impeding mechanism is the occurrence of intrusive thoughts—thoughts concerning long-term goals or values that conflict with the present hedonic activity (Bernecker & Becker, 2021). For example, individuals may think about their dietary goals while attempting to relish a tasty pizza, or think about everyday responsibilities during sexual activity (Dove & Wiederman, 2000). The conflict between the hedonic activity and the long-term goal can either be direct, as when the hedonic activity directly contradicts the long-term goal (e.g., eating pizza undermines the goal to lose weight), or indirect, as when the hedonic activity consumes resources (e.g., attention) that cannot simultaneously be allocated to the long-term goal (Kleiman & Hassin, 2011).

According to Goal System Theory (Kruglanski et al., 2002), the activation of conflicting alternative goals undermines success in pursuing focal goals (Shah & Kruglanski, 2002). This is because active alternative goals draw away cognitive and motivational resources (e.g., attention, commitment) from the focal goal. Within this theoretical framework, goal shielding refers to the automatic process by which focal goals are protected against alternative goals (Shah et al., 2002). This process of goal shielding is also relevant for the pursuit of hedonic goals and might be the reason why some people experience less intrusive thoughts than others (Bernecker & Becker, 2021). Specifically, individuals with higher trait hedonic capacity experience fewer intrusive thoughts about their long-term goals during hedonic activities, resulting in greater hedonic success (e.g., experiencing greater enjoyment and positive affect). However, priming individuals with long-term goals diminishes this advantage and increases intrusive thoughts, irrespective of their trait hedonic capacity (Bernecker & Becker, 2021, Study 3). This suggest that trait hedonic capacity is not about suppression of intrusive thoughts but rather about not having these thoughts in the first place.

Previous studies on trait hedonic capacity have encompassed a wide range of hedonic activities, including relaxation, spending time in nature, and practicing yoga. The present research aims to extend these findings to sex as a relevant hedonic activity. Instead of being causally related, we believe that trait hedonic capacity reflects cross-situational cognitive processes (i.e., the experience of intrusive thoughts) that should also extend to individuals' sexual activities. The causes of intrusive thoughts are not yet well understood, and unsuccessful goal shielding could be one factor situated at the individual level. Other factors may be situational (e.g., high stress levels) or cultural (e.g., gender norms regarding the division of household chores).

Building on this last point, previous studies have documented gender differences in trait hedonic capacity. In a sample of 1'230 participants, women reported lower trait hedonic capacity than men (Cohen's $d = 0.25$, Bernecker & Becker, 2021). Women tend to experience more intrusive thoughts during hedonic activities than men, which may also extend to their sexual activities. These findings align with studies indicating that women are less likely than men to experience orgasms during partnered heterosexual activity (Armstrong et al., 2009). During casual sex, women experience orgasms 32% as often as men, and in established relationships, they experience orgasms 79% as often (Armstrong et al., 2009). Moreover, women appear to experience less sexual desire (Frankenbach et al., 2022; but see Schultheiss et al., 2023), which could be precursor or consequence of lower orgasm frequency. Certainly, orgasm frequency should not be solely targeted as an indicator of

sexual pleasure; however, the literature has been lacking more comprehensive approaches and psychometric measures of sexual pleasure until recently (Ford et al., 2019; Laan et al., 2021).

Cognitive distraction and sexual functioning

Since its beginning research on sexual functioning has been interested in the role of cognitive processes. Masters and Johnson (1970) introduced the concept of 'spectatoring', which refers to individuals monitoring their own sexual activity rather than fully engaging in its sensory aspects. Expanding upon their work, Barlow (1986) proposed cognitive interference as a cognitive process that undermines male sexual functioning. Barlow argued that sexually dysfunctional men suffer from an attentional focus on the consequences of their (lack of) performance (i.e., [not] achieving an erection), which reduces their attention to sexually arousing cues. However, his theory has lacked empirical support to date.

Within a more established theoretical framework, namely the Dual Control Model of sexual behavior (Bancroft et al., 2009; Bancroft & Janssen, 2000), sexual responses arise from the interplay between sexual inhibitory and sexual excitatory processes within the central nervous system. Fears regarding performance and negative consequences of sexual intercourse are conceptualized as inhibitory processes. Moreover, individuals vary in their propensities for sexual inhibition and sexual excitation, which influence their sexual behavior. In this framework, inhibition is a broad concept encompassing inhibition arising from various threats (e.g., performance failure) and aspects of the situation or relationship (e.g., scent, power dynamics; Graham et al., 2004). Extensive research has linked individuals' inhibition propensity to reduced sexual desire, impaired sexual functioning, and sexual addiction/compulsivity (for an overview see Bancroft et al., 2009). Research on sexual satisfaction and pleasure remains scarce, with only one study linking low inhibitory propensity to orgasm 'problems' in women (Tavares et al., 2018).

Conceptually related research on *cognitive distraction* has focused on thoughts related to performance and bodily appearance and their impact on sexual functioning in women (Dove & Wiederman, 2000). Performance-related distraction describes thoughts about women's performance with regard to pleasing their partner. Appearance-related distraction refers to thoughts about their body and how it looks during sexual activity. Dove and Wiederman (2000) found that women with more cognitive distraction reported lower sexual esteem, less sexual satisfaction, and less consistent orgasms. These findings were replicated by Newcombe and Weaver (2016), who additionally included a subscale for everyday-related distractions, encompassing thoughts about everyday duties, responsibilities, and past and future experiences. In their sample of women, all three types of cognitive distractions were associated with lower sexual satisfaction, and were negatively related to women's trait mindfulness (Newcombe & Weaver, 2016). Women who were better able to focus on the present experienced less cognitive distraction and greater satisfaction. Along the same lines recent research suggests that 'sexual skills' such as ability to fully concentrate on sexual interaction predicts orgasm frequency in women (Kontula & Miettinen, 2016).

Using alcohol as a means of coping with cognitive distraction

When individuals experience cognitive distraction during sexual activity, an important question arises: How do they cope with it? Research on sexualized drug use indicates that individuals intentionally use psychoactive substances immediately before or during sexual activities to enhance, prolong, and/or intensify their sexual experiences (Bohn et al., 2020; Jaspal et al., 2021). These practices can lead to adverse physical and psychological health outcomes (Guerra et al., 2020). For example, individuals under the influence of disinhibiting or sedating substances are more likely to engage in high-risk sexual behaviors, such as unprotected sex (Baskin-Sommers & Sommers, 2006; Drydakis, 2022).

Thus far, little is known about motives behind the use of sexualized drug use. Therefore, we adopted a well-established framework on motives of substance use, which distinguishes between coping and enhancement motives as the two most common reasons people use substances such as alcohol (Cooper, 1994; Cox & Klinger, 1988). Individuals who drink alcohol driven by *enhancement motives* aim to enhance the physical or emotional pleasure of an experience. Individuals who drink alcohol driven by *coping motives* aim to cope with threats to the self or negative emotions. Studies show that the enhancement motive is relatively more endorsed than the coping motive and is positively associated with drinking frequency and amount (Cooper, 1994). However, coping motives are more strongly associated with maladaptive patterns of use than enhancement motives, such as drinking problems (Cooper et al., 2015).

Incorporating this framework into our theoretical considerations, we aimed to investigate whether individuals with lower trait hedonic capacity are more likely to use substances (e.g., alcohol) to cope with heightened cognitive distraction during sexual activity. Two previous studies found that individuals with lower trait hedonic capacity are generally more prone to consume alcohol to cope with negative thoughts or stress (Becker & Bernecker, 2024). However, no relationship was observed between trait hedonic

capacity and the enhancement motive. Based on these findings, we hypothesized that individuals lower in trait hedonic capacity would be more inclined to use alcohol to cope with cognitive distraction during sexual activity. Although individuals may perceive sexualized substance use as an effective means to reduce cognitive distraction during sex, this strategy poses serious risks to individuals' health and safety (Guerra et al., 2020; Jaspal et al., 2021). Therefore, it is crucial to understand the factors motivating substance use in this context where individuals, and especially women, are vulnerable (Burke et al., 1988; Hibbert et al., 2021; Stets & Pirog-Good, 1989).

The present research

This research examines trait hedonic capacity as a correlate of sexual pleasure and sexualized drug use. We tested the following four hypotheses: First, we hypothesized that trait hedonic capacity is positively related to sexual pleasure (H1), and second, negatively related to cognitive distraction during sex (H2). Third, we hypothesized that cognitive distraction undermines sexual pleasure (H3), conceptually replicating Dove and Wiederman (2000). Fourth, we hypothesized that trait hedonic capacity is negatively related to coping motivation when using substances before or during sex (H4). We conducted three studies: Study 1 and 3 had cross-sectional designs and included men and women. Study 2 had two measurement points spaced 1 week apart and focused on women. In Studies 1 and 2, we controlled for individuals' trait mindfulness to examine the incremental effects of trait hedonic capacity on sexual pleasure and cognitive distraction, beyond this known predictor. All study materials, data, and code are publicly available on the Open Science Framework: https://osf.io/xb5qv/.

Study 1

The aim of this study was to establish the hypothesized relationships between trait hedonic capacity, sexual pleasure, and cognitive distraction in a cross-sectional design. Despite our literature search, we were unable to find a comprehensive measure of sexual pleasure at the time this study was conducted (but see Borgmann et al., 2023). Most studies on sexual pleasure have assessed orgasm frequency or sexual satisfaction, which do not fully align with the comprehensive definition of sexual pleasure (Ford et al., 2019), encompassing physical (e.g., arousal) and psychological aspects (e.g., safety), as well as enjoyment (e.g., feelings of ecstasy). Therefore, we developed 15 items in line with this definition and examined their factor structure and confirmatory validity in this study, utilizing orgasm frequency and sexual satisfaction as more established and related concepts.

Method

Sample and drop-out

For this study, we recruited a community sample of $N = 247$ participants (174 female, 72 male, 195 students, M_{age} = 23.71, $SD = 6.69$, Range: 18 to 63) from Switzerland and the Netherlands as part of a psychology major class project. Students from both classes shared the link to the 10-minute online survey on their social media profiles. To participate, individuals had to be at least 18 years old and having had partnered sex in the last two months. The majority of participants were in a committed relationship ($n = 190$), while some were single ($n = 33$), a few were in an open relationship ($n = 3$), and a few were married ($n = 2$). Participants who indicated to be in a relationship reported an average relationship duration of 40.46 months ($SD = 44.33$). In most relationships partners were of opposite gender ($n = 185$) and in some of same gender ($n = 13$). We did not offer any compensation for participation. Perhaps as a result, $n = 42$ participants dropped out before the end of the survey, leaving data from $n = 205$ participants to analyze for the main research question. Dropout analyses confirmed that participants who dropped out did not significantly differ in trait hedonic capacity, $t(245) = 1.14$, $p = .254$, or relationship duration, $t(213) = 0.38$, $p = .707$, age, $t(245) = -1.09$, $p = .277$, or gender, $\chi^2 = 0.22$, $p = .897$.

Measures

The following measures were administered in German in the Swiss subsample and in English in the Dutch subsample. We controlled for subsample (1 = Swiss, 2 = Dutch) to adjust for possible effects of language or culture.

Trait hedonic capacity Trait hedonic capacity was assessed with the Trait Hedonic Capacity Scale (Bernecker & Becker, 2021). This validated scale consists of 10 items measuring *hedonic success* (e.g., "I am good at pursuing my desires") and the experience of *intrusive thoughts* (e.g., "I often think about my duties even while I am enjoying a good moment", recoded). Items were rated on a 5-point scale from 1 = *Not at all* to 5 = *Very much* (Cronbach's $\alpha = 0.89$). Higher scores reflect higher trait hedonic capacity.

Orgasm frequency We asked participants to refer to their "partnered sex life recently" and assessed orgasm frequency with 2 items (i.e., "I do reach an orgasm", "I have difficulties

reaching orgasm [reverse scored], 1 = *Never* to 5 = *Always*). Items were averaged to one indicator of orgasm frequency (ρ = .77, $p < .001$).

Sexual satisfaction We assessed sexual satisfaction in the Swiss arm of the study with the Sexual Quality of Life Scale (Abraham et al., 2008; Symonds et al., 2005; Villwock, 2018). The scale consists of 9 items ("When I think about my sex life, I feel frustrated", 1 = *Do not agree at all* to 6 = *Fully agree*, Cronbach's α = 0.89). Items were averaged to one indicator with higher scores reflecting greater satisfaction.

Sexual pleasure We developed 15 items in accordance with Ford et al.'s (2019) definition of sexual pleasure. The items covered physical (e.g., "I am very aroused during sex"), and mental aspects of sexual pleasure (e.g., "I can fully express myself"), as well as enjoyment (e.g., "The sex gives me intense pleasure."). Participants were asked to indicate how often they experience the described sensations during partnered sex recently and responded with 1 = *Never* to 5 = *Always*. A full list of items can be found in the Appendix (see Appendix Table 5).

Cognitive distraction Last, we assessed cognitive distraction with regard to thoughts related to performance (e.g., "I am worried about my partner's satisfaction with my actions while engaged in sexual activity", Cronbach's α = 0.88, Dove & Wiederman, 2000) and everyday-related distractions (e.g., "During sexual activity, I am distracted by things that happened earlier in the day.", Cronbach's α = 0.91, Newcombe & Weaver, 2016). Participants could respond with 1 = *Never* to 5 = *Always*.

Results

Scale development

We first explored the factor structure of the 15 items designed to measure sexual pleasure and conducted parallel analyses using the "psych" package (Revelle, 2024) in R (R Core Team, 2023, version 4.2.2). The analyses revealed a single-factor structure. To ascertain whether all items loaded onto this factor, we performed a confirmatory factor analysis using maximum likelihood estimation without rotation and extracting one factor. Results indicated that 14 items loaded above .40, which is considered a "fair" factor loading (Tabachnick & Fidell, 2007). However, one item (i.e., "I perceive my body to be desirable") had a loading of .39. Given that removing this item from the scale did not alter the reported results, and considering the item loading was close to the threshold, we decided to retain it. The scale demonstrated good internal consistency (Cronbach's α = 0.89) and exhibited positive correlations with orgasm frequency and sexual satisfaction (see Table 1), two related concepts, thereby supporting the validity of the scale.

Confirmatory analyses

Sexual pleasure As predicted, trait hedonic capacity was positively correlated with orgasm frequency, sexual satisfaction, and sexual pleasure (see Table 1). The effects were small in size (Cohen, 1988). We conducted three multiple regression analyses and controlled for gender (0 = female, 1 = male), age, relationship status (0 = relationship,

Table 1 Means, standard deviations, and zero-order correlations with confidence intervals for Study 1

Variable	M	SD	1	2	3	4	5
1. Trait hedonic capacity	3.31	0.65					
2. Orgasm frequency	3.68	1.07	.15* [.02, .29]				
3. Sexual satisfaction	4.12	0.72	.26** [.08, .42]	.38** [.20, .54]			
4. Sexual pleasure	4.00	0.55	.32** [.19, .44]	.47** [.35, .57]	.73** [.63, .81]		
5. Performance-related distraction	2.50	0.83	−.27** [−.39, −.13]	−.23** [−.36, −.10]	−.28** [−.45, − .10]	− .40** [−.51, − .28]	
6. Everyday-related distraction	1.86	0.66	−.41** [−.52, −.29]	−.33** [−.44, −.20]	−.45** [−.59, − .28]	−.51** [−.61, −.40]	.30** [.17, .42]

M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$

1 = single), and language (0 = German, 1 = English). Age was not significantly related to pleasure, β = −0.08, b = −0.01, SE = 0.001, t = -1.13, p = .259, and orgasm frequency, β = 0.04, b = 0.01, SE = 0.01, t = 0.56, p = .572, but significantly negatively related to satisfaction, β = −0.23, b = −0.02, SE = 0.01, t = -2.55, p = .012. Further, in line with H1 trait hedonic capacity was a positive significant correlate of sexual pleasure, β = 0.31, b = 0.26, SE = 0.06, t = 4.46, p < .001, and sexual satisfaction, β = 0.29, b = 0.35, SE = 0.11, t = 3.22, p = .002. However, the relationship between trait hedonic capacity and orgasm frequency was not significant when demographic variables were controlled, β = 0.06, b = 0.10, SE = 0.11, t = 0.88, p = .379. The unstandardized regression coefficients (b) represent the change in the outcome variable on the measurement scale for a one-point increase in the predictor variable. Specifically, a one-point increase in trait hedonic capacity corresponds to a 0.26-point increase in pleasure and a 0.29-point increase in satisfaction.

Cognitive distraction Consistent with H2, trait hedonic capacity exhibited a negative association with performance- and everyday-related cognitive distraction during sexual activity, demonstrating a small to medium effect size (Cohen, 1988). After controlling for gender, age, relationship status, and language, trait hedonic capacity showed negative relationships with both performance-related distraction, β = −0.27, b = −0.33, SE = 0.09, t = -3.80, p < .001, and everyday-related distraction, β = −0.37, b = −0.37, SE = 0.07, t = -5.60, p < .001. Furthermore, supporting H3, both forms of cognitive distraction were negatively associated with sexual pleasure, sexual satisfaction, and orgasm frequency, exhibiting small to medium effect sizes (see Table 1).

Exploratory analyses

Mediation analyses To explore if trait hedonic capacity and cognitive distraction account for the same variance in sexual pleasure, we conducted two mediation analyses using the *mediation* package in R (Tingley et al., 2014). The model estimated quasi-Bayesian confidence intervals with robust standard errors based on 5000 simulations. First, we tested whether everyday-related thoughts mediate the relationship between trait hedonic capacity and sexual pleasure. The indirect effect was significant, ACME = 0.15, 95% CI [0.08; 0.24], and so was the proportion mediated, prop. mediated = 0.56, 95% CI [0.31; 0.96]. Second, we tested whether performance-related thoughts mediate the relationship between trait hedonic capacity and sexual pleasure. Similarly, the indirect effect was significant, ACME = 0.07, 95% CI [0.03; 0.13], and the proportion mediated was also significant, prop. mediated = 0.27, 95% CI [0.11; 0.56]. The direct effect of trait hedonic capacity on pleasure was not significant when controlling for both forms of distraction in a multiple regression model, β = 0.09, b = 0.08, SE = 0.05, t = 1.45, p = .147. However, because this data is correlational, we cannot infer any causal mechanisms from this pattern (Fiedler et al., 2011). Instead, it suggests that trait hedonic capacity shares overlapping variance with both forms of cognitive distraction in predicting sexual pleasure.

Gender differences Lastly, we examined gender differences in our main variables using independent t-tests (0 = women, 1 = men). Consistent with prior studies, women reported lower trait hedonic capacity, d = 0.50, p < .001, and a lower frequency of orgasms compared to men, Cohen's d = 0.86, p < .001. However, we observed no significant gender differences in sexual satisfaction, Cohen's d = 0.01, p = .962, or sexual pleasure, Cohen's d = 0.25, p = .111. Regarding cognitive distraction, both genders experienced similar levels of performance-related thoughts, Cohen's d = 0.10, p = .501. However, women reported experiencing more frequent everyday-related distraction compared to men, Cohen's d = 0.39, p = .011.

Additionally, we examined whether gender moderated any of the predicted relationships reported above using moderated regression analyses (Aiken & West, 1991). However, none of these interactions were significant, t < 1.48, p > .140. It appears that the relationships between trait hedonic capacity, cognitive distraction, and sexual pleasure do not differ between men and women in our sample. However, it is important to note that the unequal distribution of gender in the sample and the relatively small sample size has limited the power to test these interaction effects adequately (Sommet et al., 2023).

Discussion

The findings largely supported our hypotheses. First, trait hedonic capacity was negatively associated with sexual pleasure and sexual satisfaction. The association with orgasm frequency was small and not robust against the control of demographic variables. Second, trait hedonic capacity was negatively correlated with cognitive distraction during sexual activity, suggesting shared mechanisms causing intrusive thoughts in other hedonic activities and cognitive distraction during partnered sexual activity. As mentioned, these mechanisms might lie on the individual (e.g., goal shielding), situational (e.g., high stress levels) or cultural level (e.g., gender norms). Although gender did not moderate any of the observed pathways, we observed that women reported experiencing more everyday-related distraction

than men, aligning with previous research indicating that women in heterosexual couples often bear a higher mental load regarding chores and responsibilities compared to men (Dean et al., 2022). This finding also corresponds to gender differences observed in trait hedonic capacity and intrusive thoughts specifically (Bernecker & Becker, 2021).

One limitation of the study is that the sample disproportionately represents young individuals in relationships and those who have been sexually active within the last two months. This criterion was implemented to enhance retrospective self-reports on sexual pleasure but may have resulted in a reduced variance of sexual pleasure, as individuals who derive less pleasure from sex might engage in it less frequently. Another limitation pertains to the cross-sectional design, which permits participants to respond consistently, potentially increasing overlap between semantically related measures.

Study 2

To address this limitation, Study 2 incorporated two measurement points spaced one week apart. We assessed trait hedonic capacity at T1 and measured sexual pleasure and everyday-related distraction at T2. This study focused specifically on women, as it included a mindfulness training aimed at enhancing women's sexual experiences. However, the training did not yield significant improvements in sexual pleasure; we controlled for group membership (intervention vs. control group) in the main analyses. One advantage of this study is that we were able to examine whether the effects of trait hedonic capacity remain robust after controlling for trait mindfulness (assessed at T1), a known predictor of sexual pleasure and cognitive distraction (Newcombe & Weaver, 2016). While trait mindfulness is conceptually related to trait hedonic capacity and the two are positively correlated (Bernecker & Becker, 2021), trait hedonic capacity specifically pertains to individuals' affective experiences during hedonic activities. Thus, it is expected to predict variance in sexual pleasure beyond what is accounted for by trait mindfulness, which is a more general measure of present-moment awareness. The study was pre-registered on aspredicted.org: https://aspredicted.org/6g5q6.pdf. We pre-registered that women with higher trait hedonic capacity report less cognitive distraction during sex and more sexual pleasure (H2a and H2b in the pre-registration).

Method

Participants

Aligned with the pre-registered goal of recruiting at least 140 women for the study, a total of $N = 182$ women completed T1. Of these, $n = 86$ participants ($M_{Age} = 23.51$ years, $SD = 5.02$ years, ranging from 19 to 54 years, 71 students) also completed T2 one week later (representing a 47% completion rate). To participate in the study, individuals were required to self-identify as female and be in a committed relationship ($M_{Duration} = 66.82$ months, $SD_{Duration} = 36.92$, 1 same sex relationship). The inclusion criterion regarding committed relationships aimed to increase the likelihood of recent partnered sexual activity, and indeed, the majority of participants ($n = 83$, 97%) reported engaging in sexual intercourse with their partner within the past 4 weeks. Compensation for participation consisted of course credit.

Dropout analysis

The high dropout rate was likely influenced by the demanding nature of the intervention conducted between the two measurement points. This intervention involved either daily 15-minute guided meditation sessions or control practices for a duration of 7 days. Participants in the intervention group engaged in daily activities such as body scans and exercises aimed at enhancing mindful attention in everyday life, while those in the control group focused on exercises to improve long-term goal pursuit, including visualizing successful goal attainment and implementing intentions. Importantly, dropout analyses revealed no significant difference in trait hedonic capacity between participants who completed both measurement points and those who dropped out of the study, with $t(181) < 1$. Additionally, group assignment did not affect any of the outcomes measured, nor did it moderate the reported relationships.

Measures T1

Trait hedonic capacity Trait hedonic capacity was assessed with the Trait Hedonic Capacity Scale (Bernecker & Becker, 2021) as described in Study 1 (Cronbach's $\alpha = 0.86$).

Trait mindfulness Participants filled in the short form of the German version of the Kentucky Inventory of Mindfulness Skills (KIMS-D) scale (Ströhle et al., 2010), which focuses on two aspects of mindfulness: observing and acting with awareness. The observing subscale measures individuals' awareness of and attention to internal and external experiences (12 items, e.g., "I pay attention to physical experiences such as the wind in my hair or sun on my face", Cronbach's $\alpha = 0.83$). The acting with awareness subscale

measures attention to the present moment (10 items. e.g., "I find it difficult to stay focused on what's happening in the present moment"; reverse scored, Cronbach's α = 0.70). Participants could respond with 1 = *Never* to 5 = *Very often*.

Measures T2

Sexual pleasure We assessed sexual pleasure using the same items as those administered in Study 1. However, in this study, participants reported the sexual pleasure they experienced in their most recent sexual experience, and the response scale was adjusted accordingly (*1 = Not at all true, 5 = Completely true*). Again, the exploratory factor analysis (parallel analysis) showed a single factor structure, with all items loading > 0.54 (refer to Appendix Table 5 for item loadings) on this factor. The items demonstrated high internal consistency (Cronbach's α = 0.94).

Everyday-related thoughts Similar to Study 2, we administered the items of the everyday-related distraction subscale (Newcombe & Weaver, 2016). We made slight adjustments to the items by removing the word "distraction" to assess the occurrence of everyday-related thoughts during sex rather than their presumed impact on sexual pleasure. The items exhibited high internal consistency (Cronbach's α = 0.91).

Results

Confirmatory analyses

Results revealed a small positive correlation between trait hedonic capacity and sexual pleasure (see Table 2). Additionally, trait hedonic capacity exhibited a negative association with everyday-related distraction (small effect), which, in turn, showed a negative relationship with sexual pleasure (large effect). We conducted two multiple regression models to assess whether the effects of trait hedonic capacity on sexual pleasure and everyday-related thoughts persisted when controlling for observing and acting with awareness. The effect of trait hedonic capacity on sexual pleasure slightly decreased in magnitude compared to the zero-order correlation but remained statistically significant, β = 0.22, b = 0.25, SE = 0.12, t = 2.01, p = .048. Neither the effect of mindfulness observing nor acting with awareness was significant, ts < 1. Concerning everyday-related distraction, the effect of trait hedonic capacity slightly diminished when adjusting for mindfulness but remained significant, β = −0.22, b = -0.09, SE = 0.04, t = -2.18, p = .032. While the effect of observing was not significant, acting with awareness exhibited a negative association with everyday-related thoughts, β = −0.34, b = -0.31, SE = 0.09, t = -3.33, p = .001.

Exploratory mediation analysis

To assess whether the findings from Study 1 could be replicated, we examined whether everyday distraction mediated the relationship between trait hedonic capacity and sexual pleasure. The indirect effect was significant, ACME = 0.18, 95% CI [0.03; 0.36], as was the proportion of the direct effect that was mediated, prop. mediated = 0.70, 95% CI [0.08; 2.34]. The effect of trait hedonic capacity became nonsignificant when everyday-related distraction was controlled, β = 0.06, b = 0.07, SE = 0.10, t = 0.73, p = .469. Similar to Study 1, causality cannot be inferred; nevertheless, these results suggest that trait hedonic capacity and cognitive distraction share the same variance in sexual pleasure.

Discussion

Results from Study 2 replicated those of Study 1. Trait hedonic capacity showed a positive association with sexual pleasure reported for the last sexual experience and a negative association with everyday-related thoughts. These effects persisted even after controlling for trait mindfulness. Additionally, an

Table 2 Means, standard deviations, and zero-order correlations with confidence intervals for Study 2

Variable	M	SD	1	2	3	4
1. Trait hedonic capacity	3.18	0.62				
2. Sexual pleasure	3.95	0.69	.23*			
			[.02, .42]			
3. Everyday-related thoughts	0.67	0.39	−.32**	−.66**		
			[−.50, −.12]	[−.76, −.52]		
4. Mindfulness observing	3.40	0.56	.03	.06	−.13	
			[−.18, .24]	[−.15, .27]	[−.33, .09]	
5. Mindfulness acting with awareness	2.97	0.43	.28**	.11	−.42**	.17
			[.08, .47]	[−.11, .31]	[−.58, −.22]	[−.05, .37]

M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates p < .05. ** indicates p < .01

exploratory mediation analysis suggests that cognitive distraction may explain parts of the relationship between trait hedonic capacity and sexual pleasure. However, this potential direction of causality should be validated through experimental or longitudinal studies measuring change. Furthermore, limitations include the sample's composition of young women in committed relationships and the high dropout rate.

Study 3

The results from Studies 1 and 2 indicate that individuals with lower trait hedonic capacity, who tend to experience more intrusive thoughts during hedonic activities, also report more distracting thoughts during sexual activity. This study aimed to investigate whether individuals low in trait hedonic capacity are more inclined to use alcohol before or during sexual activities as a means of coping with cognitive distraction. Additionally, an unrelated objective of this large-scale study was to examine the impact of forgiving instructions on the reporting of various sexual behaviors. However, the manipulation of forgiving instructions did not have any discernible effect on the reported outcomes and we controlled for group membership in the main analyses.

We pre-registered the following two hypotheses:

H1) Trait hedonic capacity is positively associated with motivation to use drugs/alcohol for sex to cope with negative thoughts/stress (subscale coping).

H2) Trait hedonic capacity is not significantly related ($r < |0.20|$) to motivation to use drugs/alcohol for sex to enhance the sexual experience (subscale enhancement).

Furthermore, we pre-registered plans to control for perceived stress and sensation seeking as two variables that may be linked to sexualized drug use and trait hedonic capacity. The details of the pre-registration can be accessed here: https://osf.io/xnjkc/?view_only=577758c029644c31b336f65aba1c78ba (see H1 and H2 named under section 4).

Method

Participants

We recruited $N = 903$ participants (671 female, 229 male, 3 diverse, *M*age = 23.06 years, $SD = 5.99$ years, ranging from 17 to 59 years) as part of a larger research project. Participants were recruited online via social media platforms and over a university mailing list. Students could receive course credit for participating in the study. Of all participants, 195 (22%) indicated not to consume alcohol. 369 participants reported to usually consume 1–2 standard units of alcohol per week, 291 usually consume 3–6 standard units of alcohol per week, 27 usually consume 1–2 standard units of alcohol per day, 7 indicated more than 4 standard units of alcohol per day and 6 did not want to answer. 521 participants (58%) indicated to have consumed alcohol in the last 12 months right before or during a sexual activity. In this subsample of $n = 521$ (389 female, 130 male, 2 diverse, *M*age = 23.08 years, $SD = 5.81$ years, ranging from 18 to 59 years), 407 identified as heterosexual, 15 as homosexual, 68 as bisexual, 17 as pansexual, 5 as demisexual, 0 as asexual, and 9 as other. Regarding relationship status, 192 were single, and 329 in a relationship (290 in a monogamous relationship, 21 in an open relationship, 18 named other relationship forms).

Measures

Motivation to use alcohol Participants who indicated that they had used alcohol in the last 12 months right before or during a sexual activity responded to the Drinking Motive Questionnaire Revised (DMQ-R, Cooper, 1994; Kuntsche & Müller, 2011). We measured coping and enhancement motives with 6 items each (coping motive: e.g., "I use alcohol before/during sex,… because it helps me switch off.", Cronbach's $\alpha = 0.88$; enhancement motive: e.g., "…because it makes it more fun.", Cronbach's $\alpha = 0.93$). Participants responded on a scale from 1 = *Not at all applicable* to 5 = *Very much applicable*.

Trait hedonic capacity We used the same 10 items as described in Study 1 and 2 to assess trait hedonic capacity (Cronbach's $\alpha = 0.85$).

Perceived stress We assessed perceived stress with the German version of the Perceived Stress Scale (Cohen et al., 1983; Klein et al., 2016) that consists of 10 items (e.g., "In the last month, how often have you been upset because of something that happened unexpectedly?", Cronbach's $\alpha = 0.87$). Participants responded on a scale from 1 = *Never* to 5 = *Very often*.

Sensation seeking Sensation seeking was measured with the Need Inventory of Sensation Seeking (NISS, Roth & Hammelstein, 2012), which consists of 17 items (e.g., "I like to test my body's limits", "I enjoy it when there is nothing going on for a while" [reverse scored], 1 = *Almost Never*, 5 = *Almost Always*, Cronbach's $\alpha = 0.82$).

Results

Confirmatory analyses

Table 3 displays the zero-order correlations among the main variables of Study 3. As pre-registered, we conducted

Table 3 Means, standard deviations, and zero-order correlations with confidence intervals for Study 3

Variable	M	SD	1	2	3	4
1. Trait hedonic capacity	2.56	0.69				
2. Coping motive	2.40	1.01	−.25**			
			[−.33, −.17]			
3. Enhancement motive	2.62	0.90	−.13**	.58**		
			[−.22, −.05]	[.52, .63]		
4. Perceived stress	2.59	0.60	−.60**	.27**	.17**	
			[−.65, −.54]	[.18, .34]	[.08, .25]	
5. Sensation seeking	2.46	0.59	.07	.07	.11**	−.03
			[−.01, .16]	[−.01, .16]	[.03, .20]	[−.11, .06]

M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$

Table 4 Multiple regression model predicting coping and enhancement motive

	Coping Motive					Enhancement Motive				
	b	*SE*	*t*	β	*p*	*b*	*SE*	*t*	β	*p*
Gender	-0.18	0.10	−1.76	−.08	.079	−0.20	0.09	−2.16	−.10	.031
Age[a]	0.02	0.01	3.27	.14	.001	0.01	0.01	1.09	.05	.278
Sexual orientation[b]	0.08	0.13	0.61	.03	.539	−0.11	0.12	−0.97	−.04	.334
Perceived stress	0.29	0.09	3.19	.17	.001	0.18	0.08	2.23	.12	.026
Sensation seeking	0.13	0.07	1.85	.08	.064	0.18	0.07	2.75	.12	.006
Trait hedonic capacity	-0.23	0.08	−3.04	−.16	.002	−0.08	0.07	−1.10	−.06	.271

[a]1 = female, 2 = male. [b]1= heterosexual, 2 = bisexual. Results for other sexual orientations (3 = homosexual, 4 = pansexual, 5 = demisexual, 6 = asexual, 7 = other) and nonbinary gender (3 = nonbinary) are omitted due to non-significance, *t*s <|1.69|, probably due to small cell sizes

multiple regression analyses to predict coping and enhancement motivation while controlling for age, gender, sexual orientation, stress, and sensation-seeking (see Table 4). Results indicated that women reported higher coping-motivated alcohol use compared to men, as well as higher enhancement-motivated alcohol use. Age demonstrated a positive association with coping motivation but not with enhancement motivation. Stress exhibited a positive correlation with both coping and enhancement motivation. Additionally, sensation seeking showed positive correlations with both coping and enhancement motivation, with significance observed only for the latter. Consistent with H1 and H2, trait hedonic capacity displayed a negative relationship with coping motivation, albeit with a small effect size, while its association with the enhancement motive was not significant. This suggests that individuals with lower trait hedonic capacity, among those who consume alcohol before or during sex, tend to do so to cope with distracting thoughts.

Exploratory analyses

Gender differences We explored whether gender moderated the effect of trait hedonic capacity on coping or enhancement motivation. Descriptively the negative correlation between trait hedonic capacity and coping motivation was stronger for female, $r(390) = -0.28$, $p < .001$, than for male participants, $r(131) = -0.10$, $p = .270$ (see Fig. 1). We ran a moderated regression analysis (Aiken & West, 1991) which showed a significant main effect for trait hedonic capacity, $\beta = -0.29$, $b = -0.29$, $SE = 0.05$, $t = -5.78$, $p < .001$, and gender, $\beta = -0.11$, $b = -0.26$, $SE = 0.10$, $t = -2.54$, $p = .011$. The two-way interaction was also significant, $\beta = 0.10$, $b = 0.20$, $SE = 0.10$, $t = 2.03$, $p = .043$. The negative relationship was stronger for women compared to men (see Fig. 1). The regions of significance suggest that the difference between genders was significant for individuals below the sample mean of trait hedonic capacity. For the enhancement motive, the correlation with trait hedonic capacity was again stronger for female, $r(390) = -0.13$, $p = .010$, than for male participants, $r(131) = -0.04$, $p = .640$. However, in the moderated regression analysis, the two-way interaction between trait hedonic capacity and gender was not significant, $t < 1$.

Perceived stress Last, we explored whether perceived stress moderated the effect of trait hedonic capacity on coping motivation. The moderation analysis showed a negative effect for trait hedonic capacity, $\beta = -0.16$, $b = -0.16$, $SE = 0.05$, $t = -3.03$, $p = .003$, and a significant positive effect of perceived stress, $\beta = 0.20$, $b = 0.20$, $SE = 0.05$, $t = 3.78$, $p < .001$. In addition to these two main effects the two-way interaction was significant as well, $\beta = -0.16$, $b = -0.14$, $SE = 0.04$, $t = -3.80$, $p < .001$. The negative correlation between trait hedonic capacity and coping motivation

was stronger for individuals with higher stress levels (see Fig. 2) meaning that higher trait hedonic capacity buffered the effect of stress on coping motivated alcohol use. For the enhancement motive, the two-way interaction was not significant, $\beta = -0.08$, $b = -0.06$, $SE = 0.03$, $t = -1.76$, $p = .080$.

Discussion

Study 3 findings indicate that among individuals who consumed alcohol before or during sex in the past year (58% of our sample), those with lower trait hedonic capacity were more inclined to consume alcohol to cope with stress or negative thoughts, whereas trait hedonic capacity was not associated with the motivation to enhance the sexual experience. These associations remained significant even after controlling for perceived stress and sensation seeking as potential third variables. Exploratory analyses revealed that women reported stronger coping motivation to use alcohol before or during sex than men, particularly among individuals with low trait hedonic capacity. This suggests that a high trait hedonic capacity might serve as a buffer against coping-motivated alcohol use, especially among women. Furthermore, exploratory findings suggested that high trait hedonic capacity could mitigate the positive effects of perceived stress on coping-motivated alcohol use. However, both of these observations were exploratory and require replication before conclusions can be drawn. Additionally, it is important to note that these findings are limited to young adults, predominantly those who were sexually active and in a relationship.

General discussion

Pleasure is one of the primary reasons why individuals engage in sexual activities (e.g., Birnbaum, 2010; Meston & Buss, 2007; Wood et al., 2014). However, this concept has been notably overlooked in research, health programs, and political agendas alike (Ford et al., 2019). Consequently, our understanding of the factors influencing individuals' sexual pleasure remains limited. Drawing from research on self-regulation and cognitive factors in sexual functioning, we investigated the relationship between trait hedonic capacity—individuals' ability to shield hedonic activities from conflicting thoughts—and sexual pleasure. Results from Studies 1 and 2 demonstrate that young men and women with higher trait hedonic capacity experience greater sexual pleasure and encounter fewer cognitive distractions during partnered sexual activities. Study 2 further revealed that the effects of trait hedonic capacity remained robust even after controlling for trait mindfulness, a known predictor of

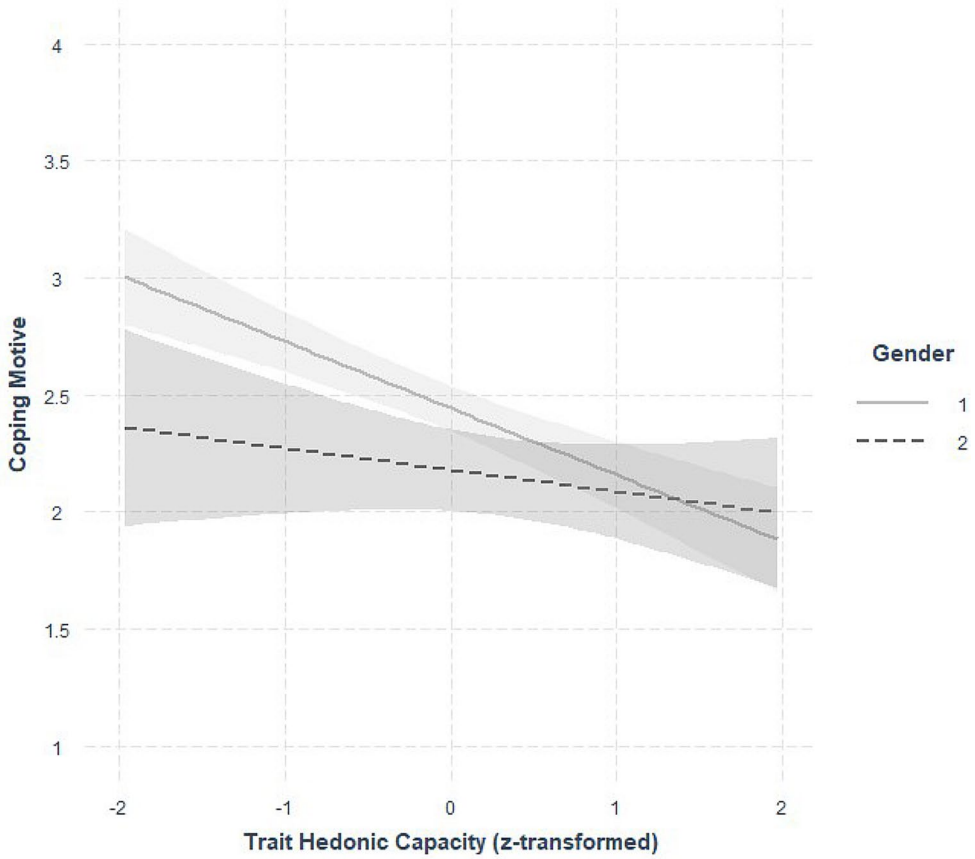

Fig. 1 Interaction effect between gender (1 = female, 2 = male) and trait hedonic capacity on coping motivation. Regions of significance represent 95% CIs

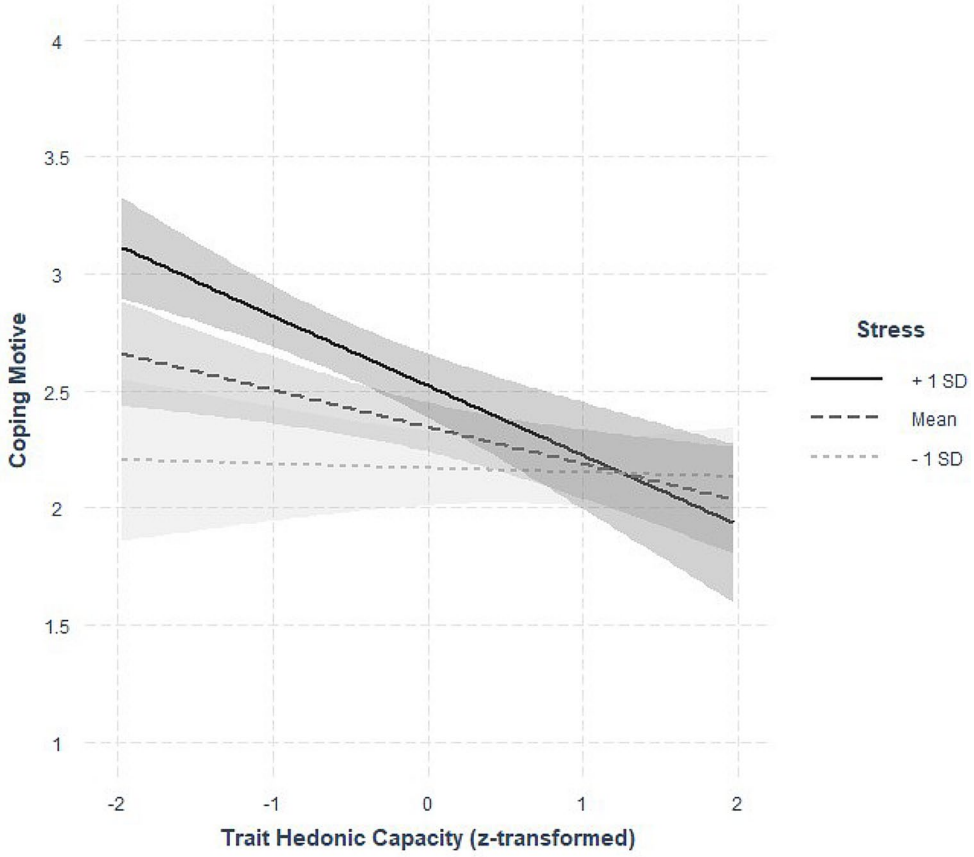

Fig. 2 Interaction effect between perceived stress and trait hedonic capacity on coping motive. Regions of significance represent 95% CIs

sexual satisfaction and cognitive distraction (Newcombe & Weaver, 2016). Building on these findings, Study 3, which was pre-registered, revealed that among individuals who use alcohol before or during sex, those with lower trait hedonic capacity are more inclined to use alcohol to cope with distracting thoughts. Exploratory analyses suggested a stronger correlation between trait hedonic capacity and coping motivation for women and individuals experiencing higher stress levels. These findings shed light on the potential role of trait hedonic capacity as predictor of sexual pleasure and coping mechanisms during sexual activities.

Theoretical contribution

The present research contributes to the literature on self-regulation by revealing a positive association between trait hedonic capacity and individuals' sexual experiences, including the pleasure they derive from them. Our findings suggest that the ability—and permission—to 'switch off' mentally is crucial and may enhance the quality of individuals' sexual encounters, potentially leading to increased sexual desire and activity.

It is important to recognize that while we examined trait hedonic capacity as an individual-level variable, the underlying processes influencing this capacity may reside within the individual (e.g., effective shielding of hedonic activities) as well as within the situation (e.g., stress) or societal system (e.g., social obligations, gender roles; Katz-Wise & Hyde, 2014; Wiederman, 2005). Future research should investigate the processes contributing to variations in trait hedonic capacity at both the individual and systemic levels. By doing so, we can identify solutions that enhance individuals' hedonic experiences not only in intimate settings but also across various facets of their lives (Chater & Loewenstein, 2023).

The present research further expands our understanding of the cognitive processes involved in sexual pleasure, shedding light on how cognitive distraction during sex reflects individuals' experiences of intrusive thoughts during other hedonic activities. This suggests the existence of common underlying factors that, if addressed, could enhance individuals' well-being and their relationships positively (Bernecker & Becker, 2021). As previously mentioned, these underlying factors could be rooted within the individual, the situation, and/or the societal context. The observed gender differences in everyday-related distraction and trait hedonic capacity are particularly intriguing. They align with studies on gender disparities in cognitive load within heterosexual couples, where women often bear more cognitive labor around household tasks than men (Daminger, 2019; Dean et al., 2022; Harris et al., 2022).

Specifically, our finding that women in the sample reported more everyday-related distraction, but not more performance-related distraction, suggests that situational and structural factors may underlie this gender difference rather than individual-level explanations like goal shielding. Structural barriers to pleasure for women could explain why the mindfulness intervention in Study 2 was unsuccessful. It may not necessarily be that women require more mindfulness, but rather better external/structural conditions that allow them to 'switch off'.

Indeed, research indicates that women who perform less household labor tend to report more sexual desire (Harris et al., 2022). It would be intriguing to explore whether these findings extend to sexual pleasure. Investigating the division of household labor in couples and its association with partners' everyday-related distractions during sex could offer important insights. Do men experience more everyday-related distraction during sex if they are more involved in household tasks? If so, the source of gender differences may predominantly be structural. If not, other individual-level processes such as goal shielding might be at play. Including same-gender or nonbinary couples, who distribute cognitive labor based on principles rather than prevailing gender norms, could offer further insights (McLean et al., 2023).

Another individual-level variable potentially relevant to cognitive distraction is individuals' propensities for sexual excitement and inhibition (Rettenberger et al., 2019). According to the Dual Control Model of sexual behavior (Bancroft & Janssen, 2000), individuals vary in their levels of sexual inhibition and excitation, which can influence trait-like variations in sexual behavior (Rettenberger et al., 2019). It would be interesting to test whether individual differences in inhibition and excitation are related to cognitive distraction, and especially to everyday-related distraction, but also to sexual pleasure and satisfaction.

Lastly, our findings offer valuable insights into potential motives behind sexualized drug use. We found that individuals with lower trait hedonic capacity, particularly women within this group, endorsed coping motives for using alcohol before or during sex. These findings suggest a degree of ambivalence towards sexual activity in these individuals, who prioritize avoiding negative outcomes such as disappointing their partner or experiencing distraction during sex. However, resorting to alcohol as a coping mechanism poses potential risks (Baskin-Sommers & Sommers, 2006; Drydakis, 2022). For instance, being under the influence of alcohol or other substances may lead to forgetting to use contraception or being unable to give consent for risky sexual practices (Bohn et al., 2020). Additionally, individuals may consent to sexual activities they would not otherwise and become more susceptible to external influences overall. Consistent with our findings, research indicates that female versus male students in the EU and Great Britain report higher engagement in voluntary risk behaviors such as sexual substance use (Jaspal et al., 2021). Women with low trait hedonic capacity may be particularly susceptible to taking such risks.

Limitations

A major limitation of our research is the reliance on predominantly student samples, comprising mostly young, well-educated, White individuals in relationships (Study 1 and 2). Consequently, the findings may not be applicable to older, non-WEIRD (Western, Educated, Industrialized, Rich, and Democratic, Henrich et al., 2010) populations and individuals who are not in relationships. Particularly, the inclusion of young sexually active individuals might restrict the generalizability of our results to a broader population where sexual activity may be less frequent, and experiences of sexual pleasure outside of relationships may differ, especially for women (Armstrong et al., 2009; Twenge et al., 2017b). Therefore, it is plausible that we have not captured the full spectrum of sexual pleasure, particularly at the lower end of the distribution.

Furthermore, our research primarily focused on partnered sex, with the majority of participants identifying as heterosexual. It remains necessary to investigate whether our findings extend to solitary sexual experiences and partnered sex outside the heterosexual norm. Additionally, a limitation arose from the absence of suitable measures for sexual pleasure, as existing measures did not align with the concept's definition (Ford et al., 2019). For instance, some measures rely on participants' subjective interpretations of sexual pleasure, by asking how "pleasurable" the last sexual experience has been (Pascoal et al., 2016). Although a multidimensional measure for sexual pleasure has been developed and validated in the meanwhile (Borgmann et al., 2023), our set of 15 items demonstrated robust factor structure and convergent validity with related concepts (i.e., sexual satisfaction, orgasm frequency).

Additionally, a critical limitation of our work is the correlational design employed in all studies, preventing inference of causality. Although Study 2 utilized a design with two measurement points to control for demand effects, which might be more pronounced when participants respond to predictor and outcome measures within a single session, future studies would ideally adopt a prospective longitudinal design to address this limitation.

Conclusion

The present research suggests that cognitive distraction during sexual activity is not an isolated phenomenon but rather

correlates with the intrusive thoughts individuals encounter during various hedonic activities. Further, individuals experiencing cognitive distraction may resort to substances like alcohol as a coping mechanism, albeit a potentially risky one. Hence, further investigation is warranted to explore the causes of cognitive distraction at individual, situational, and cultural levels, as well as to identify possible interventions.

Appendix

Table 5 Standardized item loadings for sexual pleasure assessed in Study 1 and Study 2 based on a confirmatory factor analysis based on maximum likelihood estimation without rotation

Items	Study 1*	Study 2**
1. I can/could enjoy the sex to the fullest.	.75	.87
2. The sex is/was fulfilling.	.75	.76
3. The sex gives/gave me intense pleasure.	.80	.87
4. It is/was as if I am merging with my partner.	.52	.54
5. I feel/felt uncomfortable during sex. (-)	−.50	−.58
6. It is/was passionate.	.64	.85
7. I feel/felt wanted.	.47	.58
8. During the sex I can/could fully indulge in my pleasure.	.71	.85
9. I want/wanted it to end quickly. (-)	−.55	−.76
10. I want/wanted the moment to last forever.	.53	.56
11. I am/was in a state of ecstasy.	.53	.58
12. I perceive/perceived my body to be desirable.	.39	.60
13. I can/could fully express myself.	.56	.67
14. I am/was turned on during sex.	.60	.83
15. I feel/felt great after sex.	.70	.70

*Please indicate how often you currently experience the following sensations during sex. 1 = *never*, 5 = *(almost) always*; **Please indicate how much the following statements apply to your most recent sexual experience. 1 = *not at all true*, 5 = *completely true*

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Data, materials and/or code availability Study materials, data, and code are publicly available on the Open Science Framework (upon acceptance due to identifying information in code and material): https://osf.io/xb5qv/.

Declarations

Ethical approval The studies were performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Department of Psychology, University of Zurich (No. 21.4.2).

Consent informed Consent was obtained from all individual participants included in the study.

Competing interests The authors have no relevant financial or non-financial interests to disclose.

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