



Hypersexuality in Mixed-Sex Couples: A Dyadic Longitudinal Study

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Received: 19 December 2019 / Revised: 9 February 2021 / Accepted: 12 February 2021 / Published online: 29 June 2021
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Abstract

Emotion dysregulation and intimacy problems are theoretically underpinned correlates of hypersexuality (i.e., uncontrollable sexual urges, fantasies, and behaviors resulting in distress and impairment in different areas of functioning), but the directionality of these associations has not been established, as work in this area has relied on cross-sectional designs. Moreover, although hypersexuality may have significant adverse effects on romantic relationships and approximately half of treatment-seeking individuals are in a relationship, prior studies almost exclusively involved samples of men, regardless of their relationship status. The aim of the present study was to examine the directionality of associations between both partners' emotion dysregulation, physical (i.e., partnered sexual frequency) and relationship intimacy, and hypersexuality using a longitudinal, dyadic framework. Self-reported data of 267 mixed-sex couples ($M_{\text{age_men}} = 29.9$ years, $SD = 8.2$; $M_{\text{age_women}} = 27.7$ years, $SD = 6.7$) at baseline (T1) and six-month follow-up (T2) were analyzed using a crossed-lagged model within an actor-partner interdependence framework. Prior greater emotion dysregulation (T1) in both men and women was associated with their own later greater hypersexuality (T2). Women's prior greater hypersexuality (T1) was associated with their later lower relationship intimacy (T2). Lower levels of intimacy were not significantly associated with later hypersexuality. No partner effects were found in relation to hypersexuality. Findings suggest that men and women may use sexual behaviors to cope with negative emotions, which could, in turn, lead to hypersexuality. Intimacy problems did not precede hypersexuality, although women's hypersexuality may reduce their own relationship intimacy over time.

Keywords Compulsive sexual behavior disorder · Couples · Emotion dysregulation · Hypersexuality · Intimacy

Introduction

Hypersexuality is defined as sexual urges, fantasies, and behaviors that the individual tries to control unsuccessfully, resulting in significant distress and impairment in different areas of functioning, such as work or personal relationships (Kafka, 2010; World Health Organization, 2019). Different levels of hypersexuality are present in the general population (i.e., along a continuum from no hypersexuality to high levels of hypersexuality), with approximately 3 to 10% of individuals reaching clinical levels of hypersexuality (Bóthe et al., 2020b; Dickenson et al., 2018).¹ Several theoretical

models describe potential mechanisms that may underlie or contribute to the development of hypersexuality, such as the sexhavior cycle, impulsivity, intimacy disorder, self-medication, or dual control models (Briken, 2020; Grubbs et al., 2020; Lew-Starowicz et al., 2020; Schwartz & Masters, 1994; Walton et al., 2017). Still, there is a lack of theoretical integration and unifying, empirically supported frameworks to describe the etiology of hypersexuality. Thus, systematic, methodologically rigorous studies (e.g., using longitudinal designs) are needed to simultaneously examine different models of hypersexuality in diverse populations, including couples (Grubbs & Kraus, 2021; Grubbs et al., 2020; Lew-Starowicz et al., 2020). Two models that may be particularly relevant for couples are the self-medication (Gola et al., 2020; Khantzian, 1997; Lew-Starowicz et al., 2020) and the intimacy disorder models (Adams & Robinson, 2001; Schwartz

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¹ Independent studies including large samples of men and women using taxometric analysis suggested that hypersexuality should be considered as a dimensional construct as opposed to being a categorical one (for details, see Bóthe et al. [2019a]; Graham et al. [2016]).

& Masters, 1994), whereby hypersexuality would stem in part from difficulties with emotion regulation and/or intimacy.

Emotion Dysregulation and Hypersexuality

Emotion dysregulation is characterized by low levels of awareness, acceptance, understanding, and control of emotions in a situationally appropriate manner (Gratz & Roemer, 2004), and considered a fundamental factor in the development and maintenance of psychological problems, including hypersexuality (Garofalo et al., 2016; Hall, 2011; Lew-Starowicz et al., 2020). In line with the self-medication hypothesis (Khantzian, 1997), hypersexuality may represent a compensatory behavior for problems with emotion regulation (Gola et al., 2020; Lew-Starowicz et al., 2020). Individuals with hypersexuality may have problems regulating negative emotions; thus, they may turn to sexual activities to alleviate them, as sexual activities may alter individuals' mood (e.g., orgasm is associated with tension release; Reid et al., 2008). Sexual activities could provide temporary improvement in individuals' mood and appear as a solution for emotional difficulties. Still, these sexual activities may lead to further negative emotions, and these resultant negative emotions may create a vicious cycle of emotion dysregulation and sexual activities as coping mechanisms, resulting in the development of hypersexuality (Lew-Starowicz et al., 2020; Reid et al., 2014b). This model of hypersexuality has been supported by both clinical reports and cross-sectional empirical studies, and engagement in sexual behaviors as a maladaptive coping strategy was also considered in the proposed diagnostic criteria for hypersexual disorder in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; Gola et al., 2020; Kafka, 2010; Lew-Starowicz et al., 2020).

Compared to normative data from community samples, outpatient individuals seeking treatment for hypersexuality ($n = 120$; 3% women) showed elevated levels of emotional instability and had difficulties in identifying and describing their feelings (Reid et al., 2008). In a study among 165 British university students (59% women), emotion dysregulation had positive, weak-to-moderate associations with hypersexuality, even after controlling for gender, sexual orientation, and religiousness (Dhuffar et al., 2015). These findings were further corroborated in samples of treatment-seeking men (Wordecha et al., 2018), highly sexually active gay men (Pachankis et al., 2016), individuals with substance use disorder (Hashemi et al., 2018), and American and Portuguese university students (Carvalho et al., 2015; Cashwell et al., 2017). Although the results of these studies suggest that emotion dysregulation is positively associated with hypersexuality, their cross-sectional designs did not allow to determine the directionality of the associations, requiring further examination using longitudinal data that may provide

empirical support for the self-medication model's notions (i.e., prior higher emotion dysregulation resulting in later higher hypersexuality).

Couples' Physical and Relationship Intimacy and Hypersexuality

Romantic relationships are among the most impaired areas of functioning in individuals with hypersexuality (Hentsch-Cowles & Brock, 2013; Koós et al., 2021; Reid & Woolley, 2006; Schneider, 2003; Spenhoff et al., 2013), and 42 to 68% of those seeking treatment for hypersexuality are in a romantic relationship (Bóthe et al., 2020a, 2020b, 2021; Kraus et al., 2016; Reid et al., 2012a; Wéry et al., 2016). However, hypersexuality specifically within romantic relationships remains largely unexamined, as prior studies were almost exclusively based on samples of men, regardless of their relationship status (Reid et al., 2008, 2014a; Zapf et al., 2008), and little scientific attention has been paid to the direct examination of partners' experiences with hypersexuality (Starks et al., 2013).

Besides the self-medication model and other competing models describing the potential etiology of hypersexuality (Grubbs et al., 2020; Walton et al., 2017), the intimacy disorder model (Adams & Robinson, 2001; Schwartz & Masters, 1994) deserves scientific attention. Indeed, it was proposed that early intimacy and attachment problems may generalize to later romantic relationships and may play a role in the development of adequate emotion regulation strategies, suggesting interrelatedness between intimacy issues and emotion regulation difficulties, especially in the context of hypersexuality (Adams & Robinson, 2001; Lew-Starowicz et al., 2020). Thus, examining emotion dysregulation and relationship intimacy simultaneously may provide unique insights about hypersexuality in romantic relationships.

According to the intimacy disorder model (Schwartz & Masters, 1994), some individuals with hypersexuality may have experienced childhood interpersonal traumas, which would then contribute to an impairment in skills to develop and/or maintain intimate relationships in adulthood (Lew-Starowicz et al., 2020; Slavin et al., 2020a, 2020b). Thus, central to this model is the individual's inability to adequately bond in intimate relationships (Adams & Robinson, 2001). Individuals with intimacy problems may make little or no emotional investments in their romantic relationship, feel lonely and alienated and may become overwhelmed when relationships require intimacy. They may see that sexual activities are the only way they can cope with these issues, as sexuality can provide the illusion of the intimacy they seek, leading to compulsive engagement in sexual behaviors (i.e., hypersexuality; Schwartz & Masters, 1994).

Studies of varying quality conducted among clinical and community samples have provided initial support for this model. In a sample of 32 men identified potentially as hypersexual individuals, 92% had fears of intimacy and/or abandonment (Zapf et al., 2008). In a convenience sample of 267 participants (28% women), difficulties with intimacy were positively and weakly related to cybersex addiction (a potential manifestation of hypersexuality) (Weinstein et al., 2015). In other large-scale studies, both men and women who reported lower levels of relationship intimacy also reported higher levels of hypersexuality (Štulhofer et al., 2008, 2016a). However, in a sample of 349 men who considered themselves to have problematic engagement in sexual behaviors, 56% of them reported functional impairment in their romantic relationships as a result—and not an antecedent—of their hypersexuality (Spenhoff et al., 2013).

As individuals with higher levels of hypersexuality may disconnect their emotions from sexuality, it can not only reduce their relationship intimacy in committed relationships, but also their physical intimacy (i.e., partnered sexual activities; Reid & Woolley, 2006; Whisman et al., 1997). Based on self-reports of 94 individuals (97% women) involved in a committed relationship with hypersexual individuals (Schneider, 2003), loss of interest in partnered sexual activities appeared in 68% of the couples (in either or both partners) as a consequence of hypersexuality. However, large-scale studies suggested that hypersexual men did not significantly differ in their frequencies of partnered sexual activities in the past six months compared to a control group (Spenhoff et al., 2013; Štulhofer et al., 2016b).

These conflicting findings suggest that both directions of the associations between hypersexuality and intimacy may be plausible. Although intimacy problems may be considered as precursors of hypersexuality from a theoretical perspective (Reid & Woolley, 2006; Schwartz & Masters, 1994; Zapf et al., 2008), some empirical results draw attention to the fact that hypersexuality may also result in intimacy problems in the couple (Spenhoff et al., 2013). Given past studies' over-reliance on clinical male samples and cross-sectional designs, the directionality of associations between intimacy issues and hypersexuality in couples is yet to be determined.

Dyadic Studies in Hypersexuality

Although dyadic study designs (Ledermann et al., 2011; Vailancourt-Morel et al., 2019) may provide substantial information concerning how partners' individual characteristics combined with relational characteristics may affect the functioning of the couple, only one study examined hypersexuality, and its correlates in a dyadic context. In a sample of 172

same-sex couples (Starks et al., 2013), the level of one partner's hypersexuality was unrelated to the level of the other partner's hypersexuality. Individuals' own hypersexuality was associated with their own lower sexual satisfaction and lower feelings of sexual communication quality—which can be related to relationship intimacy—but not their partners'. Moreover, the frequency of sexual activities in the relationship was unrelated to each partner's levels of hypersexuality. Although this study provided essential information about hypersexuality in romantic relationships, same-sex relationships may differ from mixed-sex relationships (Parsons et al., 2012; Rubel & Bogaert, 2015), limiting the generalizability of these findings. In sum, findings to date supporting that hypersexuality may have a significant effect on both partners are almost exclusively based on cross-sectional, intra-individual data (Bergner & Bridges, 2002; McCarthy, 2002; Reid et al., 2010), hindering the direct examination of dyadic interactions between both partners' levels of emotion dysregulation, intimacy, and hypersexuality.

Aims of the Present Study

Following the propositions of the self-medication and intimacy disorder models, this study examined the directionality of associations between partners' emotion dysregulation, physical (i.e., partnered sexual frequency) and relationship intimacy, and hypersexuality considering actor and partner effects, using dyadic longitudinal data involving two measurement points. We hypothesized that prior higher levels of emotion dysregulation and lower levels of intimacy (i.e., relationship intimacy and partnered sexual activities) would be positively related to later higher levels of hypersexuality in both partners. We also hypothesized that partners' relationship intimacy would be negatively related to their partner's hypersexuality over time.

Method

Participants

A total of 267 committed adult mixed-sex couples ($M_{age_men} = 29.9$ years, $SD = 8.2$, range = 18 to 73; $M_{age_women} = 27.7$ years, $SD = 6.7$, range = 19 to 58) participated in the study. At Time 1 (baseline), couples were together for an average of 5.4 years ($SD = 4.7$; range = 0.5 to 28.8 years); 25.5% ($n = 68$) of couples were not living together, 56.1% ($n = 150$) were cohabiting, and 18.4% ($n = 49$) were married. The majority of men (74.2%; $n = 198$) and women (74.2%; $n = 198$) reported being French Canadian, 12.3% ($n = 33$) of men and 15.7% ($n = 42$) of women reported being European, 2.6% ($n = 7$) of men and 0.7% ($n = 2$) of women reported being English Canadian, and 10.9% ($n = 29$) of men and 9.4% ($n = 25$) of women reported other cultural

identities. On average, men reported 15.6 ($SD=3.0$) and women 16.8 years ($SD=2.9$) of education. On average, couples reported engaging in sexual activities five to six times in the past month both at the baseline (Time 1) and at the six-month follow-up (Time 2) data collection.

Procedure

The present study was part of a larger longitudinal research project examining the role of childhood experiences in couples' romantic relationships (Vaillancourt-Morel et al., 2019, 2021). Couples responding to the advertisements were contacted by a research assistant for a short telephone eligibility interview. Couples were included in the present study if (1) both partners were at least 18 years old, (2) they had been together for at least six months, and (3) the woman was not pregnant at the time of the first data collection. Only intact couples at the follow-up were included in the present study. After the telephone interview, at Time 1, couples received an e-mail and were invited to complete self-report questionnaires independently using a secure online survey software (Qualtrics Research Suite). Six months and 12 months later (Time 2 and Time 3 follow-ups), the couples were contacted and completed the questionnaire again. As the variables used in this study were only assessed at Time 2 and Time 3, we will refer to these data collection points as Time 1 (T1, baseline) and Time 2 (T2, follow-up) in the following. As compensation, each partner received a 10\$ Amazon gift card after the completion of each questionnaire.

Initially, 470 couples responded to online advertisements (e.g., social media, e-mail lists) and offline posters and flyers between January and December 2016 in a large metropolitan city in North America. Out of these couples, 157 (33.4%) were excluded from the study as a result of declining participation, not meeting the eligibility criteria, or only one partner completing the first questionnaire (for details, see Vaillancourt-Morel et al., 2021). Thus, 313 (66.6%) couples were invited to participate in the follow-up questionnaires. Out of these couples, 37 (11.8%) were excluded from the present study because of separating during the project or neither of the partners completed any questions used in the present study (two couples, 0.6%). Furthermore, same-sex couples (seven couples, 2.2%) were not included in the analyses given that this study focused on mixed-sex couples on whom dyadic results are more scarce in relation to hypersexuality (Starks et al., 2013). Thus, a sample of 267 mixed-sex committed couples was retained for the present study.

Measures

Emotion Dysregulation The 36-item Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004) was used to assess emotion dysregulation via six factors:

non-acceptance of emotional responses (e.g., “When I’m upset, I become angry with myself for feeling that way”), difficulties engaging in goal-directed behavior (e.g., “When I’m upset, I have difficulty focusing on other things”), impulse control difficulties (e.g., “When I’m upset, I lose control over my behaviors”), lack of emotional awareness (e.g., “I am attentive to my feelings”), limited access to emotion regulation (e.g., “When I’m upset, I believe that there is nothing I can do to make myself feel better”), and lack of emotional clarity (e.g., “I have no idea how I am feeling”). Participants indicated their answers on a five-point scale (1 = almost never (0–10%); 5 = almost always (91–100%)) regarding how often each item applied to them. Higher scores indicated higher levels of emotion dysregulation. The DERS demonstrated adequate internal consistencies in the present sample ($\alpha_{T1_men} = 0.95$; $\alpha_{T2_men} = 0.95$; $\alpha_{T1_women} = 0.95$; $\alpha_{T2_women} = 0.94$).

Relationship Intimacy The eight-item Relationship Intimacy Scale (RIS) (Bois et al., 2013; Laurenceau et al., 1998) was used to assess relationship intimacy in couples via three factors: self-disclosure (e.g., “How much do you disclose your feelings to your partner?”), perceived partner disclosure (e.g., “How much does your partner disclose his or her feelings to you?”), and perceived partner responsiveness (e.g., “How much do you feel cared for by your partner?”), based on the model of intimacy by Reis and Shaver (1988). Participants indicated their answers on a seven-point scale (1 = not at all; 7 = a lot). Higher scores indicated higher levels of relationship intimacy. The RIS demonstrated adequate reliability in terms of internal consistencies in the present sample ($\alpha_{T1_men} = 0.89$; $\alpha_{T2_men} = 0.90$; $\alpha_{T1_women} = 0.88$; $\alpha_{T2_women} = 0.89$).

Sexual Frequency Couples' past-month frequency of sexual activities was assessed with one question: “How many times have you been sexually active as a couple in the last month (includes but not limited to all of the following: penetration, manual or oral stimulation)?” Participants indicated their answers from six response options ranging from 0 times to more than 11 times. Although the responses of the partners in the couple were strongly correlated ($r_{T1} = 0.60$, $p < .001$; $r_{T2} = 0.68$, $p < .001$), some minor differences naturally occurred. Therefore, we calculated a mean score for past-month partnered sexual frequency from both partners' answers.

Hypersexuality The seven-item Hypersexual Disorder Screening Inventory (HDSI) (Parsons et al., 2013) is a uni-dimensional scale assessing the level of hypersexuality (e.g., “I have tried to reduce or control the frequency of sexual fantasies, urges, and behavior but I have not been very successful”). Participants indicated their answers on a five-point scale (0 = never; 4 = almost always true) regarding the past six months. Higher scores indicated higher levels of hypersexual tendencies. The HDSI demonstrated adequate

Table 1 Descriptive statistics for hypersexuality, emotion dysregulation, relationship intimacy, and sexual frequency and comparison of men and women in Time 1 and Time 2 (N = 267 couples)

	Men		Women		<i>t</i> (<i>df</i>)	<i>p</i>	<i>d</i>
	<i>M</i> (<i>SD</i>)	Range	<i>M</i> (<i>SD</i>)	Range			
Hypersexuality T1	5.06 (4.48)	0–23	2.66 (3.55)	0–23	6.81 (250)	<.001	0.43
Hypersexuality T2	4.86 (4.73)	0–28	1.97 (2.88)	0–22	9.23 (237)	<.001	0.60
Emotion dysregulation T1	73.71 (19.58)	41–138	77.11 (20.01)	43–150	–1.98 (253)	.049	0.12
Emotion dysregulation T2	73.50 (20.56)	40–140	73.87 (18.42)	41–147	–0.21 (237)	.833	0.01
Relationship intimacy T1	45.13 (7.85)	12–56	45.97 (6.91)	18–56	–1.65 (253)	.100	0.10
Relationship intimacy T2	45.22 (7.45)	17–56	45.34 (7.22)	19–56	–0.24 (236)	.814	0.02
Past-month partnered sexual frequency T1		3.06 ^a (1.30)			–	–	–
Past-month partnered sexual frequency T2		2.69 ^a (1.34)			–	–	–

M mean, *SD* standard deviation, *df* degree of freedom, *T1* Time 1, *T2* Time 2

^a 0 = 0 times, 1 = 1–2 times, 2 = 3–4 times, 3 = 5–6 times, 4 = 7–10 times, 5 = more than 11 times

reliability in terms of internal consistencies in the present sample ($\alpha_{T1_men} = 0.83$; $\alpha_{T2_men} = 0.85$; $\alpha_{T1_women} = 0.83$; $\alpha_{T2_women} = 0.84$).

Statistical Analyses

Descriptive statistics, paired-samples *t*-tests (to account for the non-independence of the partners), and correlations between the examined variables were computed in SPSS 25. *Mplus* 8 was used to test the hypothesized associations between hypersexuality, past-month partnered sexual frequency, emotion dysregulation, and relationship intimacy. To account for non-independence (both dyadic and auto-correlational) and to examine the direction of the associations between the examined variables, data were analyzed using a crossed-lagged model within an actor–partner interdependence framework (APIM; Kenny et al., 2006). In this study, cross-lagged effects were the effects of participants' Time 1 scores on their Time 2 scores. The APIM analysis was conducted to examine the effects of the participants' scores on their own scores' and on their partners' scores over time. This analysis allows the examination of the actor effects while controlling for partner effects, and for partner effects while controlling for actor effects. As only mixed-sex couples were included in the present study, partners were considered distinguishable by their sex (Peugh et al., 2013). Considering the naturally non-normal distribution of the data (see Table 2), the robust maximum likelihood estimator (MLR) was used. Missing data (in most cases due to dropout from Time 1 to Time 2; ranging from 1.0% to 19.5%) were treated with the full-information maximum likelihood (FIML) method. As the model was fully saturated, the commonly used fit indices (CFI, TLI, or RMSEA) were not applicable.

Results

Descriptive data and comparisons of men and women's scores are shown in Table 1. Significant, moderate-to-strong differences were observed between men and women's hypersexuality scores, with men reporting higher levels of hypersexuality at both Time 1 and Time 2. Women reported significantly higher emotion dysregulation scores than men at Time 1 with a small effect size, but this difference was not significant at Time 2. Correlations between hypersexuality, past-month partnered sexual frequency, emotion dysregulation, and relationship intimacy at Time 1 and Time 2 are shown in Table 2. Small-to-moderate associations were observed between men and women's scores, supporting the interdependence of the data.

Emotion Dysregulation in Relation to Hypersexuality

By using cross-lagged APIM, associations between hypersexuality, past-month partnered sexual frequency, emotion dysregulation, and relationship intimacy were examined over time considering both the actor and the partner effects. The results of the model with the standardized regression coefficients are presented in Fig. 1. Men's prior greater emotion dysregulation (T1) was associated with their own later greater hypersexuality (T2) ($\beta = 0.24$, $p = .002$). Similarly, women's prior greater emotion dysregulation (T1) was associated with their own greater hypersexuality six months later (T2) ($\beta = 0.24$, $p < .001$). However, prior higher levels of hypersexuality (T1) were unrelated to later levels of emotion dysregulation (T2) in men ($p = .059$) and women ($p = .672$). No partner effects were significant for men and women's emotion dysregulation and hypersexuality.

Table 2 Correlations between hypersexuality, emotion dysregulation, relationship intimacy, and sexual frequency in Time 1 and Time 2 (N = 267 couples)

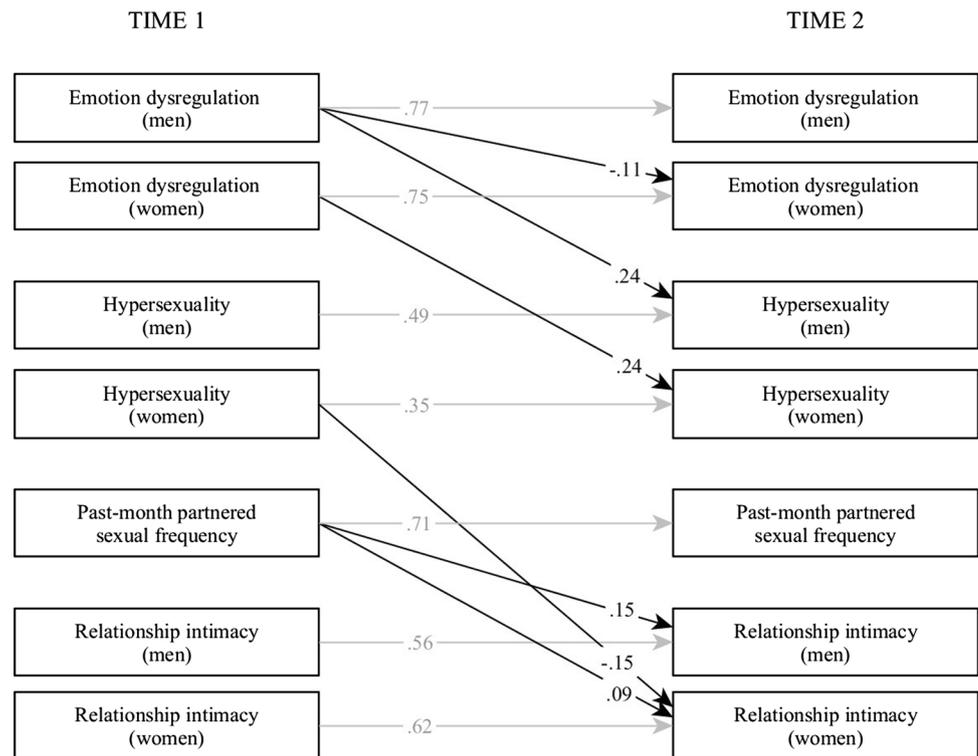
	Skew. (S.E.)	Kurtosis (S.E.)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. M's Hypersexuality T1	0.99 (0.15)	0.64 (0.31)	–												
2. W's Hypersexuality T1	2.39 (0.15)	7.87 (0.30)	.05	–											
3. M's Emotion dysregulation T1	0.98 (0.15)	0.80 (0.30)	.25**	.01	–										
4. W's Emotion dysregulation T1	0.91 (0.15)	0.48 (0.30)	.12	.29**	.04	–									
5. M's Rel. intimacy T1	–0.98 (0.15)	1.30 (0.30)	–.19**	.05	–.32**	–.14*	–								
6. W's Rel. intimacy T1	–1.19 (0.15)	2.24 (0.30)	–.16**	–.07	–.08	–.27**	.40**	–							
7. Past-month partnered sexual frequency T1	–0.20 (0.15)	–0.91 (0.30)	–.08	.09	–.09	–.08	.15*	.17**	–						
8. M's Hypersexuality T2	1.44 (0.16)	2.94 (0.31)	.54**	.03	.33**	.16*	–.14*	–.13*	–.03	–					
9. W's Hypersexuality T2	2.31 (0.15)	7.06 (0.31)	.04	.44**	.13*	.35**	.03	–.11	.07	.27**	–				
10. M's Emotion dysregulation T2	1.08 (0.16)	0.76 (0.31)	.26**	.03	.78**	.10	–.27**	–.06	–.09	.45**	.19**	–			
11. W's Emotion dysregulation T2	1.00 (0.15)	1.10 (0.31)	.10	.25**	–.06	.75**	–.11	–.18**	–.08	.11	.33**	.02	–		
12. M's Rel. intimacy T2	–1.02 (0.16)	1.32 (0.31)	–.17**	.07	–.29**	–.16*	.66**	.40**	.26**	–.19**	–.02	–.35**	–.21**	–	
13. W's Rel. intimacy T2	–1.17 (0.15)	1.42 (0.31)	–.10	–.19**	–.02	–.25**	.29**	.66**	.18**	–.07	–.13*	–.08	–.25**	.39**	–
14. Past-month partnered sexual frequency T2 ^a	0.04 (0.15)	–0.81 (0.30)	–.03	.02	–.03	–.07	.16*	.15	.70**	.05	.01	–.06	–.11	.22**	.18**

M men, W women, *Rel. Intimacy* relationship intimacy, T1 time 1, T2 time 2, *Skew.* skewness, *S.E.* standard error

^a0 = 0 times, 1 = 1–2 times, 2 = 3–4 times, 3 = 5–6 times, 4 = 7–10 times, 5 = more than 11 times

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

Fig. 1 Examination of the associations between emotion dysregulation, past-month partnered sexual frequency, relationship intimacy and hypersexuality with a cross-lagged actor–partner interdependence model (APIM). *Note* Correlations between the variables are not depicted for the sake of clarity. Only significant associations are depicted. Gray arrows represent associations between the same variables over time (autoregressions). Coefficients are standardized regression coefficients



Relationship Intimacy and Physical Intimacy in Relation to Hypersexuality

Regarding relationship intimacy, prior lower levels of relationship intimacy (T1) were not significantly related to later levels of hypersexuality (T2) among men ($p = .186$) or women ($p = .244$). Men's prior higher levels of hypersexuality (T1) were unrelated to their levels of relationship intimacy six months later (T2) ($p = .939$). However, women's prior greater hypersexual behavior (T1) was associated with their later lower relationship intimacy (T2) ($\beta = -0.15, p = .004$).² Regarding physical intimacy, prior lower levels of past-month partnered sexual frequency (T1) were not significantly related to later levels of hypersexuality (T2) among men ($p = .481$) or women ($p = .271$). Also, prior higher levels of hypersexuality

(T1) were unrelated to later levels of past-month partnered sexual frequency (T2) among men ($p = .539$) or women ($p = .346$). No partner effects were significant for men and women's relationship and physical intimacy and hypersexuality. Overall, the model explained 37.1% and 28.2% of the variance in hypersexuality (T2), 50.9% and 48.1% of relationship intimacy (T2), 65.1% and 57.3% of emotion dysregulation (T2) for men and women, respectively, and 50.6% of the variance of partnered sexual frequency (T2).

Discussion

Following recent calls for theoretical integration and rigorous methodological designs in hypersexuality research (Grubbs & Kraus, 2021; Grubbs et al., 2020), this study examined the directionality of associations between emotion dysregulation, physical (i.e., partnered sexual frequency) and relationship intimacy, and hypersexuality using a prospective dyadic study design, based on the propositions of the self-medication (Garofalo et al., 2016; Khantzian, 1997) and intimacy disorder models (Adams & Robinson, 2001; Schwartz & Masters, 1994). Results showed that both men and women who experienced higher levels of emotion dysregulation engaged in greater hypersexual behaviors over time, supporting the self-medication model. Contrary to the relational conceptualization of hypersexuality, intimacy problems did not predict hypersexuality over time. Yet, women's hypersexuality

² To determine whether the examined associations were significantly different between men and women, we compared the original, unconstrained model to a model in which all paths were constrained to be equal between both partners. The corrected chi-square difference test ($\chi^2 = 41.65, p = .014$) indicated a significant difference between the unconstrained and the fully constrained models, suggesting that the associations differed significantly between men and women. Considering the gender-based differences in the original, unconstrained model, we pushed forward this difference test by specifically constraining the associations between prior levels of hypersexuality (T1) and later relationship intimacy (T2). The corrected chi-square difference test ($\chi^2 = 3.86, p = .049$) indicated a significant difference between the two models, suggesting that men and women differ regarding the associations between hypersexuality (T1) and relationship intimacy (T2).

predicted their own lower relationship intimacy over time. No partner effects were found. Taken together, findings indicated that emotion dysregulation—but not intimacy problems—may be considered as an important predictor of hypersexuality among men and women in romantic relationships.

Emotion Dysregulation: A Potential Prospective Predictor of Hypersexuality

Addressing the limitations of past cross-sectional studies (Lew-Starowicz et al., 2020), we examined the directionality of the associations between emotional dysregulation and hypersexuality over a period of six months. In line with the self-medication hypothesis (Khantzian, 1997; Reid et al., 2008) and prior studies among single and partnered individuals—most of whom were men—(Carvalho et al., 2015; Dhuffar et al., 2015; Garofalo et al., 2016; Lew-Starowicz et al., 2020; Pachankis et al., 2016; Reid, 2010; Reid et al., 2008), findings of the present study showed that greater emotion dysregulation at baseline was positively related to greater hypersexuality six months later for both men and women, but not the reverse. Thus, our prospective results suggest that emotion dysregulation may be considered as a risk factor for hypersexuality even among partnered individuals, in line with other personality traits (e.g., impulsivity or self-conscientiousness; Bóthe et al., 2019a; Reid et al., 2012b) and psychiatric disorders (e.g., attention deficit hyperactivity disorder or depression; Bóthe et al., 2019b; Reid et al., 2012a). Individuals experiencing difficulties regulating their negative emotions may use sexual activities to cope with the threat value of negative affect. However, as sexual activities to cope with emotions provide only short-term temporary soothing, they may lead to higher levels of hypersexuality in the long run (Garofalo et al., 2016; Lew-Starowicz et al., 2020; Reid, 2010).

Thus, therapists treating individuals with high levels of hypersexuality should dedicate more attention to the development of adaptive emotion regulation strategies (e.g., emotionally focused therapy, Reid & Woolley, 2006; mindfulness, Reid et al., 2014a; or self-compassion, Reid et al., 2014b) that may not only help to cope with negative emotions without using sexual activities as a self-soothing strategy, but also contribute to the improvement of relationship intimacy (Reid & Woolley, 2006).

Decreased Relationship Intimacy: A Potential Outcome of Hypersexuality for Women

Based on the intimacy disorder model (Adams & Robinson, 2001; Hall, 2011; Schwartz & Masters, 1994) and some cross-sectional studies (Kingston et al., 2017; Rooney et al., 2018; Weinstein et al., 2015), relational problems

might be considered as potential causes of hypersexuality. However, in the present study, prior lower levels of relationship intimacy were not associated with higher levels of hypersexuality six months later. Nevertheless, prior higher levels of hypersexuality were associated with later lower levels of relationship intimacy among women, but not men. This prospective result is in line with those of prior studies among men and women, which although cross-sectional, introduced the idea that relationship problems may appear as a result of higher levels of hypersexuality (Spenhoff et al., 2013; Štulhofer et al., 2008). It has to be noted that prior studies reported negative associations between hypersexuality and relationship intimacy among both men and women (Spenhoff et al., 2013; Štulhofer et al., 2008, 2016a), while our results suggest that this association is only present among women. However, previous studies mostly used samples of treatment-seeking men (Cantor et al., 2013; Spenhoff et al., 2013; Wéry et al., 2016), which might not be generalizable to the general population of individuals with diverse levels of hypersexuality. Intimacy problems may appear as a result of hypersexuality in men as well, but these problems could only become visible when a clinically significant form of hypersexuality emerges (Reid et al., 2012a).

Another possible explanation of the sex-based difference in our study may be related to the different perceptions of sexuality between men and women. Women's sexual scripts and activities are more emotional and more strongly related to relationships compared to men's (Bartoli & Clark, 2006; McCabe et al., 2010); thus, hypersexuality may have a greater impact on women's relationship intimacy than on men's. Still, when partnered individuals seek help for their hypersexuality, the relationship should be considered as a potentially affected area of functioning, not only because the treatment-seeking individual may feel less connected to their partner, but their partner may feel distressed and experience feelings of loss and betrayal as a result of discovering their significant other's hypersexuality (Hentsch-Cowles & Brock, 2013; Reid et al., 2010; Schneider, 2003).

Hypersexuality in Relation to Physical Intimacy

Considering physical intimacy (i.e., frequency of partnered sexual activities), prior studies conducted among samples of individuals reported mixed results, with some suggesting that hypersexuality may be negatively related to the frequency of sexual activities in the couple (Schneider, 2003), while other large-scale studies did not report a significant association between hypersexuality and partnered sexual activities (Spenhoff et al., 2013; Starks et al., 2013; Štulhofer et al., 2016b). In our study, neither the prior frequency of partnered sexual activity predicted later hypersexuality levels, nor did prior hypersexuality predict the frequency of partnered sexual

activity in the couple six months later. These results corroborate the findings of previous large-scale studies reporting that partnered sexual activities may be unrelated to hypersexuality among men and women as well (Spenhoff et al., 2013; Starks et al., 2013; Štulhofer et al., 2016b). Our results are also in line with a previous typology of hypersexual individuals (Cantor et al., 2013), proposing that higher levels of hypersexuality may not derive from one universal underlying problem (e.g., low sexual frequency in the couple), but rather, different issues (e.g., using sexual activities to avoid tasks) may result in the perception of higher levels of hypersexuality. Although our results indicated no significant association between the frequency of sexual activities in the couple and one's level of hypersexuality, perceived lower levels of partnered sexual frequency could still be a contributing factor in some individuals' hypersexuality, but not for most of them (Cantor et al., 2013).

Partner Effects in Hypersexuality

Despite reported negative associations between hypersexuality and relationship difficulties (Hentsch-Cowles & Brock, 2013; Reid & Woolley, 2006; Schneider, 2003; Spenhoff et al., 2013), no partner effects were found in relation to hypersexuality in this study. Previously, only one study examined hypersexuality in a dyadic context considering both actor and partner effects in a cross-sectional study of gay men (Starks et al., 2013). In line with the results of this study, one partner's levels of hypersexuality were independent of the other partner's level of hypersexuality. Also, individuals' own hypersexuality was only related to their own relationship quality, but not to their partner's, and the frequency of sexual activities in the couple was not associated with either partner's hypersexuality (Starks et al., 2013), in line with our findings. These results suggest that individuals with higher levels of hypersexuality may rather engage in other sexual activities (e.g., masturbation, pornography use, or sex with another adult; Reid et al., 2012a; Wéry & Billieux, 2016; Wordecha et al., 2018), without the partner's awareness (Schneider, 2003).

Limitations and Future Directions

Although this study has several strengths, such as the use of a dyadic longitudinal design, providing the opportunity to examine both actor and partner effects over time and the directionality of associations between emotion dysregulation, intimacy problems, and hypersexuality—the findings should be considered alongside some limitations. Self-report scales have biases (e.g., recall bias) that should be considered when interpreting the results. Self-selection bias may

also be present as we used a convenience sample of couples recruited by advertisements. Although the directionality of the associations between the examined variables may be concluded, causality still cannot be inferred from the present findings, given the study's correlational nature. The present study used two measurement points; thus, future studies using dyadic longitudinal study designs should incorporate multiple measurement points to explore long-term correlates of hypersexuality in couples. Including same-sex couples in future studies would be necessary given that sexual and gender minority individuals may experience more negative feelings due to homophobic experiences (Pachankis et al., 2016; Parsons et al., 2008).

Moreover, in the present study, relatively high functioning committed couples (i.e., they had relatively high relationship intimacy and low levels of hypersexuality) were examined, such that findings may not apply to treatment-seeking individuals. The present study only included relationship intimacy and partnered sexual activity as measures of couples' physical and emotional intimacy. Future work may apply a more diverse set of sexual and relational well-being indicators (e.g., sexual desire, sexual satisfaction; Štulhofer et al., 2016a; Štulhofer et al., 2016b; Wéry & Billieux, 2016) to provide a better understanding of the individual and relational precursors and consequences of hypersexuality in dyadic contexts; and a more diverse set of sexual activities, as pornography use and masturbation are prominent manifestations of hypersexuality (Kafka, 2010; Kraus et al., 2016; Wéry et al., 2016; Wordecha et al., 2018). Moreover, future large-scale studies including several potential theoretical models of hypersexuality and diverse populations are needed.

Conclusions

As a first step in the integrated and methodologically rigorous examination of different theoretical models of hypersexuality (Grubbs & Kraus, 2021; Grubbs et al., 2020), this study moved beyond past individual-based, cross-sectional designs by using a prospective, dyadic framework and is based on two theoretical models of hypersexuality. This design allowed for the examination of the directions between emotion dysregulation, physical (i.e., partnered sexual frequency) and relationship intimacy, and hypersexuality in romantic relationships, testing notions of the self-medication (Gola et al., 2020; Khantzian, 1997) and intimacy disorder (Adams & Robinson, 2001; Schwartz & Masters, 1994) models of hypersexuality simultaneously. The present findings highlighted that emotion dysregulation may be considered as an important predictor of hypersexuality over time, providing further empirical support for the self-medication model, but not for the intimacy disorder model.

Acknowledgements The authors would like to thank Laurence de Montigny Gauthier and Mylène Desrosiers for their assistance with data collection.

Author Contributions Beáta Bóthe, Marie-Pier Vaillancourt-Morel, and Sophie Bergeron were involved in the conception and design. Beáta Bóthe and Marie-Pier Vaillancourt-Morel analyzed the data. Beáta Bóthe, Marie-Pier Vaillancourt-Morel, and Sophie Bergeron interpreted the data. Beáta Bóthe drafted the article. Marie-Pier Vaillancourt-Morel and Sophie Bergeron revised it critically for important intellectual content. Beáta Bóthe, Marie-Pier Vaillancourt-Morel, and Sophie Bergeron contributed to the final approval of the version to be published.

Funding This work was supported by a postdoctoral fellowship from the SCoup Team–Sexuality and Couples–Fonds de recherche du Québec, Société et Culture and by the Merit Scholarship Program for Foreign Students (PBEEE) awarded by the Ministère de l'Éducation et de l'Enseignement Supérieur (MEES) to B. Bóthe.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in the study involving human participants were in accordance with the ethical standards of the related university's institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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

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