Original Manuscript

Social Psychological and Personality Science
1-10

DOI: 10.1177/1948550620926770
journals.sagepub.com/home/spp
SAGE

Are Couples More Satisfied When They Match in Sexual Desire? New Insights From Response Surface Analyses

James J. Kim[1]*, Amy Muise[2]*, Max Barranti[2], Kristen P. Mark[3], Natalie O. Rosen[4], Cheryl Harasymchuk[5], and Emily Impett[6]

Abstract

While sexual frequency and satisfaction are strong contributors to the quality and longevity of romantic relationships and overall well-being, mismatches in sexual desire between partners are common and have been linked with poorer satisfaction. Previous findings linking mismatches in desire with poorer relationship and sexual outcomes have typically been derived using difference scores, an approach that does not account for partners' overall levels of desire. In a sample of 366 couples, we investigated whether partners who match in desire are more satisfied than desire-discrepant couples. Results of dyadic response surface analyses provided no support for a unique matching effect. Higher desire rather than matching in desire between partners predicted relationship and sexual satisfaction. These findings shed new light on whether the correspondence between partners' levels of sexual desire is associated with satisfaction and suggest the need to focus on sustaining desire and successfully navigating differences rather than promoting matching in desire.

Keywords

close relationships, sexual desire, satisfaction

Romantic relationship quality is a robust predictor of health and happiness (e.g., Coombs, 1991; Diener & Seligman, 2002), but successful relationships require partners to coordinate different needs and interests (Fitzsimmons et al., 2015; Gere & Impett, 2018). Sexual activity is one domain that distinguishes romantic relationships from other close relationships and a domain in which partners can find it difficult to coordinate their interests (Miller et al., 2003). In fact, disagreements about sex are one of the top three sources of conflict between partners (Risch et al., 2003). Given that most romantic relationships are sexually monogamous (Haupert et al., 2017), people often rely exclusively on a romantic partner to meet their sexual needs, and therefore, differences in sexual interest between partners might have particularly important consequences for satisfaction.

On a variety of traits and preferences (e.g., attitudes, physical attractiveness), when romantic partners are more similar, they report higher relationship satisfaction (e.g., Arindell & Luteijn, 2000; Markey & Markey, 2007; Russell & Wells, 1991; Wilson & Cousins, 2003). Indeed, relationship theories such as the vulnerability-stress-adaptation model (Karney & Bradbury, 1995) propose that the effect of similarity between partners on their character strengths or vulnerabilities can be more important than the independent effects of such characteristics for relational outcomes (Gonzaga et al., 2007). Similarity is theorized to foster relationship satisfaction because it may help partners understand each other (Anderson et al., 2003). However, other work suggests that there is little or no association between similarity between partners—at least in personality traits—and important relationship outcomes (van Scheppingen et al., 2018; Weidmann et al., 2017).

It is intuitive that similar levels of sexual desire could be associated with smoother interactions in a domain that tends to be highly emotionally charged for couples (e.g., Rehman et al., 2017; Theiss & Estlein, 2014). However, similarity on sexual desire might be different than similarity on personality traits since sexual desire is directed toward the partner. There

[1] University of Toronto, Ontario, Canada
[2] York University, Toronto, Ontario, Canada
[3] Univeristy of Kentucky, Lexington, KY, USA
[4] Dalhousie University, Halifax, NS, USA
[5] Carleton University, Ottawa, Ontario, Canada
[6] University of Toronto Mississauga, Ontario, Canada
*James J. Kim and Amy Muise contributed equally.

Corresponding Authors:
James Kim, University of Toronto, Toronto, ON Ontario, Canada; Amy Muise, York University, Behavioural Science Building Room 244, 4700 Keele St., Toronto, ON Ontario, Canada M3J 1P3.
Emails: jamesjk.kim@mail.utoronto.ca; muiseamy@yorku.ca

is a growing focus on interpersonal models in sexuality research that highlight the importance of considering how partners influence each other (e.g., Basson, 2000; Rosen & Bergeron, 2019). In fact, a romantic partner's level of desire is associated with a person's sexual and relationship satisfaction above and beyond their own desire (Mark, 2014; Muise et al., 2018), suggesting that levels of sexual desire in a relationship, and not matching on desire, might be more important. In the current research, we take a novel approach to testing whether couples who match in levels of sexual desire are more satisfied with their sex lives and relationships compared to couples who are mismatched.

Sexual Desire Discrepancies in Relationships

It is well-documented that sexual desire tends to decline over the course of a relationship (for a review see Muise, Kim, et al., 2016), and women's desire typically declines more steeply than men's (Klusmann, 2002) and is more strongly impacted by life transitions such as having children (e.g., McBride & Kwee, 2017). In fact, research has shown that in the majority of long-term heterosexual relationships, one partner has chronically lower sexual desire than the other partner (Davies et al., 1999; Mark, 2012; Mark & Murray, 2012).

It is important to understand links between (mis)matches in sexual desire between romantic partners given that it is a common source of conflict for couples and a frequent reason for seeking therapy (e.g., Henry & Miller, 2004). If satisfaction is deemed optimal when couples match versus mismatch on desire, therapists might advise couples to discuss their differences and work out a solution that brings their desire in line with each other. However, if matching is not linked to greater satisfaction, therapists might counsel couples to find ways to navigate desire discrepancies that do not necessarily focus on alignment of sexual interest. Findings concerning the benefits of matching can also have implications for people who may be concerned with identifying a sexually compatible partner and could impact decision making as it would determine the relative importance of attending to similarity between partners on desire.

Overall, research looking at desire discrepancies between partners—often calculated using a difference score where one partner's self-reported desire is subtracted from the other partner's desire score—has found that larger discrepancies are associated with lower sexual and relationship satisfaction (Davies et al., 1999; Mark, 2012, 2014; Mark & Murray, 2012). However, some findings have been mixed and have not consistently replicated (Mark, 2014; Mark & Murray, 2012; Rosen et al., 2018; Sutherland et al., 2015; Willoughby & Vitas, 2012). Mismatched levels of desire are common even among nonclinical samples of satisfied couples (Davies et al., 1999; Impett & Peplau, 2003; Mark, 2012; Mark & Murray, 2012). For example, in one study, couples reported some degree of difference in their levels of sexual desire on 69% of days (Day et al., 2015). Therefore, it is possible that differences in desire are a normative part of many relationships, and couples have developed strategies for managing these differences.

Past research, however, has not been able to directly answer the question of whether matching between partners in sexual desire is associated with greater satisfaction than mismatching. The bulk of the past work in this area has looked at the absolute difference between partners' levels of sexual desire, an approach that has limitations in its ability to inform true matching effects (see Barranti et al., 2017). Discrepancy scores presume that (mis)matching at higher levels (e.g., 9–8 = 1) has the same consequences as (mis)matching at lower levels (e.g., 2–1 = 1; see Edwards, 2001; Schönbrodt et al., 2018). To understand whether matching in sexual desire between partners predicts better outcomes than mismatching, we need to test whether matching is associated with greater satisfaction above and beyond the effects of partners' *levels* of desire, and whether matching at *all levels* of desire is associated with higher satisfaction compared to mismatching.

Given that higher levels of sexual desire tend to be associated with both sexual and relationship satisfaction (Mark, 2015; Muise et al., 2013; Regan, 2000), it is possible that overall levels of desire matter more for satisfaction than matching or that couples who match at relatively high levels of desire may not experience the same outcomes as couples who also match but at low levels. For example, research suggests that couples in sexless marriages—which in some cases might represent couples in which both partners have low sexual desire—report the lowest levels of satisfaction compared to couples who engage in sex more frequently (Blanchflower & Oswald, 2004; Muise, Schimmack, Impett, 2016).

Advanced Modeling of Desire Discrepancies

To test whether desire (mis)matches between romantic partners are associated with satisfaction, we used dyadic response surface analysis (DRSA; Schönbrodt et al., 2018). DRSA is ideal for testing questions about matching including how the correspondence between partners' ratings on sexual desire is associated with satisfaction, taking into account the interdependence between partners (Kenny et al., 2006). This approach, which can yield different results than difference scores, does not merge the two indicators (i.e., each partner's level of sexual desire) into one single score (i.e., a difference score; Edwards, 2002) and instead graphs the associations in three-dimensional space. DRSA, therefore, accounts for the effects of the individual indicators and can test whether satisfaction is higher for couples who match versus mismatch at all levels of sexual desire; that is, if couples are more satisfied when they match in sexual desire versus mismatch, we should see this regardless of the level of sexual desire on which couples match (e.g., low or high). In the current study, to increase statistical power, we combined data from three dyadic studies ($N = 366$ couples) and used DRSA (Schönbrodt et al., 2018) to test our key question about whether couples who match in their levels of sexual desire report greater sexual and relationship satisfaction than couples who mismatch.

Table 1. Descriptives Across Samples.

Sample	Initial *N*	Final *N*	% Caucasian	% Married	Age	*SD*	Range	Relationship Length (Years)	*SD*	Range
1	408	360	89	69	32.7	9.2	18–64	9.0	7.1	2–31
2	244	196	77	64	32.7	9.9	19–67	8.3	7.3	2–47
3	216	196	72	44	31.0	9.4	19–64	6.4	6.9	1–37

Note. The final *N* indicates participants who were retained for final analyses. All couples were mixed sex, and both partners identified as heterosexual.

Method

Sample Descriptives

Three unique data sets of couples were merged. Sample 1 included 204 couples ($N = 408$) recruited from the United States and Canada via online advertisements, social networking (Twitter, Facebook, Reddit), and email listervs. Sample 2 included 122 couples ($N = 244$) recruited through advertisements on Reddit and Kijiji (posted in five major Canadian cities) as well as through advertisements posted in various public locations (e.g., libraries, community centers, and coffee shops) in a major Canadian city (more details about this study can be found in Study 1 in Muise et al., 2019). Sample 3 included 108 couples ($N = 216$) recruited throughout Canada and the United States via flyers, online and radio advertisements, and word-of-mouth (for more information about this sample, see control sample in Rosen et al., 2019). We limited the combined sample to participants for whom we had data from both partners. Further, only mixed-sex couples in which both partners identified as heterosexual were retained given previous work demonstrating gender differences in overall levels of sexual desire (see Peplau, 2003). Our final sample included 366 mixed-sex couples ($N = 732$) included in our analyses (Sample 1: $N = 348$ or 174 couples; Sample 2: $N = 196$ or 98 couples; Sample 3: $N = 188$ or 94 couples; see Table 1 for sample descriptives.

At the time of conducting this work, no power analysis tool exists for DRSA; therefore, to provide an estimate power, we used the Actor Partner Interdependence Model (APIM) power calculator (Ackerman et al., 2016). If we were testing main effects, based on small ($r = .15$) actor and partner effects, with a sample of 366 couples, we have 99% power to detect the effects at an α of .05. However, DRSA includes squared terms as well as an interaction term, which would have less power to detect.

Measures

Sexual desire was measured the same across all samples using 7 items from the Sexual Desire Inventory-2 (Spector et al., 1996). As the current research concerned sexual desire in the context of established relationships, we used only items reflecting the partner-focused dyadic sexual desire dimension (i.e., Items 1, 2, 3, 6, 7, 8, and 9) based on research by Moyano et al. (2017; see Table S1 in the Online Supplemental Materials for item text and response options). Items were summed and divided by 10 for each participant; thus, scores ranged from 0 to 5.4. These scores were then centered on the grand mean (i.e., 3.86) in the combined sample (Schönbrodt et al., 2018). Scale items were reliable across samples (Sample 1: $\alpha = .88$, Sample 2: $\alpha = .90$, Sample 3: $\alpha = .80$).

Relationship satisfaction was measured with highly similar face-valid 1-item measures across samples (Sample 1: "Overall, how would you describe your overall relationship with your partner?" (1 = *very unsatisfying* to 9 = *very satisfying*); Sample 2: "How satisfied are you with your relationship?" (1 = *not at all* to 7 = *extremely*); Sample 3: "In general, how satisfied are you with your relationship?" (1 = *not at all* to 7 = *completely*). Scores were averaged and standardized within each sample before combining the three samples given the different scale points across studies, similar to approaches used in prior research assessing outcomes using combined data from multiple samples (Webster et al., 2015).

Sexual satisfaction was measured with the GMSEX (Lawrance & Byers, 1995), with participants rating their sex life on five 9-point (Sample 1) or 7-point (Samples 2 and 3) dimensions: *good–bad, pleasant–unpleasant, positive–negative, satisfying–unsatisfying, valuable–worthless* (Sample 1: $\alpha = .94$, Sample 2: $\alpha = .93$, Sample 3: $\alpha = .92$). Sexual satisfaction item scores were also averaged and standardized within each sample before combining the three samples.

Data Analysis Strategy

First, to provide a frequency distribution of couples and their levels of desire discrepancy, we computed a couple difference score for each dyad, similar to prior research (e.g., Mark et al., 2014). Couple difference scores were computed by subtracting women's sexual desire score from men's sexual desire score in each couple (all couples were mixed-sex). Thus, more positive values would reflect men reporting higher desire relative to their female partner, while more negative scores would reflect women reporting higher desire relative to their male partner (e.g., -1 indicates a woman having higher sexual desire than their partner by one unit). In order to compare DRSA to the traditional difference score approach to testing associations between (mis)matching on desire and satisfaction, we calculated an absolute difference score for each couple by taking the absolute value of the couple difference scores. Men's and women's satisfaction outcomes were regressed separately on these absolute difference scores.

Next, we used DRSA to test whether matching in sexual desire between partners is associated with greater satisfaction than mismatching. DRSA represents the marriage of RSA with the APIM (Schönbrodt et al., 2018). The APIM models

interdependence between partners in a relationship (Kenny et al., 2006), and RSA is an analytic approach that models the association between two predictor variables and an outcome variable in three-dimensional space to test for the (non)existence of similarity effects (e.g., Edwards, 2002). Accompanied by a graphical representation, RSA provides values for five coefficients (α1–α5) that collectively answer unique questions about whether (mis)matches matter for a specific outcome. The coefficients are derived from a polynomial regression model (for an overview of the RSA method, see Barranti et al., 2017; Edwards, 2002). For criteria requirements to determine similarity effects (i.e., matching effects) and how the α1–α5 coefficients collectively describe whether matches are associated with higher or lower outcomes than mismatches, we refer readers to Humberg et al. (2019).

Overview of RSA surface values α1 to α5. While no one coefficient (α1–α5) in isolation can determine a matching effect (Humberg et al., 2019), here, we overview the meaning of each surface value below and then outline the pattern of results that would provide evidence that matching in sexual desire between partners is associated with greater sexual and relationship satisfaction compared to mismatching. The surface value α1 tests the slope of the *line of congruence* (i.e., the line where couples perfectly match in desire) at the point (0, 0). This line is theoretically interesting because points along this line reflect couples matching at different levels of desire. In the current research, if only α1 is significant and positive, it indicates that couples with higher sexual desire report higher satisfaction than couples with lower levels of desire (while a negative α1 coefficient in isolation indicates that higher levels of desire are associated with *lower* satisfaction compared to lower levels). However, when we have evidence for a matching effect (e.g., if matching is better than mismatching for satisfaction), the α1 can reveal whether matching at higher levels is associated with greater satisfaction relative to matching at lower levels.

The surface value α2 tests the *curvature* of the line of congruence. It describes a nonlinear relationship between the average level of the predictor variables and the outcome variable. In the current research, if only the α2 is significant and positive, it indicates that couples with moderate levels of sexual desire are less satisfied relative to couples at extreme levels of desire (while a negative α2 coefficient indicates that couples with moderate levels of sexual desire are more satisfied relative to couples at extreme levels of desire).

The surface value α3 tests the slope of the *line of incongruence* at point (0, 0). In the current research, if only α3 is significant and positive, it indicates that satisfaction is higher when a person's (i.e., the actor's) sexual desire is greater than their partner's sexual desire, compared to vice versa, while a negative α3 indicates that satisfaction is higher when the partner's desire is greater than the actor's desire.

The surface value α4 tests for *curvature* along the line of incongruence. The α4 coefficient can help answer whether matches are better or worse than mismatches (i.e., congruence effects), although we note that this effect cannot be determined by solely interpreting an α4 in isolation (Humberg et al., 2019). In the current research, if α4 is significant and positive while α2 and α3 and α5 are nonsignificant, it indicates that satisfaction is greater the more partners are mismatched in desire (while a significant negative α4 indicates that satisfaction is lower the more partners are mismatched in desire).

The surface value α5 (see Schönbrodt et al., 2018) is relevant for determining whether a response surface reflects a *congruence effect* (detailed below), as the α1–α4 parameters alone are not sufficient to detect such an effect (Humberg et al., 2019). In the current research, a nonsignificant α5 value would be required to determine whether there is a congruence effect, provided that all other conditions for a broad congruence effect on the α1–α4 parameters are met.

Evidence of matching effects. To determine whether we have evidence that matching in sexual desire between partners is better than mismatching (i.e., a congruence effect), we followed the guidelines of Humberg et al. (2019).[1] Using the surface values above, requirements of a matching effect include a significant, negative α4 value and an α3 and α5 values that are not significantly different than 0. For a *strict congruence* pattern, α1 and α2 must also not be significantly different from 0, as overall this provides evidence that couples who match are more satisfied than those who mismatch at all levels of desire. However, it is also possible to demonstrate *broad congruence*, where in addition to a matching effect there are additional main effects of the predictors, meaning that although couples who match are more satisfied than couples who mismatch, couples with a higher average level of desire are more satisfied. Given that, based on past research (e.g., Muise et al., 2013), we expect main effects of each partner's sexual desire (i.e., higher desire is associated with higher sexual and relationship satisfaction), we allow α1 (or α2) to be different from 0 (i.e., we suspect that broad congruence is more likely than strict congruence). In fact, we would expect α1 to be significant and positive since in isolation this indicates that couples with higher average desire are more satisfied than couples with lower desire. If a positive, significant α1 is accompanied by a negative, significant α4 and a null α3 and α5, this provides evidence that matching matters for satisfaction but allows for the influence of a person's and their partner's level of desire (i.e., broad congruence). That is, whereas strict congruence would suggest that matching is better than not matching at all levels of sexual desire, broad congruence indicates that if Couple A (e.g., 2–1 = 1) and Couple B (e.g., 9–8 = 1) have the same discrepancy (e.g., 1), then Couple B, who have higher levels of desire, will be more satisfied.

DRSA analytic strategy. Given the dyadic nature of our data and that dyads can be distinguished by gender, we used DRSA (Schönbrodt et al., 2018) to help ascertain whether the response surface effects differ for men's satisfaction and women's satisfaction, or whether the effects can be treated as equivalent across men and women. We used lavaan (Rosseel, 2012) and the RSA package (Schönbrodt, 2017) in R to test path models

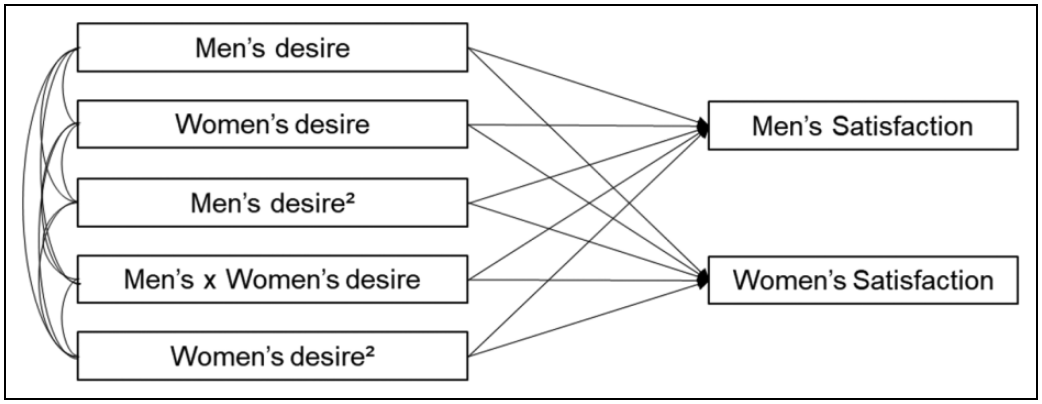

Figure 1. Full dyadic response surface analysis model.

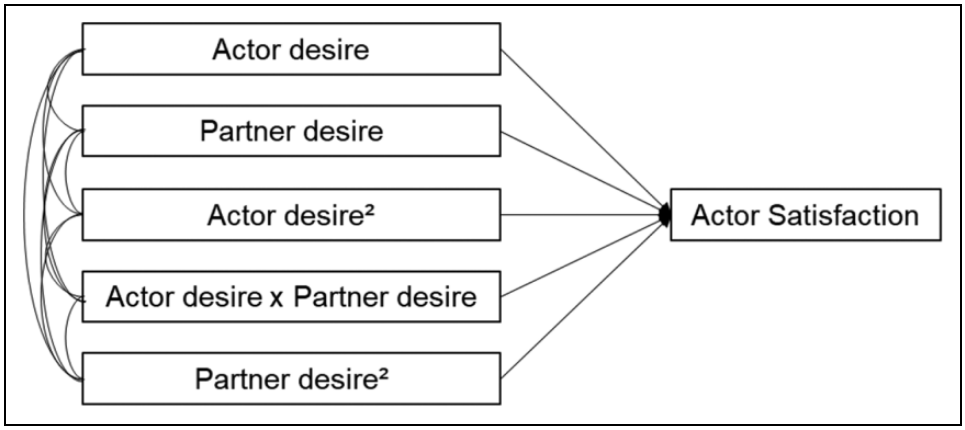

Figure 2. Constrained dyadic response surface analysis model.

with polynomial regressions implementing full-information maximum likelihood estimation for missing data. As outlined by Schönbrodt et al. (2018), given the complexity of a fully specified DRSA model as it estimates a large number of path coefficients and covariances (see Figure 1), constraints can be applied to simplify the full modelfor parsimony and increase statistical power. Thus, we applied parameter constraints to reduce model complexity according to current recommendations (Schönbrodt et al., 2018). Specifically, we constrained all actor and partner effects to be equal across gender. We then conducted nested model comparisons using a χ^2 likelihood ratio test. We determined that the simpler (i.e., gender-constrained) model predicting relationship satisfaction did not fit significantly worse than the full DRSA model, $\chi^2(5) = 3.37$, $p = .64$, nor did the model predicting sexual satisfaction, $\chi^2(5) = 5.80$, $p = .33$; thus, we retained the simpler models (see Figure 2).

These findings demonstrate that the effects of the polynomial regression can be interpreted similarly for both men and women. Thus, our gender-constrained polynomial regression model effectively tests how an individual and partner's desire are associated with individual outcomes, in line with APIM framework (Kenny et al., 2006). Final models were computed by bootstrapping standard errors and p values with 10,000 replications as per recommendations (Schönbrodt et al., 2018). In our final combined data set, we additionally coded for which sample each couple was from using effect coding (Aiken, & West, 1991) to control for sample differences in our models. The resulting two effect-coded variables for the three sample groups were coded as follows: (1) −1 (Sample 1), 1 (Sample 2), 0 (Sample 3); (2) −1 (Sample 1), 0 (Sample 2), 1 (Sample 3). We note here that the results did not change based on whether or not this control was included. Open data and R code for difference score and DRSA analyses can be found in the Online Supplement and on the Open Science Framework (https://osf.io/mp5q2/).

Results

Descriptives

Table 2 displays means and standard deviations for sexual desire, relationship satisfaction, and sexual satisfaction by sample. In the combined sample, men's sexual desire was significantly higher than women's desire, men: $M = 4.09$, $SD = 0.79$; women: $M = 3.62$, $SD = 1.03$, $t(737) = 6.86$, $p < .001$. The grand mean of sexual desire was 3.86 ($SD = 0.95$). Sexual

Table 2. Measurement Descriptives Across Samples.

	Sexual Desire	Relationship Satisfaction (Scales Differ by Sample)	Sexual Satisfaction (Scales Differ by Sample)
Sample	*M* (*SD*)	*M* (*SD*) [range]	*M* (*SD*) [range]
1	3.83 (0.949)	7.90 (1.43) [1–9]	7.28 (1.56) [1–9]
2	3.54 (1.017)	6.08 (1.03) [1–7]	5.66 (1.27) [1–7]
3	4.22 (0.718)	4.24 (0.80) [1–5]	6.33 (0.75) [1–7]

desire was significantly higher in men than women in Sample 1, men: $M = 4.92$, $SD = 0.78$; women: $M = 3.56$, $SD = 1.04$, $t(350) = 5.40$, $p < .001$ and Sample 2, men: $M = 3.92$, $SD = 0.82$; women: $M = 3.20$, $SD = 1.10$, $t(189) = 5.14$, $p < .001$, but not in Sample 3, Men: $M = 4.26$, $SD = 0.75$; Women: $M = 4.17$, $SD = 0.67$, $t(194) = 0.87$, $p = .39$. For frequency histogram of couple difference scores, see the Online Supplement. Of the 366 couples, there were 229 (62.6%) in which men's desire was higher than women's desire, 115 couples (31.4%) in which women had higher desire than men, and 22 (6%) in which men and women had equal levels of desire (i.e., exactly the same scores). Consistent with the mean level differences, more couples consisted of men reporting higher desire than women, $\chi^2(2, N = 344) = 37.78$, $p < .001$. In addition, there was a small, positive correlation between partners' desire ($r = .21$, $p < .001$).

Couple Absolute Difference Score Analyses

Regression analyses conducted separately for men and women showed that greater absolute discrepancies in sexual desire were negatively associated with men's relationship satisfaction, $b = -.16$, $t(364) = -2.75$, $p < .01$, 95%CI [−.28,−.05], $r = -.14$, and women's relationship satisfaction, $b = -.18$, $t(362) = -3.14$, $p < .01$, 95%CI [−.29,−.07], $r = -.16$. Greater absolute discrepancies in sexual desire were also negatively associated with men's sexual satisfaction, $b = -.36$, $t(359) = -5.95$, $p < .001$, 95%CI [−.48,−.24], $r = -.30$, and women's sexual satisfaction, $b = -.44$, $t(358) = -7.74$, $p < .001$, 95% CI [−.55,−.33], $r = -.38$. Therefore, the results of difference score analyses would suggest that larger mismatches in sexual desire between partners are associated with lower sexual and relationship satisfaction for both men and women (see the Online Supplement for additional details). Notably, these findings are not considered valid given that difference score regressions can lead to false-positive results, thus necessitating the use of DRSA.

DRSA

Figures 3 and 4 show the response surface plots, depicting how combinations of actor's sexual desire (on the *x*-axis) and partner's sexual desire (on the *y*-axis) relate to actor's relationship satisfaction and actor's sexual satisfaction, respectively.

Relationship satisfaction. Results from the DRSA predicting relationship satisfaction showed only a significant positive α1

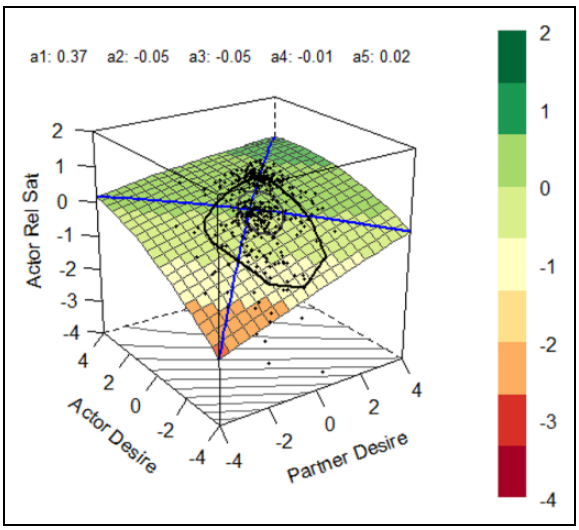

Figure 3. Dyadic response surface analysis plot of associations between actor and partner sexual desire and relationships satisfaction. *Note.* Sexual desire scores are centered on the grand mean.

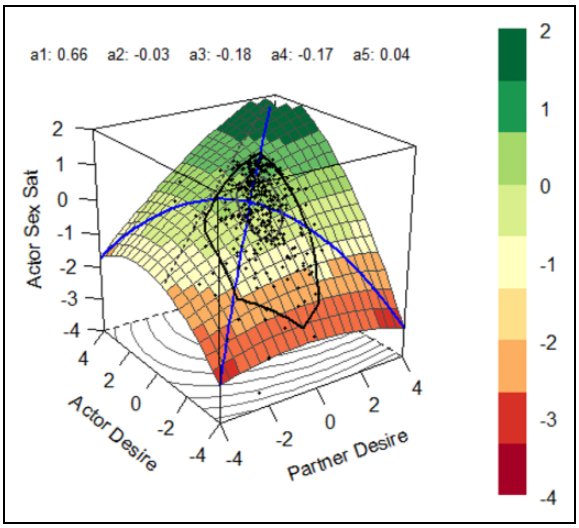

Figure 4. Dyadic response surface analysis plot of associations between actor and partner sexual desire and sexual satisfaction. *Note.* Sexual desire scores are centered on the grand mean.

surface value (see Table 3). This response surface pattern indicates that couples with higher levels of desire are more satisfied than couples with lower levels of desire (see Figure 3). Given that α4 was not significantly different from zero, we found no evidence suggesting that matching in sexual desire between

Table 3. Polynomial and Response Surface Slope Coefficients for Relationship and Sexual Satisfaction.

	Relationship Satisfaction			Sexual Satisfaction		
	b	*SE*	*p*	*b*	*SE*	*p*
Response surface slopes						
α1	.37	.09	.00	.66	.07	.00
α2	−.05	.03	.16	−.03	.08	.67
α3	−.05	.06	.38	−.18	.07	.01
α4	−.01	.10	.93	−.17	.04	.00
α5	.02	.05	.66	.04	.04	.30
Polynomial coefficients						
b_0	.07	.06	.24	.21	.06	.00
b_1 (*X*)	.16	.05	.00	.24	.05	.00
b_2 (*Y*)	.21	.05	.00	.42	.05	.00
b_3 (X^2)	−.00	.03	.89	−.03	.03	.35
b_4 (*XY*)	−.02	.06	.72	.07	.05	.14
b_5 (Y^2)	−.02	.03	.48	−.07	.03	.02

Note. *X* = actor's sexual desire; *Y* = partner's sexual desire.

partners was associated with significantly higher or lower levels of relationship satisfaction compared to mismatching.

Sexual satisfaction. Results from the DRSA model predicting sexual satisfaction showed significant positive α1, negative α3, and negative α4 surface values (see Table 3). As mentioned above, the interpretation for the RSA can change when more than one coefficient is significant (Humberg et al., 2019). Although we have a significant and negative α4 value, α3 is also significantly different than zero; this response surface pattern (i.e., $\alpha4 < 0$ and $\alpha3 < 0$) does not suggest that matching on sexual desire between partners is better than mismatching for sexual satisfaction (Humberg et al., 2019, see Figure 4). Instead, the significant, negative α3 value suggests that sexual satisfaction is higher when the actor's own desire is higher than their partners, compared to when their partner's desire is higher than the actor's. As in the model for relationship satisfaction, there was also a positive, significant α1 effect suggesting that couples with higher desire are more sexually satisfied than couples with lower sexual desire (see Online Supplement for additional details of the sexual satisfaction model).

Discussion

Conventional wisdom and evidence from past research suggest that partners who are similar (i.e., match) in their levels of sexual desire will also experience greater satisfaction (e.g., Davies et al., 1999; Mark, 2015). In fact, desire discrepancies or mismatches are a common presenting problem in couples' therapy (e.g., Mark, 2015). In a large sample of couples, using DRSA, we found that people who are matched in sexual desire with their partner are not more satisfied than those who are mismatched, a finding that differed from the conclusions drawn from a traditional difference score approach. Instead, it was the overall *level* of sexual desire for the couple that was associated with sexual and relationship satisfaction. Consistent with past research that both partners' levels of desire are associated with greater sexual and relationship satisfaction (e.g., Muise et al., 2013; Mark, 2014), in the current research, couples with higher (vs. lower) desire were more satisfied.

Given the prevalence of desire discrepancies, even among nonclinical samples of highly satisfied couples (e.g., Day et al., 2015), it is possible that many couples develop strategies for managing desire differences. For example, people who are approach-motivated in their relationships and sex lives (Impett et al., 2008; Muise et al., 2013), communally motivated to be responsive to their partner's sexual needs (Day et al., 2015), and believe that sexual relationships take work and effort to be satisfying (Maxwell et al., 2017) tend to be able to navigate sexual differences with a partner while maintaining satisfaction. The finding that higher desire is important for sexual and relationship satisfaction is in line with theory and research on the benefits of maintaining desire over time in a relationship (e.g., Baumeister & Bratzlavsky, 1999; Mark & Lasslo, 2018) and with findings that low sexual desire is linked to thoughts of leaving a current relationship (Regan, 2000).

Although there are limitations, including that the data are cross-sectional and correlational—meaning that we cannot confirm the causal direction—and consist of nonclinical samples of fairly satisfied couples, the current work provides new insights into how the correspondence between romantic partners' sexual desire is associated with satisfaction. Of note is that the current research focused on congruence in partners' actual—not perceived—levels of desire, an important conceptual distinction given previous research demonstrating differing effects of actual versus perceived similarity (e.g., Montoya et al., 2008). A remaining question from the current work is whether partners are aware of differences in their levels of desire. This question is pertinent since previous work has found that *perceptions* of desire discrepancy are a stronger predictor of lower sexual and relationship satisfaction than actual discrepancies between partners (e.g., Davies et al., 1999). Given that people often project their own feelings on to their partner (e.g., Lemay et al., 2007), it is possible that people are not aware of differences between their own and their partner's sexual desire. Past research shows that both men and women do accurately track changes in their partner's sexual desire, but men, in particular, tend to systematically underestimate their partner's desire (Muise, Stanton, et al., 2016). Future research could investigate the consequences of (in)accurately perceiving a partner's desire and if associations between accuracy and satisfaction differ based on the level of sexual desire. For example, there could be benefits to accurately perceiving a partner as high in desire but costs to perceiving a partner's low desire.

The current findings—along with other recent findings on personality similarity (van Scheppingen et al., 2018; Weidmann et al., 2017)—do not support the idea that matching on sexual desire between partners is linked to satisfaction in romantic relationships. Therefore, in existing relationships in which desire discrepancies are common (Mark, 2015), it might not be fruitful for partners to aim to match on desire but rather

to find ways to maintain desire over the course of their relationship or successfully navigate sexual differences.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by Social Sciences and Humanities Research Council (SSHRC) Insight Grants awarded to Amy Muise and Emily A. Impett, an SSHRC Insight Development Grant awarded to Cheryl Harasymchuk, Amy Muise, and Emily A. Impett, a Patty Brisben Foundation Grant for Women's Sexual Health awarded to Kristen P. Mark, and an SSHRC doctoral fellowship awarded to James Kim.

ORCID iD

Amy Muise https://orcid.org/0000-0002-9000-4106

Supplemental Material

The supplemental material is available in the online version of the article.

Note

1. See Online Supplement for additional tests of the position of the first principal axis in relation to the line of congruence.

References

Ackerman, R. A., Ledermann, T., & Kenny, D. A. (2016). *Power analysis for the actor-partner interdependence model*. https://robert-ackerman.shinyapps.io/APIMPowerR/

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

Anderson, C., Keltner, D., & John, O. P. (2003). Emotional convergence between people over time. *Journal of Personality and Social Psychology*, *84*(5), 1054–1068.

Arindell, W. A., & Luteijn, F. (2000). Similarity between intimate partners for personality traits as related to individual levels of satisfaction with life. *Personality and Individual Differences*, *28*, 629–637.

Barranti, M., Carlson, E. N., & Côté, S. (2017). How to test questions about similarity in personality and social psychology research: Description and empirical demonstration of response surface analysis. *Social Psychological and Personality Science*, *8*, 465–475.

Basson, R. (2000). The female sexual response: A different model. *Journal of Sex & Marital Therapy*, *26*(1), 51–65.

Baumeister, R. F., & Bratslavsky, E. (1999). Passion, intimacy, and time: Passionate love as a function of change in intimacy. *Personality and Social Psychology Review*, *3*, 49–67.

Blanchflower, D. G., & Oswald, A. J. (2004). Money, sex and happiness: An empirical study. *Scandinavian Journal of Economics*, *106*, 393–341.

Coombs, R. H. (1991). Marital status and personal well-being: A literature review. *Family Relations: An Interdisciplinary Journal of Applied Family Studies*, *40*, 97–102.

Davies, S., Katz, J., & Jackson, J. L. (1999). Sexual desire discrepancies: Effects on sexual and relationship satisfaction in heterosexual dating couples. *Archives of Sexual Behavior*, *28*, 553–567.

Day, L. C., Muise, A., Joel, S., & Impett, E. A. (2015). To do it or not to do it? How communally motivated people navigate sexual interdependence dilemmas. *Personality and Social Psychology Bulletin*, *41*, 791–804.

Diener, E., & Seligman, M. E. P. (2002). Very happy people. *Psychological Science*, *13*, 81–84.

Edwards, J. R. (2001). Ten difference score myths. *Organizational Research Methods*, *4*, 265–287.

Edwards, J. R. (2002). Alternatives to difference scores: Polynomial regression analysis and response surface methodology. In F. Drasgow & N. Schmitt (Eds.), *Measuring and analyzing behavior in organizations: Advances in measurement and data analysis* (The Jossey-Bass Business & Management Series, pp. 350–400). Jossey-Bass.

Fitzsimons, G. M., Finkel, E. J., & vanDellen, M. R. (2015). Transactive goal dynamics. *Psychological Review*, *122*, 648–673.

Gere, J., & Impett, E. A. (2018). Shifting priorities: Effects of partners' goal conflict on goal adjustment processes and relationship quality in developing romantic relationships. *Journal of Social and Personal Relationships*, *35*, 793–810.

Gonzaga, G. C., Campos, B., & Bradbury, T. (2007). Similarity, convergence, and relationship satisfaction in dating and married couples. *Journal of Personality and Social Psychology*, *93*, 34–48.

Haupert, M. L., Gesselman, A. N., Moors, A. C., Fisher, H. E., & Garcia, J. R. (2017). Prevalence of experiences with consensual nonmonogamous relationships: Findings from two national samples of single Americans. *Journal of Sex & Marital Therapy*, *43*(5), 424–440.

Henry, R. G., & Miller, R. B. (2004). Marital problems occurring in midlife: Implications for couples therapists. *American Journal of Family Therapy*, *32*, 405–417.

Humberg, S., Nestler, S., & Back, M. D. (2019). Response surface analysis in personality and social psychology: Checklist and clarifications for the case of congruence hypotheses. *Social Psychological and Personality Science*, *10*, 409–419.

Impett, E. A., & Peplau, A. L. (2003). Sexual compliance: Gender, motivational, and relationship perspectives. *The Journal of Sex Research*, *40*, 87–100.

Impett, E. A., Strachman, A., Finkel, E. J., & Gable, S. L. (2008). Maintaining sexual desire in intimate relationships: The importance of approach goals. *Journal of Personality and Social Psychology*, *94*, 808–823.

Karney, B. R., & Bradbury, T. N. (1995). The longitudinal course of marital quality and stability: A review of theory, methods, and research. *Psychological Bulletin*, *118*(1), 3.

Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *The analysis of dyadic data*. Guilford.

Klusmann, D. (2002). Sexual motivation and the duration of partnership. *Archives of Sexual Behavior*, *31*, 275–287.

Lawrance, K., & Byers, E. S. (1995). Sexual satisfaction in long-term heterosexual relationships: The interpersonal exchange model of sexual satisfaction. *Personal Relationships*, *2*, 267–285.

Lemay, E. P., Jr., Clark, M. S., & Feeney, B. C. (2007). Projection of responsiveness to needs and the construction of satisfying

communal relationships. *Journal of Personality and Social Psychology*, *92*, 834–853.

Mark, K. P. (2012). The relative impact of individual sexual desire and couple desire discrepancy on satisfaction in heterosexual couples. *Sexual & Relationship Therapy*, *27*, 133–146.

Mark, K. P. (2014). The impact of daily sexual desire and daily sexual desire discrepancy on the quality of the sexual experience in couples. *The Canadian Journal of Human Sexuality*, *23*, 27–33.

Mark, K. P. (2015). Sexual desire discrepancy. *Current Sexual Health Reports*, *7*, 198–202.

Mark, K. P., Herbenick, D., Fortenberry, J. D., Sanders, S., & Reece, M. (2014). The object of sexual desire: Examining the "what" in "what do you desire?" *Journal of Sexual Medicine*, *11*, 2709–2719.

Mark, K. P., & &Lasslo, J. (2018). Maintaining sexual desire in long-term relationships: A systematic review and conceptual model. *The Journal of Sex Research*, *55*, 563–581.

Mark, K. P., & Murray, S. (2012). Gender differences in desire discrepancy as a predictor of sexual and relationship satisfaction in a college sample of heterosexual romantic relationships. *Journal of Sex & Marital Therapy*, *38*, 198–215.

Markey, P. M., & Markey, C. N. (2007). Romantic ideals, romantic obtainment, and relationship experiences: The complementarity of interpersonal traits among romantic partners. *Journal of Social and Personal Relationships*, *24*, 517–533.

Maxwell, J., Muise, A., MacDonald, G., Day, L. C., Rosen, N. O., & Impett, E. A. (2017). How implicit theories of sexuality shape sexual and relationship well-being. *Journal of Personality and Social Psychology*, *112*, 238–279.

McBride, H. L., & Kwee, J. L (2017). Sex after baby: Women's sexual function in the postpartum period. *Current Sexual Health Reports*, *9*, 142–149.

Miller, R. B., Yorganson, J. B., Sandberg, J. G., & White, M. B. (2003). Problems that couples bring to therapy: A view across the family life cycle. *The American Journal of Family Therapy*, *31*, 395–407.

Montoya, R. M., Horton, R. S., & Kirchner, J. (2008). Is actual similarity necessary for attraction? A meta-analysis of actual and perceived similarity. *Journal of Social and Personal Relationships*, *25*, 889–922.

Moyano, N., Vallejo-Medina, P., & Sierra, J. C. (2017). Sexual Desire Inventory: Two or three dimensions? *Journal of Sex Research*, *54*, 105–116.

Muise, A., Harasymchuk, C., Day, L. C., Bacev-Giles, C., Gere, J., & Impett, E. A. (2019). Broadening your horizons: Self-expanding activities promote desire and satisfaction in established romantic relationships. *Journal of Personality and Social Psychology*, *116*, 237–258.

Muise, A., Impett, E. A., & Desmarais, S. (2013). Getting it on versus getting it over with sexual motivation, desire, and satisfaction in intimate bonds. *Personality and Social Psychology Bulletin*, *39*, 1320–1332.

Muise, A., Kim, J. J., McNulty, J. K., & Impett, E. A. (2016). The positive implications of sex for relationships. *Advances in personal relationships*, *Vol. 1: Positive approaches to optimal relationship development*. Cambridge University Press.

Muise, A., Schimmack, U., & Impett, E. A. (2016). Sexual frequency predicts greater well-being, but more is not always better. *Social Psychological and Personality Science*, *7*, 295–302.

Muise, A., Stanton, S. C., Kim, J. J., & Impett, E. A. (2016). Not in the mood? Men under-(not over-) perceive their partner's sexual desire in established intimate relationships. *Journal of Personality and Social Psychology*, *110*, 725–742.

Peplau, L. A. (2003). Human sexuality: How do men and women differ? *Current Directions in Psychological Science*, *12*, 37–40.

Rehman, U. S., Lizdek, I., Fallis, E. E., Sutherland, S., & Goodnight, J. A. (2017). How is sexual communication different from nonsexual communication? A moment-by-moment analysis of discussions between romantic partners. *Archives of Sexual Behavior*, *46*(8), 2339–2352.

Regan, P. C. (2000). The role of sexual desire and sexual activity in dating relationships. *Social Behavior and Personality*, *28*, 51–60.

Risch, G. S., Riley, L. A., & Lawler, M. G. (2003). Problematic issues in the early years of marriage: Content for premarital education. *Journal of Psychology and Theology*, *31*, 253–269.

Rosen, N. O., Bailey, K., & Muise, A. (2018). Degree and direction of sexual desire discrepancy are linked to sexual and relationship satisfaction in couples transitioning to parenthood. *The Journal of Sex Research*, *55*, 214–225.

Rosen, N. O., & Bergeron, S. (2019). Genito-pelvic pain through a dyadic lens: Moving toward an interpersonal emotion regulation model of women's sexual dysfunction. *The Journal of Sex Research*, *56*(4-5), 440–461.

Rosen, N. O., Dube, J., Corsini-Munt, S., & Muise, A. (2019). Sexual, relational, and psychological adjustment of women with sexual interest/arousal disorder and their partners: A comparison to control couples. *Journal of Sexual Medicine*, *16*, 83–95.

Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*, 1–36.

Russell, R. J. H., & Wells, P. A. (1991). Personality similarity and quality of marriage. *Personality and Individual Differences*, *17*, 407–412.

Schönbrodt, F. D. (2017). RSA: An R package for response surface analysis (version 0.9.11). https://cran.r-project.org/package=RSA

Schönbrodt, F. D., Humberg, S., & Nestler, S. (2018). Testing similarity effects with dyadic response surface analysis. *European Journal of Personality*, *32*, 627–641.

Spector, I. P., Carey, M. P., & Steinberg, L. (1996). The Sexual Desire Inventory: Development, factor structure, and evidence of reliability. *Journal of Sex & Marital Therapy*, *22*, 175–190.

Sutherland, S. E., Rehman, U. S., Fallis, E. E., & Goodnight, J. A. (2015). Understanding the phenomenon of sexual desire discrepancy in couples. *Canadian Journal of Human Sexuality*, *24*, 141–150.

Theiss, J. A., & Estlein, R. (2014). Antecedents and consequences of the perceived threat of sexual communication: A test of the relational turbulence model. *Western Journal of Communication*, *78*(4), 404–425.

van Scheppingen, M. A., Chopik, W. J., Bleidorn, W., & Denissen, J. J. A. (2018). Longitudinal actor, partner, and similarity effects of personality on well-being. *Journal of Personality and Social Psychology*, *117*(4), e51–e70.

Webster, G. D., Laurenceau, J. P., Smith, C. V., Mahaffey, A. L., Bryan, A. D., & Brunell, A. B. (2015). An Investment model of sociosexuality, relationship satisfaction, and commitment: Evidence from dating, engaged, and newlywed couples. *Journal of Research in Personality*, *55*, 112–126.

Weidmann, R., Schönbrodt, F. D., Ledermann, T., & Grob, A. (2017). Concurrent and longitudinal dyadic polynomial regression analyses of big five traits and relationship satisfaction: Does similarity matter? *Journal of Research in Personality*, *70*, 6–15.

Willoughby, B. J., & Vitas, J. (2012). Sexual desire discrepancy: The effect of individual differences in desired and actual sexual frequency on dating couples. *Archives of Sexual Behavior*, *41*, 477–486.

Wilson, G. D., & Cousins, J. M. (2003). Partner similarity and relationship satisfaction: Development of a compatibility quotient. *Sexual and Relationship Therapy*, *18*, 161–170.

Author Biographies

James Kim is a graduate student at the University of Toronto. His research broadly focuses on romantic relationships and sexuality.

Amy Muise is an Assistant Professor in the Department of Psychology at York University and a York Research Chair in Relationships and Sexuality. Her research focuses on romantic relationships and sexuality.

Maxwell Barranti is an Assistant Professor in the Department of Psychology at York University. His research broadly focuses on the formation and accuracy of personality judgments as well as personality measurement.

Kristen Mark is an Associate Professor in Health Promotion at University of Kentucky. Her research focuses on sexual health, sexuality, and romantic relationships.

Natalie Rosen is an Associate Professor in the Departments of Psychology & Neuroscience and Obstetrics & Gynaecology at Dalhousie University. Her research focuses on sexual problems in romantic relationships.

Cheryl Harasymchuk is an Associate Professor in the Department of Psychology at Carleton University. Her research focuses on play in romantic relationships and boredom.

Emily Impett is a Professor of Psychology at the University of Toronto Mississauga. Her research broadly focuses on topics at the intersection of sexuality, close relationships, and emotions.

Handling Editor: Richard Slatcher