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The Role of Dyadic Sexual Desire Similarity in Predicting Sexual Behaviors in Cohabitating Couples: An Ecological Momentary Assessment Study

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ABSTRACT

Although researchers are increasingly paying attention to the dyadic nature of sexual desire and its relevance to sexual and relational outcomes, our understanding of how sexual desire operates on a couple level and how it may influence the occurrence of sexual activity in relationships remains limited. This study used ecological momentary assessments to explore to what extent similarity in levels of desire for sex with one's sexual partner, or dyadic sexual desire, was associated with sexual initiations, receptivity to one's partner's initiations, and partnered sexual activity, and how these associations were moderated by perceived partner support. Ninety-four cohabitating couples (M_{age} = 26.30, SD = 7.60) provided six reports a day for 10 consecutive days. We used response surface analysis to examine the associations among both the degree and direction of (dis)similarity in partners' dyadic desire and each of the three outcome variables. Our results revealed that although partners tended to experience similar levels of desire on a moment-to-moment basis, similarity in desire levels was not associated with the three outcome variables. Rather, higher desire within couples predicted each partner's behavioral outcomes. At lower levels of perceived partner support, dyadic sexual desire was negatively associated with women's receptivity to sexual initiations by their partners, indicating high context-sensitivity of women's sexual responding. These findings offer new insights into the links between the similarity in partners' levels of dyadic desire and sexual behaviors in couples, suggesting the need for increased focus on maintaining desire and promoting perceived partner support in clinical practice.

A growing body of empirical evidence emphasizes the dynamic and dyadic nature of sexual desire and its relevance to sexual and relational outcomes (e.g., Dewitte & Mayer, 2018; Mark et al., 2019; Muise et al., 2019). Nonetheless, most research on sexual desire does not address its time- and context-dependence. That is, most studies to date have focused on individual levels of sexual desire without much consideration of how sexual processes may unfold in couples' daily lives. Consequently, we still have a limited understanding of how sexual desire fluctuates and operates over time in couples, and how such fluctuations, at the individual and dyadic level, may positively or negatively influence the occurrence of partnered sexual activity. Relationship researchers have long been interested whether greater similarity, defined as the equality of indices between the relationship partners (Schönbrodt et al., 2018), can predict better outcomes for the relationship and/or the individual partners (e.g., Acitelli et al., 2001; Gonzaga et al., 2007). In the current study, we used ecological momentary assessments (EMAs) to explore how similarity in desire for sex with one's sexual partner, or dyadic sexual desire (Prekatsounaki et al., 2022), is associated with initiating sex with one's partner, receptivity to one's partner's initiations, and partnered sexual activity. We also tested how these associations might be moderated by perceived partner support.

Similarity in Dyadic Sexual Desire and Sexual Initiation, Receptivity, and Behavior

Contemporary theories of sexual responding conceptualize sexual desire as an emotional-motivational state that emerges in response to sexual incentives (Singer & Toates, 1987; Toates, 2009). In the context of intimate relationships, sexual desire can be considered a dyadic, state-like construct that ebbs and flows over time and is shaped by interpersonal dynamics (e.g., Acevedo & Aron, 2009; Dewitte et al., 2020; Levine, 1987; Mark & Lasslo, 2018; Prekatsounaki et al., 2022; Ridley et al., 2006; Velten et al., 2017; Vowels et al., 2018). In such contexts, relationship partners influence and regulate each other's affective, behavioral, and physiological responses on a moment-to-moment basis, acting as a single system comprised of two interdependent individuals (Butler, 2011; Field, 1985, 1994; Hofer, 1984; Sbarra & Hazan, 2008; Sels et al., 2021). More specifically, partners are believed to tune in their responses to arrive at an optimal level of functioning for their relationship, maximizing positive and minimizing negative dyadic outcomes.

Although similarity- and sex-related processes have been theoretically linked (e.g., Sbarra & Hazan, 2008), thus far similarity has not received much empirical attention within

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the field of sex research. The available evidence indicates that sexual partners may share their daily fluctuations in sexual desire (Vowels et al., 2018). Yet, it remains unclear what the implications of those shared fluctuations of desire are for the sexual relationship. It is widely assumed that similarity in partners' sexual desire is beneficial to the quality of a (sexual) relationship (Day et al., 2015; Girard, 2019; Mark, 2015; Willoughby & Vitas, 2012) and, indeed, discrepancies in desire levels between partners have been associated with negative sexual and relational outcomes (Jodouin et al., 2021; Mark, 2015; Rosen et al., 2018; Willoughby et al., 2014). However, past research on similarity and discrepancy effects has relied largely on methodologically problematic profile similarity indices, such as difference scores, where one partner's desire score is subtracted from the score of the other (e.g., Davies et al., 1999; Mark & Murray, 2012; Willoughby & Vitas, 2012). This method does not allow researchers to consider the level of desire at which partners were similar when modeling their outcomes, often leading to results that are difficult to interpret and replicate (Edwards, 1993). But it is likely that associations among partners' behavioral outcomes and similarity in their dyadic sexual desire will differ when a couple is at low versus high levels of desire. Moreover, most past research has not examined the effects of the direction of desire differences or discrepancies (i.e., which of the two partners experiences lower desire) on sexual outcomes in relationships. Yet, the direction of desire discrepancy could well be differentially associated with partners' initiation, responsivity, and engagement in sexual activities. For example, recent findings indicate that the direction of sexual desire discrepancies may have an effect on sexual satisfaction (Attaky et al., 2020; Rosen et al., 2018). Nevertheless, our understanding of how the direction of sexual desire discrepancies relates to couples' sexual initiations, receptivity, and behavior is still limited.

In mixed-gender relationships, traditional sexual scripts and gender norms tend to prescribe men to take sexual initiative, and women to remain passive when it comes to initiating sex (Sanchez et al., 2012). Furthermore, women, more than men, seem to prioritize relationship needs over personal needs (Kiecolt-Glaser & Newton, 2001). Consistent with this, women have been found to be less likely to reject unsolicited forms of sexual pressure from their partners, compared to men (Jozkowski et al., 2014). Therefore, in the instances when a woman's desire is lower than her partner's desire, she might be more likely to respond positively to his initiations. Yet, research also indicates that men and women have an equal chance of being the lower desire partner (Sutherland et al., 2015), and there is evidence to suggest that there might be more similarities than differences in men and women's sexual desire (Dawson & Chivers, 2014), challenging more traditional gendered assumptions.

In the initial stages of a sexual or intimate relationship, dyadic sexual desire levels are typically high in both partners, and sexual frequency and satisfaction are also generally high (Klusmann, 2002; Mark & Murray, 2012; McCarthy & Ross, 2018; Schmiedeberg & Schröder, 2016). However, the experience of sexual desire is influenced by a myriad of biopsychosocial factors (Carvalho & Nobre, 2011; Murray & Milhausen, 2012; Nimbi et al., 2020, 2018), making it highly unlikely for any two individuals to be high and similar in their dyadic desire levels across time and contexts (Klusmann, 2002; McCarthy & Ross, 2018). Thus, despite a large body of evidence indicating that discrepancies in sexual desire can negatively impact the sexual relationship, it seems that such discrepancies are commonplace in long-term relationships and do not necessarily cause distress or dissatisfaction (Clement, 2002; Dewitte et al., 2020; Murray et al., 2012; Vowels et al., 2018). Yet, relational conflicts may still arise when sexual desire levels are discrepant between partners (Davies et al., 1999). Distress or dissatisfaction may not necessarily result from discrepancies in desire *per se*, but from couples' inability to tune in to each other and navigate the interpersonal processes involved in deciding whether to engage in sexual activities or not. In such situations, a higher desire partner may be subject to sexual rejection, while a lower desire partner may feel pressured to respond positively or feel guilty for not responding positively to sexual initiations of the partner (Baumeister & Dhavale, 2001; Kim et al., 2018).

Perceived Partner Support and the Associations between Dyadic Sexual Desire, Sexual Initiations, Receptivity, and Behavior

Several findings suggest that feeling supported by a relationship partner can be an important factor in buffering against decreases in sexual desire, especially for women. For example, perceived partner support contributes positively to feelings of sexual desire in women transitioning to parenthood (Hipp et al., 2012), and, on the day-to-day level, correlates with sexual behaviors in women (Fortenberry et al., 2005). Additionally, women with breast cancer report feeling more attractive (Wimberly et al., 2005) and more open to sex and intimacy (Ghizzani et al., 1995) when they perceive their partners to be supportive. Furthermore, there is evidence that perceived partner support increases plasma oxytocin levels in both men and women (Grewen et al., 2005), which in turn could increase sexual desire (Pfaus, 2009). Thus, perceived partner support could increase dyadic desire and facilitate sexual approach behaviors, because sexual activity with a supportive partner enhances the intimate experience. In contrast, perceiving the partner to be unsupportive may lead to feelings of resentment and decreased relationship satisfaction (Overall et al., 2010), and consequently to decreased dyadic desire and increased avoidance of physical intimacy. As such, perceived partner support could be an important moderator in the associations between couple similarity in partners' dyadic sexual desire and partnered sexual activity.

The Current Study

In the current study, we used ecological momentary assessments (EMAs) to capture the associations among the similarity in partners' dyadic sexual desire at one moment and their sexual initiations, receptivity to those initiations, and partnered sexual activity at the next moment. In doing so, we accounted not only for the similarity effects but also for the effects of level of dyadic sexual arousal, and, in case of sexual desire discrepancy, the effects of its direction. In addition, we explored the potential moderating role of perceived partner support on

these associations. By monitoring dyadic sexual desire and the occurrence of partnered sexual behaviors across several time points during the day, EMAs allowed us to capture detailed experiences in a natural context, near the time of occurrence, thus providing more detail, reducing retrospective bias, increasing ecological validity, and allowing for the use of a prospective design (Reis et al., 2014).

We predicted that: (1) partners' dyadic sexual desire would covary on a momentary level; and that (2) dyadic sexual desire similarity would be differentially associated with the outcome variables depending on the effects of level of desire at which partners are similar, and in case of discrepancy, on the effects of its direction. In addition, we expected that (3) higher levels of perceived partner support would increase the likelihood of sexual initiations, receptivity, and partnered sexual behavior; while (4) lower levels of perceived partner support would be associated with avoidance of physical intimacy, thus decreasing the likelihood of sexual initiations, receptivity, and partnered sexual behavior. Given the lack of consistent evidence, we made no specific predictions regarding the effects of gender on any of the associations described above.

Method

Participants and Recruitment

Couples were recruited through social media advertising, flyers, and posters distributed around the university campus, in cafes, shops, supermarkets, as well as by word of mouth, and participated for a monetary reward of €30 per couple. The advertisements directed participants to a screening questionnaire assessing the eligibility criteria and collecting their contact information. Potential participants were invited via e-mail to take part in the study if they: (1) were at least 18 years old; (2) were in a sexual relationship with a partner who was also willing to participate in the study; (3) lived together with that partner at the time of the study; and (4) were proficient in English or Dutch. Participants were excluded from participation if they suffered from a medical condition and/or used medication known to affect sexual response.

Three hundred seventeen couples received an invitation to take part in the study. Of these couples, 133 did not respond to the invitation (~ 42%); 49 responded to the invitation but did not complete any EMAs (~ 15%); 15 couples dropped out during the EMA portion of the study due to technical issues with the EMA app (~ 5%); five couples dropped out during the EMA portion of the study citing lack of time to complete the momentary assessments (~ 2%). Finally, two couples declined the invitation to participate, citing privacy concerns (~ 1%). Additionally, 19 couples were excluded from analyses due to a small number (< 30%) of EMAs completed by one or both partners. Thus, the final sample consisted of 94 couples.

Procedure

Following the invitation to participate, volunteers were directed to a website where they received more information about the study and, after providing informed consent, were asked to complete a set of questionnaires, independently from their partner. Once both relationship partners had completed the baseline questionnaire, they received an e-mail with detailed instructions on how to download and use the EMA smartphone app (mEMA; ilumivu, Inc., Cambridge, MA; www.ilumivu.com). After installing the app, participants received information about the login credentials, dates for the 10-day study period, and times during which the assessment prompts would be delivered. Prompts were delivered six times a day (at 11 a.m., 1 p.m., 3 p.m., 5 p.m., 7 p.m., and 9 p.m.) for 10 consecutive days. Times at which the prompts were delivered were set based on the time zone the participants were in. Participants had a 30-min time window to complete their report, after which the questionnaire would no longer be available and result in a missing entry for that time point. If participants had not completed their report after the initial prompt, they received up to three reminders to complete their report six, twelve, and eighteen minutes following the initial prompt. Both partners had to complete at least 30% of the EMAs for the couple to be included in the analyses (Delespaul, 1995). Couples who had completed at least one EMA a day during the 10-day study period were reimbursed for their time. Furthermore, following the 10-day study period, participants were sent a link to a questionnaire in which they were asked about their experiences using the EMA app and any possibly relevant events (e.g., illness, loss of a job, relationship dissolution) that might have happened during the study. Because data collection took place during the COVID-19 pandemic, between April 2020 and April 2021, each EMA included an item assessing pandemic-related stress. Participants overall reported low levels of pandemic-related stress on a 7-point scale (M = 1.89, SD = 1.37). Therefore, the data on COVID-19-related stress were not analyzed further. The study was approved by the local Psychology and Neuroscience Ethics Review Committee (code: ERCPN-222_66_04_2020).

Measures

Demographic Questionnaire

Demographic variables included age, gender, employment status, educational level, ethnicity, number of children, marital status, relationship type (e.g., monogamous relationship), relationship duration, sexual orientation, and contraception use. For the purposes of sample description, the demographic questionnaire also included single-item questions assessing relationship and sexual satisfaction, as well as satisfaction with one's sexual functioning, all using 7-point Likert-type scales with response options ranging from 1 = *Extremely dissatisfied* to 7 = *Extremely satisfied*. Sexual frequency over the month prior to participation in the current study was also assessed.

Ecological Momentary Assessments (EMAs)

Dyadic Sexual Desire. Dyadic sexual desire was assessed as follows: "*At the moment, I feel sexual desire towards my partner*," with response options on a 7-point Likert-type scale, ranging from 1 = *Not at all* to 7 = *Very strongly*. The item formulation was based on the definition of dyadic sexual desire by Prekatsounaki et al. (2022), while the rating scale was inspired by the rating scales used in Sexual Desire Inventory-2 (SDI-2; Spector et al., 1996).

Sexual Initiations. As noted by Vannier and O'Sullivan (2011), sexual initiation strategies can be divided into behavioral and verbal strategies. To reflect this distinction, sexual initiations in the current study were assessed as follows: "*Since the last beep, did you express interest in sexual activity with your partner, or did you take sexual initiative?*" with response options: "*No*," "*Yes, I showed my partner*," "*Yes, I told my partner*." For the purposes of our analyses, this outcome variable was dichotomized to reflect the presence and absence of sexual initiation (yes vs. no), regardless of the mode of initiation (i.e., verbal or behavioral).

Sexual Receptivity. Receptivity to a partner's sexual initiation was assessed as follows: "*In case your partner took the sexual initiative after the last beep, how did you respond to their sexual initiative?*" with response options: "*I responded positively*," "*I did not respond*," "*I responded negatively*," and "*No sexual initiative*." For the purposes of the analyses, this outcome variable was dichotomized. Sexual receptivity was indexed when participants reported responding positively to their partner's initiations, and lack of sexual receptivity was indexed when participants reported responding negatively, not responding to their partner's initiations or indicating no sexual initiative was taken by their partner.

Partnered Genital Sexual Activity. Solitary sexual activity and partnered sexual activity were assessed as follows: "*Since the last beep, I have masturbated*," with response options: "*No*," "*Alone*," and "*Together with my partner*;" and "*Since the last beep, I engaged in the following intimate behaviors with my partner*," with response options: "*No intimate behaviors with my partner*," "*Non-genital contact (e.g., cuddling, kissing)*," "*Genital touching*," "*Oral sex*," "*Penetration (penis or dildo in vagina or anus)*." Data on solitary sexual activity (i.e., masturbation alone) are not reported here. For the purposes of analysis, this outcome variable was dichotomized, such that genital sexual activity with a partner was indexed when participants indicated masturbating together with their partner, engaging in genital touching, oral, or penetrative sex. Lack of partnered genital sexual activity was indexed when partners indicated engaging in non-genital contact or not engaging in any intimate behaviors with their partners.

Perceived Partner Support. Perceived partner support was assessed using the following item: "*Since the last beep, I felt supported by my partner*" with response options on a 7-point Likert-type scale, ranging from 1 = *Not at all* to 7 = *Very much*.

Data Analysis

To investigate the temporal associations among the similarity in partners' dyadic sexual desire in relation to sexual initiations, receptivity to partners' initiations, as well as partnered sexual behaviors, we tested six separate time-lagged polynomial longitudinal regression models and used response surface analysis (RSA; Nestler et al., 2019; Schönbrodt et al., 2018). RSA is a method allowing for the calculation of both the effect of the level and direction of (dis)similarity in measures between partners on continuous outcome variables by including quadratic and interaction effects of one's own and one's partner predictor variables. However, as we were interested in predicting binary outcomes (e.g., the presence or absence of partnered sexual activity), we used an adaptation of RSA (Schönbrodt & Humberg, 2021). More specifically, we relied on longitudinal logistic regression models, modeling the probability of the event of interest.

The regression and RSA analyses involved several steps. First, each time-lagged polynomial longitudinal regression model included the regressions of all grand mean-centered predictor variables (each partner's sexual desire, squared terms of each partner's sexual desire, and an interaction term of partners' sexual desire) at a previous assessment point (t-1) on the outcome variables (log odds of sexual initiation vs. no initiation by men and women, log odds of men and women being receptive vs. unreceptive to partner's sexual initiation, and log odds of partnered sexual activity vs. no partnered sexual activity) at a particular assessment point (t). Partnered sexual activity was considered only if both partners reported it at the same assessment point. The effects of the over-time predictors were split into the assessment-time level and person-level effects (i.e., within-subject and between-subject effects), allowing us to explore moment-to-moment associations between the variables of interest. To estimate how partners' dyadic sexual desire levels fluctuated over time together, we jointly modeled the dyadic sexual desire of both partners using a multilevel model with correlated random intercepts for each partner, and unstructured residual covariance at each time-point. Thus, we estimated the covariance of momentary dyadic sexual desire between partners (as described by Butner et al., 2007) as well as couple-level covariance.

We evaluated the results of our analyses with regard to five surface test values (a_1,a_2,a_3,a_4, and a_5). These surface test values provided by the RSA are the key test of our predictions as they provide information on the effects of similarity in dyadic sexual desire, the effects of within-couple desire level, and, in case of discrepancy, the effects of its direction. We tested the significance of the surface values by entering the five parameter estimates obtained from the polynomial longitudinal logistic regression analysis, their respective standard errors, and covariances into the RSA package in R (Schönbrodt & Humberg, 2021). This analysis tests the similarity effects, showing how (dis)similarity in sexual desire levels between the partners is associated with the outcome variables (i.e., log odds of sexual initiation vs. no initiation by men and women, log odds of men and women being receptive vs. unreceptive to partner's sexual initiations, and log odds of partnered sexual activity vs. no partnered sexual activity).

Surface value a_1 tests the slope of the line of congruence (i.e., the line where partners' dyadic desire levels are equivalent) at the point (0, 0). Points along this line reflect the similarity between the partners at different levels of dyadic desire. In the current research, if only a_1 is significant and positive, it indicates that within couples, at moments with higher dyadic sexual desire, partners have a higher likelihood of initiating sex, being receptive to the sexual initiative, and engaging in sexual behaviors than at moments with lower levels of dyadic desire. A significant negative a_1 coefficient indicates that at moments with higher levels of dyadic desire partners have a lower chance

of initiating sex, being receptive to the sexual initiative, and engaging in sexual behaviors compared to moments with lower levels of dyadic desire.

Surface value a_2 tests the curvature of the line of congruence, describing a nonlinear relationship between the average level of sexual desire and the outcome variables. In the current study, if only a_2 is significant and positive, it indicates that at moments with moderate levels of dyadic sexual desire partners are less likely to initiate sex, be receptive to sexual initiation, and engage in sexual behaviors relative to moments with extreme levels of dyadic sexual desire. Conversely, a significant and negative a_2 coefficient indicates that at moments with moderate levels of sexual desire partners are more likely to initiate sex, be receptive to sexual initiation, and engage in sexual behaviors relative to moments with extreme levels of dyadic sexual desire.

Surface value a_3 tests the slope of the line of incongruence at point (0, 0). In the current research, if only a_3 is significant and positive, it indicates that the likelihood of initiating sex, being receptive to the sexual initiative, and engaging in sexual behaviors is higher at moments when a person's (i.e., the actor's) dyadic sexual desire is greater than their partner's dyadic sexual desire, compared to vice versa. A significant and negative a_3 indicates that the likelihood of initiating sex, being receptive to sexual initiative, and engaging in sexual behaviors is higher at moments when the partner's dyadic desire is greater than the actor's dyadic desire.

Surface value a_4 tests the curvature of the line of incongruence. The a_4 can help answer whether similarity is better or worse than dissimilarity (i.e., similarity effects), although these effects cannot be determined by solely interpreting an a_4 in isolation (Humberg et al., 2019). In the current study, if a_4 is significant and positive while a_3, and a_5 are nonsignificant, it indicates a higher likelihood of initiating sex, being receptive to the sexual initiative, and engaging in sexual behaviors, at moments when partners have dissimilar dyadic desire levels. A significant negative a_4 value indicates a lower likelihood of initiating sex, being receptive to the sexual initiative, and engaging in sexual behaviors at moments when partners have dissimilar desire levels. However, if a significant negative a_4 surface value is accompanied by a significant a_1 and/or a_2 surface value, and non-significant a_3 and a_5 values, it indicates a broad similarity effect, where in addition to the similarity effect there is also a main effect of the level of dyadic desire. This means that couples are more likely to initiate sex, be receptive to sexual initiative, and engage in partnered sex not only when their dyadic desire levels are similar but also when they are at a certain level (e.g., high or moderate).

Finally, surface value a_5 (see, Schönbrodt et al., 2018) is relevant for determining whether a response surface reflects a strict similarity effect (detailed below), because the a_1 _a_4 parameters alone are insufficient to detect such an effect (Humberg et al., 2019). In the current study, a nonsignificant a_5 value would be required to determine whether similarity is better or worse than dissimilarity at all levels of dyadic sexual desire, provided that a_4 value is significantly different from zero, while a_1, a_2, and a_3 values are not significant. We ran separate analyses for men and women on all outcome variables.

As a second step, we expanded the polynomial longitudinal logistic models described above to investigate whether the effects of dyadic sexual desire might differ depending on the extent to which each partner perceived the other as supportive. We investigated the role of perceived partner support as a moderator by fitting separate models, where we included interaction terms of the moderator at *t*-1 with all predictor variables at *t*-1. First, we tested the moderation model at the average level of the moderator. If the model revealed that the moderator interacted significantly with the predictor variables, we calculated RSA parameters at lower (- 1 *SD*), average, and higher (+ 1 *SD*) levels of the moderator. All regressions were fitted with the *lme4, lmerTest*, and *nlme* packages in R with robust maximum likelihood method with corrected standard errors (*SE*) for clustered observations to handle missing data (Bates et al., 2015; Kuznetsova et al., 2017; Pinheiro et al., 2022).

Results

Descriptives

Of the participating couples (N = 94), eighty-eight couples were mixed-gender, and six couples were same-gender couples, including two gay couples, and four lesbian couples. Women ranged in age from 18 to 50 years (M = 25.24, SD = 6.65), while men ranged in age from 18 to 56 years (M = 27.04, SD = 8.56), with 79% of participants being younger than 30 years of age. The majority of participants (59%) were employed, 53% were students, and 6% were unemployed. Most of the participants (69%) obtained a university degree. In total 83% of men and 82% of women identified as White. Thirty-nine percent of the women reported using hormonal contraception.

The couples had been in their current relationship between three months and 30 years, with 73% of the couples being in a relationship for less than 5 years. Most of the couples were unmarried (88%). Only 9% of the participants reported having children. The majority of participants (84%) reported engaging in partnered sexual behaviors at least once a week for the month prior to participating in this study. On average, both men and women were highly satisfied with their relationships with their partners (M = 6.38, SD = 0.98 for men, and M = 6.18, SD = 0.98 for women), as well as with their sexual relationship (M = 5.68, SD = 1.18 for men, and M = 5.47, SD = 1.18 for women). Furthermore, participants reported, on average, high satisfaction with their overall sexual functioning (M = 5.71, SD = 1.10 for men, and M = 5.17, SD = 1.32 for women).

Table 1 presents descriptive data for the outcome variables. Over the course of the study, most couples (87%) reported at least one partnered sexual activity, with 12 couples reporting no partnered sex. Among partnered sexual behaviors, genital touching was reported most frequently, followed by penetrative sex, oral sex, and masturbating together with the partner. Both men and women were most likely to report partnered sexual activity at the first assessment of the day, at 11 a.m. (encompassing both the morning and the previous night; 44%), followed by the second assessment at 1 p.m. (15%), and the last assessment of the day, at 9 p.m. (14%). Men reported taking sexual initiative toward their partner more often than women did. Both men and women tended to express

Table 1. Sexual Initiations, Receptivity to Partner's Sexual Initiations, and Partnered Sexual Behaviors in Couples. Descriptive Statistics at the Prompt Level.

	Descriptive statistics			
	Men		Women	
	N	%	*N*	%
Sexual initiative	861	100	829	100
Verbal	248	28.8	261	31.5
Behavioral	613	71.2	568	68.5
Receptivity to partner's initiative	774	100	926	100
Positive response	432	55.8	471	50.9
Negative response	8	1	18	1.9
No response	13	1.7	41	4.4
No sexual initiative	211	27.3	264	28.5
Missing response	110	14.2	132	14.3
Partnered sex	449	100	453	100
Genital touch	375	83.5	393	86.8
Masturbating together	52	11.6	66	14.6
Oral sex	229	51	229	50.6
Penetrative sex	281	62.6	279	61.6

their interest behaviorally rather than verbally. In most cases, men and women reported responding positively to their partner's sexual initiative. Nevertheless, in nearly one-third of the cases, when one of the partners reported taking sexual initiative, the other indicated their partner did not take such initiative.

On average, dyadic sexual desire levels of men (M = 2.82, SD = 1.79), and women (M = 2.52, SD = 1.70) across all assessment points were low to moderate. When dyadic sexual desire was plotted as a function of assessment time across the day, averaged over participants and days, a clear pattern appeared (see Figure 1). Dyadic sexual desire showed a decline after the 11 a.m. assessment, increased again gradually from the 3 p.m. assessment, and peaked at the last assessment of the day at 9 p.m. This pattern was similar for men and women, although men's desire levels were slightly higher than women. Dyadic desire levels of relationship partners covaried significantly at the assessment time level, r_s = .14, p < .001, but not on the couple level, across all assessment points, r_s = .01, p = .401. Therefore, couples shared fluctuations in their dyadic sexual desire levels from one assessment to the next, but on average, over the entire study period, dyadic sexual desire levels of the relationship partners did not show any significant association.

On average, women completed 74% and men completed 71% of the total number of assessments. All participants completed at least 30% of the assessments, the equivalent of 20 entries in the current study, which is considered sufficient for data analysis (Delespaul, 1995). The proportion of missing data was comparable across assessment times, ranging from 26% to 29%. In the case of a 100% completion rate by all participants, the total number of data entries in a day would be 1128 (188 participants × 6 assessments/day). The number of completed assessments ranged from

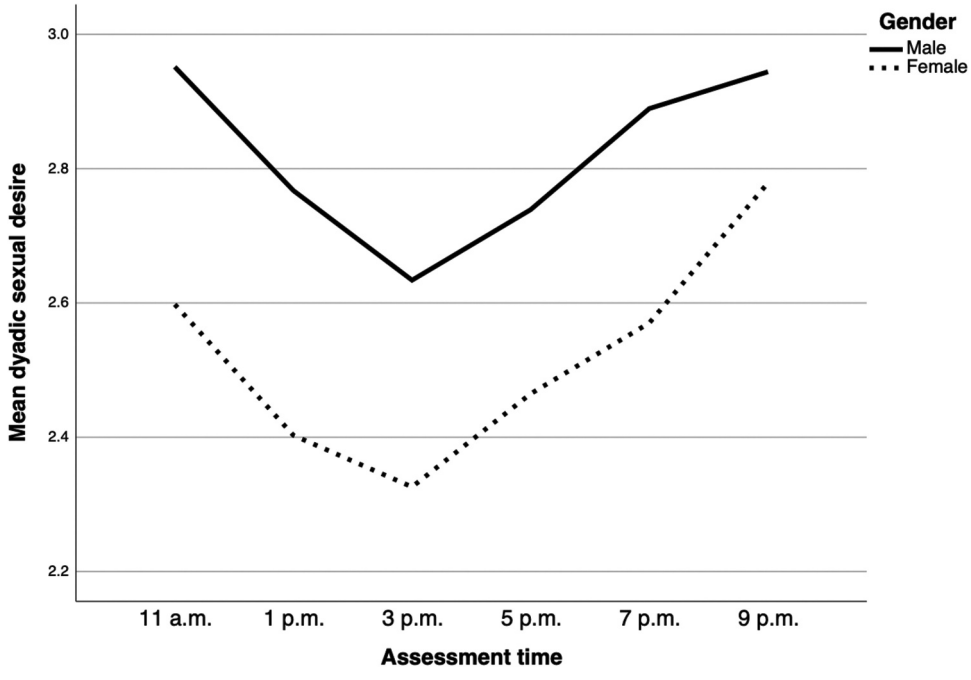

Figure 1. Men's and women's dyadic sexual desire across the day, averaged over participants and days.

1068 on the second day of the study to 866 on the last day of the study.

Time-Lagged Polynomial Regression and RSA Analyses

Tables 2 to 4 present the results of the time-lagged polynomial longitudinal regression analyses and the surface tests.

Similarity in Dyadic Desire and Sexual Initiation

As shown in Table 2, the positive and significant a_1 values indicate that both men and women were more likely to indicate interest in sex to their partner at moments when the couple had high levels of dyadic sexual desire, compared to moments when these levels were low. Given the absence of significant a_4 values, we found no evidence to suggest that men or women were

Table 2. Prediction of Men's and Women's Sexual Initiations by Similarity in Actor's (A) and Partner's (P) Dyadic Sexual Desire at a Previous Assessment Point.

	Parameter estimates						
Parameter	Estimate	*SE*	*z*-value	Sig.	Surface values		Sig.
Men taking the initiative to have sex							
Intercept	− 1.91	0.13	− 14.67	< .001			
t-1 Dyadic sexual desire A	0.28	0.05	5.98	< .001	a_1	0.54	< .001
t-1 Dyadic sexual desire P	0.26	0.04	6.18	< .001	a_2	0.04	.190
t-1 Dyadic sexual desire A * P	0.01	0.02	0.24	.809	a_3	0.01	.832
t-1 Dyadic sexual desire A^2	0.01	0.02	0.66	.511	a_4	0.03	.339
t-1 Dyadic sexual desire P^2	0.03	0.02	1.41	.158	a_5	− 0.01	.606
Women taking the initiative to have sex							
Intercept	− 2.11	0.13	− 16.68	< .001			
t-1 Dyadic sexual desire A	0.35	0.04	8.08	< .001	a_1	0.64	< .001
t-1 Dyadic sexual desire P	0.28	0.05	6.03	< .001	a_2	0.00	.990
t-1 Dyadic sexual desire A * P	0.01	0.02	0.01	.993	a_3	− 0.07	.279
t-1 Dyadic sexual desire A^2	0.02	0.02	1.19	.233	a_4	0.00	.999
t-1 Dyadic sexual desire P^2	− 0.02	0.02	− 1.10	.271	a_5	−0.04	.108

Table 3. Prediction of Men's and Women's Responses to Partner's Sexual Initiations by Similarity in Actor's (A) and Partner's (P) Dyadic Sexual Desire at a Previous Assessment Point.

	Parameter estimates						
Parameter	Estimate	*SE*	*z*-value	Sig.	Surface values		Sig.
Men's responses to sexual initiative by their partner							
Intercept	− 0.76	0.21	− 3.59	< .001			
t-1 Dyadic sexual desire A	− 0.21	0.10	− 2.16	.031	a_1	− 0.06	.656
t-1 Dyadic sexual desire P	0.15	0.09	1.58	.113	a_2	0.00	.999
t-1 Dyadic sexual desire A * P	0.01	0.04	0.10	.921	a_3	− 0.36	.006
t-1 Dyadic sexual desire A^2	0.03	0.04	0.72	.469	a_4	− 0.01	.906
t-1 Dyadic sexual desire P^2	− 0.03	0.03	− 0.91	.363	a_5	− 0.06	.257
Women's responses to sexual initiative by their partner							
Intercept	− 0.61	0.20	− 3.09	.002			
t-1 Dyadic sexual desire A	− 0.29	0.08	− 3.40	.001	a_1	− 0.51	< .001
t-1 Dyadic sexual desire P	− 0.22	0.09	− 2.41	.016	a_2	0.10	.056
t-1 Dyadic sexual desire A * P	0.04	0.04	0.94	.345	a_3	0.07	.525
t-1 Dyadic sexual desire A^2	0.01	0.03	0.08	.940	a_4	0.03	.638
t-1 Dyadic sexual desire P^2	0.07	0.03	2.00	.045	a_5	0.06	.195

Table 4. Prediction of Men's and Women's Partnered Sexual Activity by Similarity in Actor's (A) and Partner's (P) Dyadic Sexual Desire at a Previous Assessment Point.

	Parameter estimates						
Parameter	Estimate	*SE*	*z*-value	Sig.	Surface values		Sig.
Men's engagement in partnered sexual activity							
Intercept	− 2.81	0.11	− 24.93	< .001			
t-1 Dyadic sexual desire A	0.33	0.06	5.40	< .001	a_1	0.73	< .001
t-1 Dyadic sexual desire P	0.39	0.06	7.03	< .001	a_2	− 0.04	.255
t-1 Dyadic sexual desire A * P	− 0.03	0.02	− 1.53	.127	a_3	− 0.06	.429
t-1 Dyadic sexual desire A^2	− 0.02	0.02	− 0.89	.376	a_4	0.03	.455
t-1 Dyadic sexual desire P^2	0.01	0.02	0.62	.539	a_5	− 0.03	.294
Women's engagement in partnered sexual activity							
Intercept	− 2.77	0.11	− 25.31	< .001			
t-1 Dyadic sexual desire A	0.38	0.05	7.01	< .001	a_1	0.70	< .001
t-1 Dyadic sexual desire P	0.32	0.06	5.43	< .001	a_2	− 0.04	.246
t-1 Dyadic sexual desire A * P	− 0.02	0.02	− 1.08	.282	a_3	− 0.06	.448
t-1 Dyadic sexual desire A^2	0.01	0.02	0.36	.722	a_4	0.01	.851
t-1 Dyadic sexual desire P^2	− 0.02	0.02	− 1.12	.262	a_5	− 0.03	.296

more likely to indicate interest in sex to their partner at moments when their own dyadic desire levels were similar to their partner's.

Similarity in Dyadic Desire and Receptivity to Sexual Initiation

As shown in Table 3, for men, the nonsignificant a_1, a_2, a_4, and a_5 values indicate that the line of congruence was linear, and its slope was zero. The line of incongruence was also linear, suggesting that the likelihood of men being receptive to their partner's initiations was higher at moments when the levels of dyadic desire between the partners were dissimilar. Specifically, as indicated by the significant and negative a_3 value, men were more likely to be receptive to their partner's sexual initiations at moments when their partner's dyadic sexual desire levels were higher than their own.

The negative and significant a_1 value indicates that women were less likely to be receptive to their partner's sexual initiative at moments when the couple had high levels of dyadic desire, compared to moments with low levels of dyadic desire. The absence of a significant a_4 value indicates that there was no evidence to suggest that women were more receptive to their partner's sexual initiative at moments when their own dyadic desire levels were similar to their partner's.

Similarity in Dyadic Desire and Partnered Sexual Behaviors

As shown in Table 4, the positive and significant a_1 values indicate that both men and women were more likely to engage in sex with their partners at moments when their levels of dyadic sexual desire were high, compared to moments when they were low. Given the absence of significant a_4 values, we found no evidence to suggest that men or women were more likely to engage in sex with their partner at moments when their own dyadic desire levels were similar to their partner's.

Tests of Moderation by Perceived Partner Support

Our analyses revealed that the associations between similarity in dyadic sexual desire and receptivity to the sexual initiative by the partner were moderated by perceived partner support in women, but not in men. Further tests revealed that perceived partner support had a moderating effect at lower, but not higher, levels of the moderator. The results of these analyses are presented in Table 5.

At lower levels of perceived partner support, the negative and significant a_1 value together with the significant and positive a_2 value indicate that at moments when women reported lower perceived partner support levels, high and moderate levels of dyadic sexual desire between the partners were associated with a lower likelihood of women's receptivity to their partner's sexual initiations. The absence of a significant a_4 value indicates that there was no evidence to suggest that women were more receptive to their partner's sexual initiative at moments when their own dyadic desire levels were similar to their partner's.

For both men and women, the associations between partners' similarity in dyadic sexual desire and sexual initiations, as well as between partners' similarity in dyadic sexual desire and partnered sexual behaviors were not moderated by perceived partner support, as evidenced by nonsignificant interaction effects between perceived partner support and any of the predictor variables. The results of these analyses can be found in Supplementary Tables 6 and 7 online.

Discussion

This study examined, in a sample of cohabitating couples, the links among similarity in dyadic sexual desire, sexual initiations, receptivity to sexual initiations, and partnered sexual activity, as well as the degree to which such associations might be moderated by perceived partner support. Despite the substantial body of work suggesting that similarity between partners in sexual desire has positive effects on sexual relationships (Day et al., 2015; Girard, 2019; Mark, 2015; Willoughby & Vitas, 2012), we found no evidence that experiencing similar levels of dyadic sexual desire was associated with higher odds to initiate, be receptive to, or engage in partnered sexual behaviors. Even though the couples shared a portion of their daily fluctuations in dyadic desire, our results show that experiencing high, but not necessarily similar (i.e., identical), levels of dyadic sexual desire can facilitate sexual initiation and engagement in partnered sexual behaviors in both men and women. As such, our findings echo those of Kim et al. (2021), who reported that in non-clinical samples of couples higher, not similar, levels of sexual desire were associated with higher relationship and sexual satisfaction.

Considering how prevalent sexual desire discrepancies are, it appears that some couples may have developed strategies to increase their dyadic desire and navigate the interpersonal processes involved in deciding whether to engage in sexual activities or not, even when their desire levels were dissimilar. Studies have found that individuals who are motivated to have sex for approach goals (e.g., to enhance intimacy) or to meet their partner's sexual needs (Hogue et al., 2019; Muise et al., 2017, 2013) more successfully manage sexual desire discrepancies. More sexually active couples may also communicate more openly about their sexual wants and needs, continuously attempting to work toward sexual scripts and patterns that are satisfying to both partners (Dewitte et al., 2020).

Although couples' dyadic desire levels were associated with the likelihood of both men and women being receptive to their partner's sexual initiatives, these effects differed by gender. Men were more likely to be receptive to their partner's sexual initiative when their partner's desire levels were higher than their own, indicating that the partner's desire was an important factor in men's willingness to engage in partnered sex. This is inconsistent with past research findings showing that men report being more likely to have sex for physical gratification motives (e.g., Carroll et al., 1985; Hatfield et al., 1989; Hill & Preston, 1996). Given possible societal and cultural changes with increased emphasis placed on equality in sexual pleasure (Coleman et al., 2021; Laan et al., 2021), our findings might reflect such changes. Yet, research also suggests that compared to men, women are more sensitive to sexual rejection and are more likely to refrain from future initiations following sexual rejection (De Graaf & Sandfort, 2004; Metts et al., 1992).

Table 5. Prediction of men's and women's responses to partner's sexual initiations by similarity in actor's (A) and partner's (P) dyadic sexual desire moderated by perceived partner support (PPS) at a previous assessment point.

	Parameter estimates						
Parameter	Estimate	*SE*	*z*-value	Sig.	Surface values		Sig.
Men's responses to sexual initiative by their partner at average levels of PPS at *t*-1							
Intercept	− 0.76	0.21	− 3.53	<.001			
t-1 Dyadic sexual desire A	− 0.17	0.10	− 1.71	.087			
t-1 Dyadic sexual desire P	0.15	0.10	1.56	.118			
t-1 Dyadic sexual desire A * P	0.01	0.04	0.12	.906			
t-1 Dyadic sexual desire A^2	0.02	0.04	0.49	.621			
t-1 Dyadic sexual desire P^2	− 0.03	0.04	− 0.97	.331			
t-1 PPS A	− 0.08	0.11	− 0.67	.502			
t-1 Dyadic sexual desire A * PPS A	0.01	0.06	0.22	.828			
t-1 Dyadic sexual desire P * PPS A	0.07	0.07	1.02	.306			
t-1 Dyadic sexual desire A*P * PPS A	− 0.02	0.03	− 0.81	.418			
t-1 Dyadic sexual desire A^2 *PPS A	− 0.01	0.03	− 0.10	.920			
t-1 Dyadic sexual desire P^2 *PPR A	− 0.01	0.03	− 0.08	.936			
Women's responses to sexual initiative by their male partner at average levels of PPS at *t*-1							
Intercept	− 0.58	0.21	− 2.73	.006			
t-1 Dyadic sexual desire A	− 0.32	0.09	− 3.40	.001	a_1	− 0.59	< .001
t-1 Dyadic sexual desire P	− 0.27	0.10	− 2.83	.005	a_2	0.08	.216
t-1 Dyadic sexual desire A * P	0.05	0.05	1.09	.277	a_3	0.05	.703
t-1 Dyadic sexual desire A^2	− 0.05	0.04	− 1.23	.219	a_4	− 0.01	.846
t-1 Dyadic sexual desire P^2	0.09	0.04	2.48	.013	a_5	0.14	.014
t-1 PPR A	0.04	0.13	0.29	.770			
t-1 Dyadic sexual desire A * PPS A	− 0.03	0.08	− 0.31	.756			
t-1 Dyadic sexual desire P * PPS A	− 0.08	0.07	− 1.12	.259			
t-1 Dyadic sexual desire A*P * PPS A	− 0.02	0.03	− 0.52	.602			
t-1 Dyadic sexual desire A^2 *PPS A	0.08	0.03	2.28	.023			
t-1 Dyadic sexual desire P^2 *PPS A	− 0.01	0.03	− 0.06	.951			
Women's responses to sexual initiative by their male partner when PPS levels at *t*-1 were low (−1 *SD*)							
Intercept	− 0.54	0.22	− 2.41	.016			
t-1 Dyadic sexual desire A	− 0.33	0.10	3.28	.001	a_1	− 0.70	< .001
t-1 Dyadic sexual desire P	− 0.37	0.12	− 2.97	.003	a_2	0.16	.013
t-1 Dyadic sexual desire A * P	0.04	0.05	1.01	.312	a_3	− 0.03	.835
t-1 Dyadic sexual desire A^2	0.03	0.04	0.71	.475	a_4	0.06	.426
t-1 Dyadic sexual desire P^2	0.08	0.04	2.04	.041	a_5	0.07	.308
t-1 PPR A	0.01	0.12	0.09	.930			
t-1 Dyadic sexual desire A * PPS A	− 0.04	0.07	− 0.60	.547			
t-1 Dyadic sexual desire P * PPS A	− 0.09	0.06	− 1.52	.129			
t-1 Dyadic sexual desire A*P * PPS A	− 0.01	0.03	− 0.29	.772			
t-1 Dyadic sexual desire A^2 *PPS A	0.07	0.03	2.00	.045			
t-1 Dyadic sexual desire P^2 *PPR A	0.01	0.02	0.09	.928			
Women's responses to sexual initiative by their male partner when PPS levels at *t*-1 were high (+1 *SD*)							
Intercept	− 0.72	0.27	− 2.68	.007			
t-1 Dyadic sexual desire A	− 0.35	0.13	2.78	.006			
t-1 Dyadic sexual desire P	− 0.23	0.12	− 1.95	.051			
t-1 Dyadic sexual desire A * P	0.06	0.06	0.98	.328			
t-1 Dyadic sexual desire A^2	− 0.09	0.06	− 1.51	.130			
t-1 Dyadic sexual desire P^2	0.10	0.05	2.16	.031			
t-1 PPS A	0.08	0.11	0.72	.469			
t-1 Dyadic sexual desire A * PPS A	0.02	0.07	0.21	.832			
t-1 Dyadic sexual desire P * PPS A	− 0.03	0.07	− 0.49	.624			
t-1 Dyadic sexual desire A*P * PPS A	− 0.02	0.03	− 0.63	.529			
t-1 Dyadic sexual desire A^2 *PPS A	0.05	0.03	1.85	.064			
t-1 Dyadic sexual desire P^2 *PPS A	− 0.01	0.02	− 0.39	.694			

Considering that our sample consisted mostly of mixed-gender couples, it might be that these results reflect a tendency of heterosexual men to agree to have sex with their female partner in order to avoid such negative consequences. It is also possible that men are more likely to be receptive to their partner's sexual initiative because it signals to them that they are a desirable sexual partner. Indeed, research in heterosexual relationships shows that men report more satisfaction when women initiate sex, at least in part because this contradicts social norms and expectations about sexual initiation being the domain of men, which can increase men's sense of sexual desirability (Velten et al., 2017).

We also found that women were less likely to be receptive to their partner's sexual initiative when the couple experienced high levels of dyadic desire. This could reflect women's agency or desire to make their own decisions whether to have sex. However, if that were the case, we would also have expected to see a significant a_3 surface value, but we did not find this. Instead, this effect was moderated by perceived partner support, such that women were less likely to be receptive to their partner's sexual initiative at moments when the couple had moderate or high levels of dyadic desire, but the partner was perceived as less supportive. Even though this effect was small, this finding fits with the idea that perceiving one's partner as

unsupportive may decrease dyadic desire and trigger avoidance of physical intimacy. It also indicates context-sensitivity of sexual responding in women and shows that the extent to which women in our study felt supported by their partners was crucial for their receptivity to their partner's sexual initiation.

Strengths, Limitations, and Future Directions

A strength of the present study involves the use of electronic EMAs, which allowed us to collect multiple time-sampled assessments from both partners throughout the day and across days, thus providing us with a detailed view of couples' daily experiences (Reis et al., 2014). By assessing dyadic sexual desire and not the general sexual desire levels, we were able to control for the object of sexual desire that partners reported on while completing their assessments. The sophisticated statistical method (Schönbrodt et al., 2018) used in the current study allowed us to test novel hypotheses with regard to the associations among the level, (direction of) discrepancy, and similarity in dyadic sexual desire and each partner's outcomes. Furthermore, in testing these associations, we considered the moderating role of perceived partner support.

Yet, some limitations should be acknowledged. First, our sample involved mostly heterosexual, well-educated, White, sexually healthy, and relationally satisfied couples, who volunteered to report on sexual experiences in their daily lives. Thus, our results may not characterize the sexual dynamics within the broader population of couples, nor the dynamics of couples experiencing sexual or relational distress. Future studies should include more diverse samples, including samples of non-heterosexual couples, and couples that experience relational and/or sexual distress.

The response surface methodology used in the current study is also not without pitfalls. Recommendations regarding the interpretation of surface values vary (e.g., Barranti et al., 2017; Humberg et al., 2019; Schönbrodt et al., 2018; Shanock et al., 2010) and there is controversy and disagreement as to which (combinations) of the surface values represent a similarity effect (see Humberg et al., 2019). We think that this issue is, at least in part, related to the conceptual confusion regarding what RSA tests, and the myriad of different terms used to describe the results of RSA (e.g., similarity, congruence, matching, agreement, discrepancy). Researchers using this method should be mindful and careful in selecting and defining the constructs measured and the hypotheses tested to avoid further conceptual confusion and discrepancies in the interpretations of effects.

To deliver assessments to both partners at the same time using the EMA software the assessment times had to be fixed rather than semi-random. This could have made it easier for participants to anticipate when the assessments will be delivered, potentially causing them to prepare their responses before the assessments and changing the way they would naturally respond (Alliger & Williams, 1993). If possible, future studies should try to incorporate software options that allow for semi-random assessment times that are synchronized within couples. The intensive sampling procedure could have fatigued participants, influencing (the accuracy of) their responses and increasing the amount of missingness within the dataset (Napa Scollon et al., 2009). Indeed, in the current study, the number of missing values increased toward the end of the study period. Yet, since the proportion of missing assessments was kept below the limit of 70% recommended by Delespaul (1995), we did not consider the missing data problematic. Moreover, most of the constructs assessed in the current study were measured using items developed by the authors. Thus, these items did not come from validated questionnaires and their use could have resulted in measurement error. Future studies should strive to use validated questionnaires and their EMA adaptations to increase the confidence in their results.

Seeing that partners reported initiating sex nearly four times more often than they reported engaging in partnered sexual activities, future studies could investigate why the desire to have sex with a relationship partner did not lead to sexual activity. In a similar vein, investigating (sexual) behaviors following a partner's sexual rejection, and their influence on dyadic sexual desire during future assessments could improve our understanding of the link between sexual desire and (partnered) sexual behaviors.

Conclusion

Despite the dyadic, dynamic, and context-dependent nature of sexual desire, studies on sexual desire and its consequences in daily relationship contexts are still relatively rare. The findings from the current study contribute to filling this gap by showing that in couples' daily lives it was the level of sexual desire, rather than the extent to which partners' desire levels were similar, that was associated with sexual initiations, receptivity, and behavior of men and women. Given that the experience of sexual desire is influenced by a myriad of factors, and it is unlikely for relationship partners to consistently experience similar desire levels, it may not come as a surprise that similarity in dyadic desire was not a prerequisite for sexual behavior in couples to occur. As such, our findings provide support for clinical interventions aimed at maintaining dyadic sexual desire in long-term relationships and suggest a need for increased focus on managing decreases in perceived partner support, especially for women. To develop a better understanding of factors that promote engagement in sexual behavior in couples, future research might benefit from a stronger focus on strategies that couples employ when managing sexual desire discrepancies in their daily lives, and how these strategies relate to their behavioral outcomes.

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Data availability statement

Research data for this project has been made available on DataVerseNL platform (https://dataverse.nl/) under the following DOI: https://doi.org/10.34894/IMRDQK

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