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Are you coming on to me? Bias and accuracy in couples' perceptions of sexual advances

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Are You Coming On to Me? Bias and Accuracy in Couples' Perceptions of Sexual

Advances

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Abstract

How accurately do romantic partners perceive each other's sexual advances? Two preregistered studies investigated whether perceivers over- or underestimate the specific behaviours their partner uses to indicate sexual interest (directional bias), as well as correctly detect the particular pattern of those behaviours (tracking accuracy). We also tested if biased and accurate perceptions were moderated by gender and explored how bias and accuracy predicted relational outcomes. Results revealed strong evidence for tracking accuracy in judgments of sexual advances overall, and mixed results for directional bias. Gender moderated only directional bias, such that women consistently overestimated their partner's sexual advances, whereas men underestimated or showed no bias. Finally, biased sexual advance perceptions were associated with sexual satisfaction and love for both perceivers and partners. Implications for relationship functioning are discussed.

Keywords: bias and accuracy, love, romantic relationships, sexual advances, sexual satisfaction

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Imagine that, during a quiet evening at home watching a movie with your romantic

partner, you feel intense sexual desire and sensually put a hand on your partner's thigh. Your

partner, however, does not respond and blithely continues to watch the movie. You guess that

s/he is not interested in sexual activity. Is your partner truly not interested in sexual activity, or

did s/he simply miss your cue? In the present research, we examined bias and accuracy in

romantic partners' judgments of each other's sexual advance behaviours, how these perceptual

processes may be moderated by gender, and whether these processes are associated with

relationship outcomes.

Sexual activity is an important feature of romantic relationships that differentiates them

from other types of close relationships (Schwartz & Young, 2009). Sexual satisfaction is

associated with relationship happiness, whereas sexual dissatisfaction is associated with

relationship dissolution (Donnelly, 1993; Edwards & Booth, 1994; Muise, Kim, McNulty, &

Impett, 2016). Romantic couples engage in sexual activity approximately 1-2 times per week

(Byers & Heinlein, 1989; Laumann, Gagnon, Michael, & Michaels, 1994; Vannier & O'Sullivan,

2011). Not all attempts to initiate sexual activity are successful, however, and thus couples report

sexual *advances* by at least one partner approximately 3-4 times per week (Byers & Heinlein,

1989). Partners use various behaviours to indicate sexual interest, including kissing, hand-

linking, embracing, and intimate touching (Jesser, 1978; McCormick, 1979). Nonetheless, some

sexual advances may be unsuccessful because of their nonverbal and/or indirect nature (Jesser,

1978; McCormick, 1979; Vannier & O'Sullivan, 2011), or due to other factors (e.g., the

perceiver being stressed or distracted), suggesting that partners may not always accurately perceive each other's attempts to be sexually intimate.

Bias and Accuracy in Sexual Advance Perceptions

Judgments of partners and relationships can be both biased and accurate. Specifically, perceivers may demonstrate *directional bias*, wherein they systematically over- or underestimate an aspect of their partner/relationship, while simultaneously demonstrating *tracking accuracy*, wherein they correctly detect the specific pattern of an aspect of their partner/relationship (Fletcher & Kerr, 2010, 2013; West & Kenny, 2011). These perceptual processes can help partners balance the need to protect themselves from short-term rejection with the desire to maintain long-term, fulfilling relationships (cf. Murray, Derrick, Leder, & Holmes, 2008; Murray, Holmes, & Collins, 2006). Research suggests that perceivers demonstrate both directional bias and tracking accuracy when judging their partner's regard (Overall, Fletcher, & Kenny, 2012) and sexual desire (Muise, Stanton, Kim, & Impett, 2016). Moreover, bias and accuracy are separately linked with positive views of the relationship (Lackenbauer, Campbell, Rubin, Fletcher, & Troister, 2010), as well as relationship outcomes (e.g., satisfaction and commitment; Muise, Stanton, et al., 2016).

Applied to the current research, overestimation of sexual advances could be beneficial, as individuals feel more loved and attractive after engaging in sexual behaviours (Bersamin, Walker, Waiters, Fisher & Grube, 2005; Pease 2013), and feel more desired if they perceive their partner making frequent advances (Dodrill, 2007). Conversely, overestimation may make individuals feel that their partner approaches them incessantly, and thus *underestimation* of sexual advances could be better for the relationship. It is perhaps unclear, then, whether perceivers should be motivated to over- or underestimate their partner's sexual advances to

maximize relationship outcomes. Nevertheless, romantic partners should demonstrate tracking accuracy when judging sexual advances, simply because romantic partners engage in regular sexual activity (Byers & Heinlein, 1989; Laumann et al., 1994; Vannier & O'Sullivan, 2011), which creates recognizable patterns (e.g., a shared sexual script; Simon & Gagnon, 1986, 1987).

Sexual Advances and Gender

Men and women sometimes differ in their approaches to sexual activity (Byers & Heinlein, 1989; Laumann et al., 1994; Muise, Stanton, et al., 2016). Sexual script theory (Simon & Gagnon, 1984, 1987, 2003) proposes that, in relationships, men traditionally initiate sexual encounters and women restrict them. Men report feeling more comfortable being an initiator and more easily imagine these types of scenarios (Grauerholz & Serpe, 1985; Hickman & Muehlenhard, 1999), whereas women who are asked to imagine sexual initiation scenarios typically describe their partner as the initiator (Ortiz-Torres, Williams, & Ehrhardt, 2003). These preferences link to actual behaviour, with men initiating sexual encounters more than women (e.g., Byers & Heinlein, 1989; Laumann et al., 1994).

How might bias and accuracy differ between genders? In *casual, short-term relationships* men tend to *overestimate* others' sexual interest (Shotland & Craig, 1988), while women underestimate or show no bias (Abbey, 1982; Haselton & Buss, 2000). Error management theory (EMT; Galperin & Haselton, 2012; Haselton & Buss, 2000) explains this through the lens of evolutionary psychology, suggesting that a variety of social cognitive biases are adaptations that help minimize the costs associated with judgmental errors. In the case of men's overperception bias, the costs associated with incorrectly perceiving interest where there is none (a false positive) and facing rejection is deemed less costly than not perceiving interest where there is (a false negative) and missing mating opportunities.

However, recent research suggests that in *long-term romantic relationships* men tend to *underestimate* their partner's sexual desire (Muise, Stanton, et al., 2016). Within romantic relationships there are numerous opportunities to engage in sexual activity; therefore, the costs associated with missing sexual cues may be lower. Moreover, the costs associated with partner rejection are higher than stranger rejection, as partner rejection is more emotionally painful (Leary, Springer, Negel, Ansell, & Evans, 1998) and threatens sexual satisfaction (Byers & Heinlein, 1989). According to EMT, this discrepancy in costs should be associated with men underestimating their partner's sexual desire in this context (Muise, Stanton, et al., 2016). In contrast to the effects of directional bias, research consistently finds no gender differences in tracking accuracy (e.g., Eldesouky, English, & Gross, 2017; Muise, Stanton, et al., 2016; Overall & Hammond, 2013).

The Current Research

The goals of the present two studies were to examine directional bias and tracking accuracy in romantic partners' judgments of each other's sexual advance behaviours, if gender moderates these perceptual processes, and how bias and accuracy are associated with sexual satisfaction and love.[1] We chose these relationship outcomes because they are desirable aspects of healthy relationships generally, and are also especially applicable to the sexual aspect of relationships (e.g., Muise, Kim, et al., 2016; Rubin & Campbell, 2012). Love is one of the strongest predictors of relationship success (Le, Dove, Agnew, Korn, & Mutso, 2010), and sexual satisfaction is strongly linked with marital and relationship satisfaction (e.g. Schoenfeld, Loving, Pope, Huston, & Štulhofer, 2017). Additionally, previous research has demonstrated

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[1] We also examined relationship satisfaction and sexual frequency as outcome variables, which were not associated with accuracy and bias. Due to space limitations, we opted to discuss only sexual satisfaction and love. For a full description of all analyses and results, please see Dobson (2016).

strong links between sexual satisfaction and love and the quality and quantity of sexual

behaviours (e.g., Costa & Brody, 2007; Kaestle & Halpern, 2007; Schoenfeld et al., 2017;

Sprecher & Regan, 1998).

Knowing that some of the analyses we intended to run were exploratory, we adopted an

approach to data collection and hypothesis generation/testing unique for this area of research.

Prior to collecting any data, we decided to corroborate exploratory analyses with a confirmatory

replication study. We chose to conduct a single wave of data collection, and then randomly

assigned couples to either the exploratory or confirmatory dataset. The confirmatory dataset was

not examined until after all analyses for the exploratory dataset were conducted and confirmatory

hypotheses selected.[2] Prior to Study 1, we had no formal hypotheses regarding overall

directional bias. However, we predicted that partners should be able to accurately track the

pattern of each other's sexual advance behaviours. Additionally, consistent with Muise, Stanton,

et al.'s (2016) study, we predicted that men would underestimate their partner's sexual advances

and women would show no bias, over and above other processes relevant to sexual advance

behaviours (i.e., partners' frequency of sexual initiation and rejection). Finally, we made no

formal *a priori* predictions for Study 1 regarding associations between biased and accurate

perceptions and relational outcomes.

Study 1: Exploratory Study

Participants

Participants were 134 couples recruited via flyers and newspaper advertisements from the

local university and surrounding community who participated in exchange for CAD-$20.00

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[2] The methods of Studies 1 and 2 were preregistered on the Open Science Framework (OSF) at https://osf.io/5x47y/ (Dobson & Campbell, 2015).

(CAD-$10.00 per partner). Data from 14 couples were excluded because one or both partners indicated they were not sexually active. This left 120 couples to be divided evenly between Study 1 (exploratory dataset) and Study 2 (confirmatory dataset). Couples' data were arranged in a combined dataset by the date and time of study completion and, following this order, couples were assigned sequentially to a dataset, beginning with Study 1 (e.g., first couple assigned to Study 1, second couple assigned to Study 2, and so on). There were no differences between datasets on age, relationship length, or sexual frequency.

Sixty couples were therefore assigned to Study 1. Partners were 18-49 years of age (M_{years} = 22.51, SD_{years} = 5.73) and were involved in their relationship from 3 months to 30.25 years (M_{years} = 2.46, SD_{years} = 3.42). Fifty-two couples were dating, and eight were common-law, engaged, or married. Fifty-seven were heterosexual couples, one couple was female-female, and in two couples at least one partner did not indicate their gender.[3,4]

Measures and Procedure

Partners arrived at the lab and separately and privately completed a battery of questionnaires on a computer. For the purposes of the present studies, partners first completed demographic items, including a series of questions regarding how often they and their partner attempt to initiate sexual activity, and how often they and their partner turn down sexual activity. These initiation and rejection questions asked participants to estimate how often each event occurs in their relationship in one month, with possible responses on a 7-point scale (1 = *never*, 7 = *>11 times a month*).

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[3] Couples where at least one partner did not indicate their gender were excluded from gender-related analyses.

[4] The analytic plan of Study 1 was preregistered on the OSF, and it, as well as the data, syntax, and output are posted at https://osf.io/7dvyw/ (Dobson, Campbell, & Stanton, 2017).

Next, in order to examine bias and accuracy in judgments of sexual advance behaviours, participants read short descriptions of 29 distinct behaviours[5] representing how one might indicate interest in sexual activity to a partner (e.g., "I put my hand on my partner's thigh"). Participants were instructed to "Think about your relationship, and take a moment to think about the different behaviours that (you use/your partner uses) to indicate to (your partner/you) that (you/they) are interested in having sex with (him or her/you). Then, using the scale below please rate the degree to which (you use/your partner uses) each of the behaviours to communicate (you/they) are interested in having sex with (your partner/you)". For each behaviour description, participants used a 7-point scale (1 = *never*, 7 = *always*) to rate the degree to which *they* enact the behaviour as well as their perceptions of the degree to which their *partner* enacts the behaviour, thus creating a perception profile for themselves and their partner.

Participants then reported sexual satisfaction using Hudson, Harrison, and Crosscup's (1981) 25-item Index of Sexual Satisfaction. They responded to items (e.g., "My sex life is very exciting") on a 7-point scale (1 = *never*, 7 = *all of the time*), (α = .84). Participants also reported their love for their partner using Sternberg's (1988) 36-item measure. They rated items (e.g., "I am certain of my love for my partner") on a 7-point scale (1 = *I strongly disagree*, 7 = *I strongly agree*), (α = .95). Finally, partners were reunited, debriefed, and dismissed.

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[5] Past research on behaviours used to indicate sexual interest has focused mainly on those used in casual, non-committed relationships (e.g., Greer & Buss, 1994) or on assigning behaviours within romantic relationships to broad categories (e.g., Vannier & O'Sullivan, 2011). Therefore, an inventory of the specific sexual advance behaviours that occur within romantic relationships does not yet exist. We conducted a pilot study to address this issue, compiling a list of sexual advance behaviours commonly enacted by men and women in the context of their romantic relationships. Six raters identified 67 items from Greer and Buss's (1994) 122-item Tactics for Promoting Sexual Encounters (a list of behaviours commonly enacted outside of a relationship context) as relevant to committed relationships context. This list was then rated by an online sample of participants (N = 461) in terms of how often they use those behaviours within their romantic relationship to approach their partner for sexual activity. A series of predetermined cut-off points were used to reduce the number of items, resulting in a 29-item list of sexual advance behaviours. The measures and data analytic plan for this pilot study were preregistered on the Open Science Framework (OSF), and these, as well as the data and results, are posted at https://osf.io/s9ten/ (Dobson & Campbell, 2017).

Results and Discussion

Data Analytic Strategy

We used West and Kenny's (2011) Truth and Bias (T&B) Model of judgment to simultaneously estimate directional bias and tracking accuracy in partners' perceptions of each other's sexual advance behaviours, similar to recent research on perceptual processes in intimate relationships (e.g., Muise, Stanton, et al., 2016; Overall et al., 2012; Overall & Hammond, 2013). In the T&B Model, the *perceiver's* (i.e., the person making judgments) ratings of their partner are compared with their *partner's* actual ratings. Our data have a nested structure, with perceivers' multiple ratings of partners' sexual advance behaviours across the 29 items nested within dyad. The intercept (directional bias), the slope of partners' actual sexual advance ratings on perceivers' judgments (tracking accuracy), and the slope of perceivers' own sexual advance ratings on their judgments of their partner (assumed similarity) were allowed to vary randomly in all T&B models, consistent with previous T&B research (e.g. Overall, Fletcher, & Kenny, 2012).

In the T&B Model (West & Kenny, 2011), the directional bias estimate is obtained by centering the perceiver's ratings of their partner's sexual advances on the partner's actual sexual advance ratings by subtracting the grand mean of all partners' sexual advance ratings (i.e., mean across dyads) from the perceivers' judgments for each behaviour. Thus, the intercept represents the difference between the mean of the partners' actual sexual advance rating and the mean of the perceivers' ratings of their partner. A negative average intercept indicates that perceivers generally *underestimate* partners' sexual advances, whereas a positive average intercept indicates that perceivers generally *overestimate* partners' sexual advances. Tracking accuracy is represented by the slope of partners' actual sexual advance ratings on perceivers' judgments,

demonstrating whether perceivers correctly report the pattern of partners' actual ratings. A

positive slope indicates greater tracking accuracy.

Lastly, examining the slope of perceivers' own sexual advance ratings on their judgments

of their partner indicates *assumed similarity*, the extent to which perceivers project their

perceptions of their own behaviour onto their judgments of their partner. A positive slope

indicates greater assumed similarity. Studies using the T&B Model often examine directional

bias and tracking accuracy statistically adjusting for assumed similarity so that the estimate of

tracking accuracy represents direct accuracy (see Muise, Stanton, et al., 2016; West, Dovidio, &

Pearson, 2014). Therefore, we included assumed similarity in all models, but will not interpret its

effects. After testing overall patterns of directional bias and tracking accuracy in perceptions of

sexual advances, we then tested models that included gender as a moderating variable, and ruled

out alternative explanations for our findings.

Bias and Accuracy in Perceptions of Sexual Advances

Overall, perceivers did not display directional bias. However, they demonstrated tracking

accuracy when making judgments of their partner's sexual advances (see Table 1).

Table 1
Study 1: Directional Bias, Tracking Accuracy, and Assumed Similarity on Perceptions of Partners' Sexual Advances

Judgments of Partners' Sexual Advances	Truth and Bias Model Estimates				
	b	SE	t	95% CI	r
Directional Bias	.06	.05	1.22	-.04, .17	.16
Tracking Accuracy	.15	.02	6.21***	.10, .20	.63
Assumed Similarity	.52	.03	15.78***	.45, .59	.90

Note. Approximate effect sizes were computed using the formula $r = \sqrt{t^2/(t^2 + df)}$
(see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Degrees of freedom
ranged from 56.94 to 58.83.
***$p < .001$

Moderation by Gender

A significant main effect of gender (i.e., a gender effect for directional bias) emerged ($b = -.15$, $t(1611.03) = -5.90$, $p < .001$, 95% CI: [-.21, -.10]) . A follow-up model was then run with dummy-coded variables for men and women. Men displayed no directional bias, whereas women overestimated the degree to which their partners engaged in sexual advance behaviours. There was no gender difference for tracking accuracy ($b = -.001$, $t(2745.30) = -.07$, $p = .95$, 95% CI: [-.03, .03]); both men and women displayed tracking accuracy (see Table 2).

Table 2
Study 1: Associations Between Gender and Bias and Accuracy

Judgments of Partners' Sexual Advances	Truth and Bias Model Estimates				
	b	*SE*	*t*	95% CI	*r*
Directional Bias					
Men	-.07	.06	-1.25	-.18, .04	.16
Women	.24	.05	4.39***	.13, .35	.42
Tracking Accuracy					
Men	.17	.03	5.89***	.11, .22	.49
Women	.18	.03	6.12***	.11, .22	.53
Assumed similarity					
Men	.48	.04	13.30***	.41, .55	.83
Women	.57	.04	15.65***	.49, .64	.87

Note. Approximate effect sizes were computed using the formula $r = \sqrt{t^2/(t^2 + df)}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Degrees of freedom ranged from 54.40 to 2960.19.
***$p < .001$

Ruling out alternative explanations. Previous studies have demonstrated gender differences in frequency of sexual initiation and rejection (Byers & Heinlein, 1989; Laumann et al., 1994; Simon & Gagnon, 1984), so we sought to rule this out as an alternative explanation for the gender difference in directional bias. We included both perceptions of and actual partner sexual initiation and rejection in their respective models.

Perceptions of and actual partner sexual initiation were associated with directional bias, such that higher sexual initiation was associated with overestimation of sexual advances ($b = .09$, $t(1518.05) = 4.98$, $p < .001$, 95% CI:[.05, .13]; $b = .09$, $t(1158.39) = 4.65$, $p < .001$, 95% CI:[.05, .13], respectively). Conversely, higher perceptions of and actual partner sexual rejection were

associated with underestimation of sexual advances (b = -.12, $t(1416.87)$ = -5.06, $p < .001$, 95%

CI:[-.17, -.07]; b = -.07, $t(1342.21)$ = -2.32, p = .02, 95% CI:[-.13, -.01], respectively).

Despite these associations, when frequency of sexual initiation and rejection were

included in the model with gender, the gender difference in directional bias remained robust (see

Table 3). We display the analysis for perceptions of sexual initiation and rejection; the models

testing actual partner initiation and rejection were identical.

Table 3

Study 1: Associations of Perceptions of Partner's Sexual Initiation, Rejection, and Gender with Bias and Accuracy

	Truth and Bias Model Estimates				
Judgments of Partner's Sexual Advances	b	SE	t	95% CI	r
Directional Bias					
Perceptions of Partner's Average Initiation	.05	.02	3.01**	.02, .09	.15
Perceptions of Partner's Average Rejection	-.07	.02	-3.11**	-.12, -.03	.13
Gender	-.09	.03	-2.91**	-.14, -.03	.07
Tracking Accuracy					
Perceptions of Partner's Average Initiation	.01	.01	.62	-.01. .02	.03
Perceptions of Partner's Average Rejection	-.004	.01	-.36	-.03, .02	.02
Gender	.01	.02	.61	-.02, .04	.01
Assumed Similarity					
Perceptions of Partner's Average Initiation	-.02	.01	-2.00*	-.04, -.0004	.08
Perceptions of Partner's Average Rejection	-.03	.01	-2.27*	-.06, -.004	.08
Gender	-.03	.02	-2.06*	-.07, -.002	.04

Note. Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Degrees of freedom ranged from 381.57 to 2778.23.
*$p < .05$, **$p < .01$, ***$p < .001$

Associations of Bias and Accuracy in Perceptions of Sexual Advances with Relational

Outcomes

To test how directional bias and tracking accuracy in perceptions of sexual advances

were associated with sexual satisfaction and love, we conducted analyses using multilevel

polynomial regression with response surface analyses (RSA; see Barranti, Carlson, & Côté,

2017; Edwards, 2002; Shanock, Baran, Gentry, Pattison, and Heggestad, 2010). Combining

polynomial regression with RSA allowed us to test the following questions relevant to our

research goals: 1) How do similar scores on predictor variables X and Y relate to the outcome variable Z? and 2) Is Z different if X is higher than Y or vice versa? These models conceptualize accuracy differently than in the T&B Model, but the response surface values are good proxies for directional bias and tracking accuracy (see Muise, Stanton, et al., 2016).

The general form of the polynomial regression equation is $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2$; in our analyses, the outcome variables Z were sexual satisfaction and love, X was perceivers' judgments of their partner, and Y was partners' actual ratings. In these models, scores for perceptions of sexual advances and the partner's actual reported advances were centered on the midpoint of the scale (see Edwards, 1994; Shanock et al., 2010). The output obtained from the polynomial regression models are not interpreted directly; rather, the output is used to examine the significance of four surface test values (a_1, a_2, a_3, and a_4). When considering how X and Y relate to Z in our studies, the *line of perfect agreement* represents the levels of sexual satisfaction and love when perceivers' and partners' ratings of sexual advance behaviours are essentially the same (i.e., $X = Y$). The slope of the line of perfect agreement is represented by a_1, which allows us to answer whether matches at high values have different outcomes than matches at low values. The curvature along the line of perfect agreement is represented by a_2, which allows us to determine whether matches at extreme values have different outcomes than matches at less extreme values.

The line perpendicular to the line of perfect agreement is the *line of incongruence*, which represents the levels of sexual satisfaction and love when perceivers' and partners' ratings of sexual advance behaviours are not in agreement (i.e., $X = -Y$). The slope of the line of incongruence is represented by a_3, which allows us to answer whether one mismatch ($X > Y$; i.e., overestimation) is better or worse than the other ($X < Y$; i.e., underestimation). The curvature

along the line of incongruence is represented by a_4, which allows us to answer whether matches

are better or worse than mismatches. Prior research using this analytic approach to test the

associations of bias and accuracy with outcomes has used a_1 as a proxy for tracking accuracy and

a_3 as a proxy for directional bias (e.g., Muise, Stanton, et al., 2016). However, a_4 is a better

proxy for tracking accuracy because it tests whether matches in perceivers' and partners'

perceptions are better than mismatches in predicting outcomes, whereas a_1 tests whether matches

at high values have different outcomes than matches at low values (cf. Barranti et al., 2017).

Thus, our primary focus was to examine how directional bias (a_3) and tracking accuracy (a_4)

were associated with sexual satisfaction and love. We also report a_1 and a_2 for interest.

Results revealed that directional bias in judgments of sexual advances was associated

with sexual satisfaction, but the effects were different for perceivers and partners. For *perceivers*,

overestimation (vs. underestimation) of the partner's sexual advances was linked to increases in

sexual satisfaction. For *partners*, however, *underestimation* (vs. overestimation) of their

advances by the perceivers was linked to increases in sexual satisfaction (a_3). There were no

significant effects of accuracy on sexual satisfaction (see Table 4). Graphs of these effects were

plotted using the R package RSA (Schönbrodt, 2016; see Figure 1).

Table 4
Study 1: Associations of Bias and Accuracy with Sexual Satisfaction

Sexual Satisfaction	Multilevel Polynomial Regression Estimates					
	b_0	$b_1 X$	$b_2 Y$	$b_3 X^2$	$b_4 X \times Y$	$b_5 Y^2$
Actor (Perceiver) SS	5.65 (.01)***	.02 (.01)+	-.02 (.01)*	.01 (.01)	-.001 (.01)	-.001 (.01)
Partner SS	5.64 (.01)***	-.01 (.01)	.03 (.01)*	-.0004 (.01)	-.01 (.01)	.01 (.01)

Sexual Satisfaction	Response Surface Analysis Estimates			
	Line of Perfect Agreement		Line of Incongruence	
	Slope a_1	Curvature a_2	Slope a_3	Curvature a_4
Actor (Perceiver) SS	.00 (.02) [.01]	.01 (.01) [.08]	.04 (.01) [.27]**	.01 (.02) [.06]
Partner SS	.01 (.01) [.08]	.01 (.01) [.04]	-.04 (.01) [.25]**	.02 (.01) [.08]

Note. We report unstandardized regression coefficients. SS = sexual satisfaction; X = perceptions of the partner's advances; Y = partner's actual advances (standard errors in parentheses, r in square brackets). Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007).
+$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Figure 1. Study 1 RSA for bias and accuracy in perceiver perceptions of the partner's sexual advances and the partner's actual sexual advances predicting perceiver and partner sexual satisfaction. The line of perfect agreement runs from the front to back corner, while the line of incongruence runs from the left to the right corner.

Bias in judgments of sexual advances was also associated with love for partners, such that underestimation (vs. overestimation) of their advances by perceivers was linked to increased love. No effects of accuracy on love emerged, although matching at higher levels of sexual advances was associated with greater partner love than matching at lower levels (a_1). No significant effects of bias on *perceivers'* love were found (see Table 5 and Figure 2).

Table 5
Study 1: Associations of Bias and Accuracy with Love

	Multilevel Polynomial Regression Estimates					
Love	b_0	b_1X	b_2Y	b_3X^2	$b_4X \times Y$	b_5Y^2
Actor (Perceiver) L	6.03 (.02)***	.02 (.01)+	.003 (.02)	.02 (.01)	-.01 (.004)+	-.01 (.003)*
Partner L	6.01 (.02)***	-.01 (.01)	.06 (.02)***	-.001 (.01)	-.01 (.01)*	.003 (.003)
	Response Surface Analysis Estimates					
	Line of Perfect Agreement			Line of Incongruence		
Love	Slope a_1		Curvature a_2	Slope a_3		Curvature a_4
Actor (Perceiver) L	.02 (.02) [.11]		.00 (.01) [.002]	.03 (.03) [.09]		.02 (.02) [.10]
Partner L	.05 (.02) [.26]**		-.01 (.01) [.07]	-.08 (.02) [.29]**		.01 (.02) [.08]

Note. We report unstandardized regression coefficients. L = love; X = perceptions of the partner's advances; Y = partner's actual advances (standard errors in parentheses, *r* in square brackets). Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007).
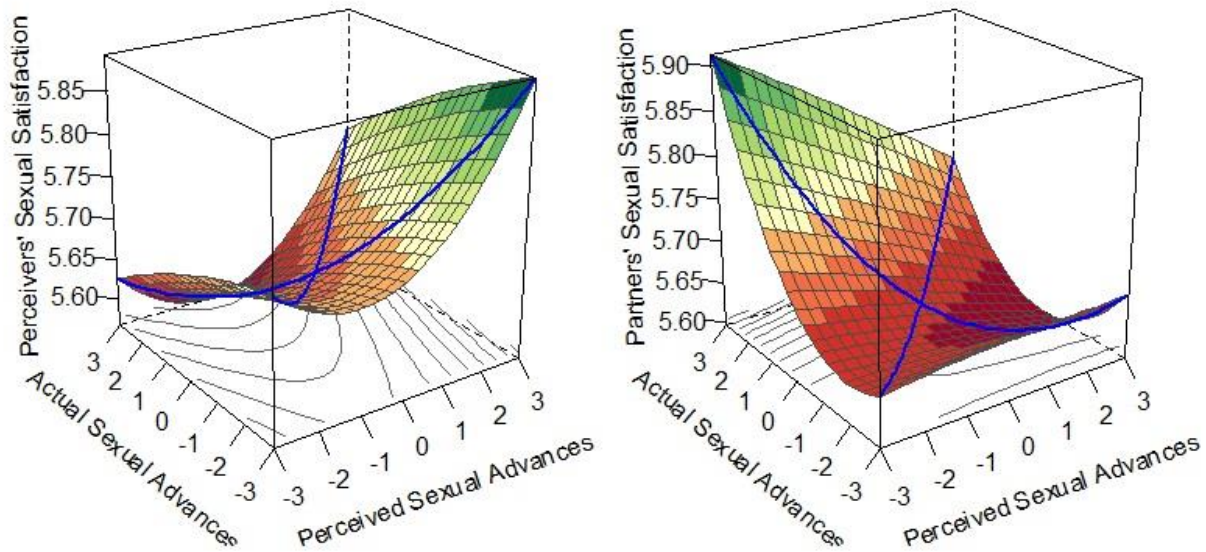+*p* < .10, *p < .05, **p < .01, ***p < .001
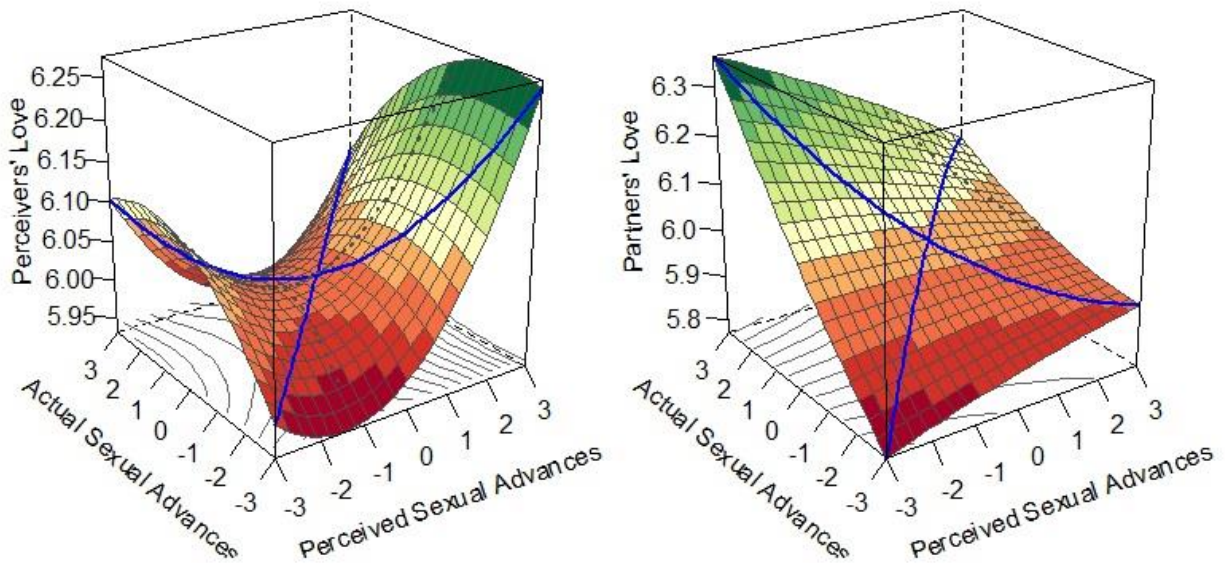
Figure 2. Study 1 RSA for bias and accuracy in perceptions of the partner's sexual advances and the partner's actual advances predicting perceiver and partner love. The line of perfect agreement runs from the front to back corner, while the line of incongruence runs from the left to the right corner.

However, an alternative interpretation of the data is plausible. Polynomial regression with RSA focuses on the four surface test values as they relate to the line of perfect agreement and the line of incongruence. However, examining Figures 1 and 2 more broadly indicates that bias may

not have the greatest effect on relationship outcomes, but rather each person's perceptions of the partner's advances may be what matters most. That is, the perceptions of the partner's advances may be what has the greatest association with outcomes for perceivers, while the partner's actual behaviour has the greatest association with outcomes for partners. The graphs demonstrate the possibility of this association, as when perceptions of the partner's advances are high (versus low), perceivers' sexual satisfaction is consistently higher, whereas when the partner's actual advances are high (versus low), partners' sexual satisfaction and love are consistently higher.

We tested this alternative interpretation by comparing specific points on the graphs. If bias does have a unique association, then (a) high perceptions but low actual advances (3, -3) should be associated with greater sexual satisfaction for perceivers than when both perceptions and actual advances are high (3, 3) and (b) low perceptions but high actual advances (-3, 3) should be associated with greater sexual satisfaction and love for partners than when both perceptions and actual advances are high (3, 3). We entered the specific X and Y values into the regression equation to determine the predicted outcome value, and calculated the standard error for each point using the rule for calculating the variance of multiple correlated variables (SE = $\sqrt{(B_0^2*SE_{B0}^2 +\ldots B_i^2*SE_{Bi}^2 + 2ABcov(B_0, B_1)\ldots+2YZcov(B_h, B_i))}$). We then conducted a one-tailed t-test with the mean scores and standard errors for each point. Comparing when perceptions of advances are high but actual advances are low (3, -3) to when perceptions of sexual advances and actual advances are high (3, 3), we found that the difference between these points is not significant ($t(120) = .76$, $p = .22$). When comparing when perceptions of advances are low but actual advances are high (-3, 3) to when perceptions of sexual advances and actual advances are high (3, 3), the difference between these points is not significant ($t(120) = .88$, $p =$

.19) for sexual satisfaction, but is significant for love ($t(120) = 5.99$, $p < .001$). Therefore, there appear to be multiple processes in effect.

This study provides preliminary evidence of bias and accuracy in romantic partners' perceptions of each other's sexual advance behaviours. Generally, perceivers displayed no directional bias and tracking accuracy. Although previous research has examined bias and accuracy in partners' perceptions of each other's sexual desire (Muise, Stanton, et al., 2016), no research has yet been conducted regarding bias and accuracy in other aspects of sexual activity, including sexual advances. The findings of Study 1 were promising and relevant for research on relationship functioning, but some of the analyses in this study were exploratory, necessitating confirmatory hypothesis testing with a second sample (Study 2) before drawing firm conclusions.

Study 2: Confirmatory Study

Participants, Procedure, and Measures

Recruitment methods and procedure, as well as the measures for own sexual advance behaviours, perceptions of partner's sexual advance behaviours, sexual satisfaction (Hudson et al., 1981; $\alpha = .89$), and love (Sternberg, 1988; $\alpha = .95$), were identical in Study 2. The 60 couples assigned to Study 2 were 18-51 years of age ($M_{years} = 22.31$, $SD_{years} = 5.69$) and were involved in their relationship from 3 months to 31.50 years ($M_{years} = 2.66$, $SD_{years} = 4.16$). Most couples were dating ($N = 49$), and a minority were common-law, engaged, or married ($N = 11$). Fifty-four were heterosexual couples, 5 were female-female couples, and 1 was a male-male couple.[6]

Results and Discussion

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[6] The hypotheses and analytic plan of Study 2 were preregistered on the OSF, and they, as well as the data and syntax are posted at https://osf.io/fhbiy/ (Dobson, Campbell, & Stanton, 2017).

Bias and Accuracy in Perceptions of Sexual Advances

Overall, perceivers underestimated, but displayed tracking accuracy when making judgments of sexual advances. Although the results for directional bias differ from Study 1, the results regarding tracking accuracy are consistent (see Table 6). In Table 6, and all remaining tables in Study 2, we include estimates of the coefficients and 95% confidence intervals calculated using pooled data from Study 1 and Study 2.

Table 6

Study 2: Directional Bias, Tracking Accuracy, and Assumed Similarity on Perceptions of Partners' Sexual Advances

Judgments of Partners' Sexual Advances	Truth and Bias Model Estimates					Pooled Estimates	
	b	SE	t	95% CI	r	b	95% CI
Directional Bias	-.13	.06	-2.31*	-.25, -.02	.29	-.03	-.11, .05
Tracking Accuracy	.18	.03	6.28***	.12, .24	.65	.16	.13, .20
Assumed Similarity	.51	.04	14.44***	.44, .58	.89	.51	.47, .56

Note. Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Degrees of freedom ranged from 53.52 to 55.99. Pooled estimates calculated using pooled data from Study 1 and Study 2.
*$p < .05$, ***$p < .001$

Moderation by Gender

A gender effect of directional bias emerged ($b = -.30$, $t(1742.79) = -11.34$, $p < .001$, 95% CI:[-.35, -.25]). A follow-up model was then run with dummy-coded variables for men and women. Men underestimated their partner's sexual advance behaviours, whereas women marginally overestimated. There were no gender differences for tracking accuracy ($b = -.01$, $t(2618.16) = -.98$, $p = .33$, 95% CI:[-.04, .01]); both men and women displayed tracking accuracy. Although in Study 1 directional bias was not evident for men, all other results are consistent (see Table 7).

Table 7
Study 2: Associations Between Gender and Bias and Accuracy

Judgments of Partner's Sexual Advances	Truth and Bias Model Estimates					Pooled Estimates	
	b	SE	t	95% CI	r	b	95% CI
Directional Bias							
Men	-.47	.10	-4.46***	-.68, -.26	.61	-.27	-.35, -.18
Women	.14	.08	1.89$^+$	-.01, .30	.24	.19	.10, .27
Tracking Accuracy							
Men	.20	.02	9.83***	.16, .24	.53	.17	.13, .21
Women	.20	.02	10.30***	.16, .24	.61	.19	.15, .23
Assumed Similarity							
Men	.43	.02	20.77***	.39, .47	.81	.45	.40, .50
Women	.55	.02	28.10***	.51, .59	.87	.55	.50, .60

Note. Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Degrees of freedom ranged from 54.25 to 3297.38. Pooled estimates calculated using pooled data from Study 1 and Study 2.
$^+p < .10$, ***$p < .001$

Ruling out alternative explanations. Perceptions of and actual partner sexual initiation were associated with directional bias, such that higher sexual initiation was associated with overestimation of sexual advances ($b = .19$, $t(1599.03) = 11.24$, $p < .001$, 95% CI:[.16, .22]; $b = .10$, $t(1109.47) = 4.77$, $p < .001$, 95% CI:[.06, .14], respectively). Conversely, higher perceptions of and actual partner sexual rejection were associated with underestimation of sexual advances ($b = -.22$, $t(1349.19) = -7.75$, $p < .001$, 95% CI:[-.28, -.17]; $b = -.16$, $t(1450.71) = -5.32$, $p < .001$, 95% CI:[-.22, -.10], respectively). Not found in Study 1, partner's actual sexual rejection was associated with tracking accuracy ($b = .04$, $t(933.18) = 2.49$, $p = .01$, 95% CI:[.01, .08]), such that tracking accuracy was associated with both low (-1SD; $b = .13$, $t(107.62) = 3.68$, $p < .001$, 95% CI:[.06, .20]) and high (+1SD; $b = .24$, $t(117.58) = 6.66$, $p < .001$, 95% CI:[.17, .31]) partner sexual rejection, but was stronger for those with a partner who rejects more.

When frequency of sexual initiation and rejection were included in the model with gender, the gender difference in directional bias remained robust (see Table 8), consistent with Study 1. We display the analysis for perceptions of sexual initiation and rejection; the models testing actual partner initiation and rejection were identical.

Table 8

Study 2: Associations of Perceptions of Partner's Average Sexual Initiation, Rejection, and Gender with Bias and Accuracy

Judgments of Partner's Sexual Advances	Truth and Bias Model Estimates					Pooled Estimates	
	b	SE	t	95% CI	r	b	95% CI
Directional Bias							
Perceptions of Partner's Average Initiation	.14	.02	7.08***	.10, .17	.26	.10	.08, .13
Perceptions of Partner's Average Rejection	-.15	.03	-5.14***	-.20, -.09	.21	-.09	-.13, -.06
Gender	-.11	.03	-3.54***	-.18, -.05	.09	-.10	-.14, -.06
Tracking Accuracy							
Perceptions of Partner's Average Initiation	.004	.01	.404	-.02, .02	.02	.007	-.006, .02
Perceptions of Partner's Average Rejection	-.01	.02	-.81	-.04, .02	.04	-.008	-.03, .01
Gender	.004	.02	.21	-.03, .04	.004	.008	-.01, .03
Assumed Similarity							
Perceptions of Partner's Average Initiation	.02	.01	1.72+	-.003, .04	.06	-.002	-.02, .01
Perceptions of Partner's Average Rejection	.03	.02	1.52	-.008, .06	.06	-.009	-.03, .01
Gender	-.03	.02	-1.69	-.06, .005	.04	-.04	-.06, -.01

Note. Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Degrees of freedom ranged from 331.90 to 2265.22. Pooled estimates calculated using pooled data from Study 1 and Study 2.
$^+p < .10$ ***$p < .001$

Associations of Bias and Accuracy in Perceptions of Sexual Advances with Relational Outcomes

Results from the multilevel polynomial regression with RSA revealed that directional bias in judgments of sexual advances was associated with sexual satisfaction, but the effects were different for perceivers and partners. Similar to Study 1, for *perceivers*, *overestimation* (vs. underestimation) of the partner's sexual advances was linked to increases in sexual satisfaction. Although results trended in the same direction as Study 1, no significant effect of bias on sexual satisfaction was found for partners. Consistent with Study 1, no significant effects of accuracy on sexual satisfaction were found (see Table 9 and Figure 3). It appears that *overestimation* is good for *oneself*, however *underestimation* trends toward being good for one's *partner*.

Table 9

Study 2: Associations of Bias and Accuracy with Sexual Satisfaction

Sexual Satisfaction	**Multilevel Polynomial Regression Estimates**					
	b_0	b_1X	b_2Y	b_3X^2	$b_4X{\times}Y$	b_5Y^2
Actor (Perceiver) SS	5.45 (.02)***	.04 (.01)**	-.004 (.02)	.01 (.01)	-.01 (.01)	.01 (.01)
Partner SS	5.48 (.02)***	-.002 (.02)	.03 (.01)*	.0004 (.01)	-.01 (.01)	.01 (.01)
	Pooled Multilevel Polynomial Regression Estimates					
Sexual Satisfaction	b_0	b_1X	b_2Y	b_3X^2	$b_4X{\times}Y$	b_5Y^2
Actor (Perceiver) SS	5.56	.03	-.02	.01	-.01	.002
	{5.54, 5.58}	{.02, .05}	{-.04, .003}	{-.001, .03}	{-.02, .01}	{-.01, .01}
Partner SS	5.57	-.01	.03	.003	-.01	.01
	{5.55, 5.59}	{-.03, .01}	{.01, .04}	{-.01, .01}	{-.02, .002}	{-.001, .02}

Sexual Satisfaction	**Response Surface Analysis Estimates**			
	Line of Perfect Agreement		Line of Incongruence	
	Slope a_1	Curvature a_2	Slope a_3	Curvature a_4
Actor (Perceiver) SS	.04 (.03) [.14]	.00 (.01) [.03]	.05 (.02) [.22]*	.03 (.03) [.11]
Partner SS	.02 (.02) [.11]	.00 (.01) [.004]	-.03 (.02) [.12]	.03 (.03) [.09]

Note. We report unstandardized regression coefficients. SS = sexual satisfaction; X = perceptions of the partner's advances; Y = partner's actual advances (standard errors in parentheses, *r* in square brackets, 95% CI in braces). Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Pooled estimates calculated using pooled data from Study 1 and Study 2.
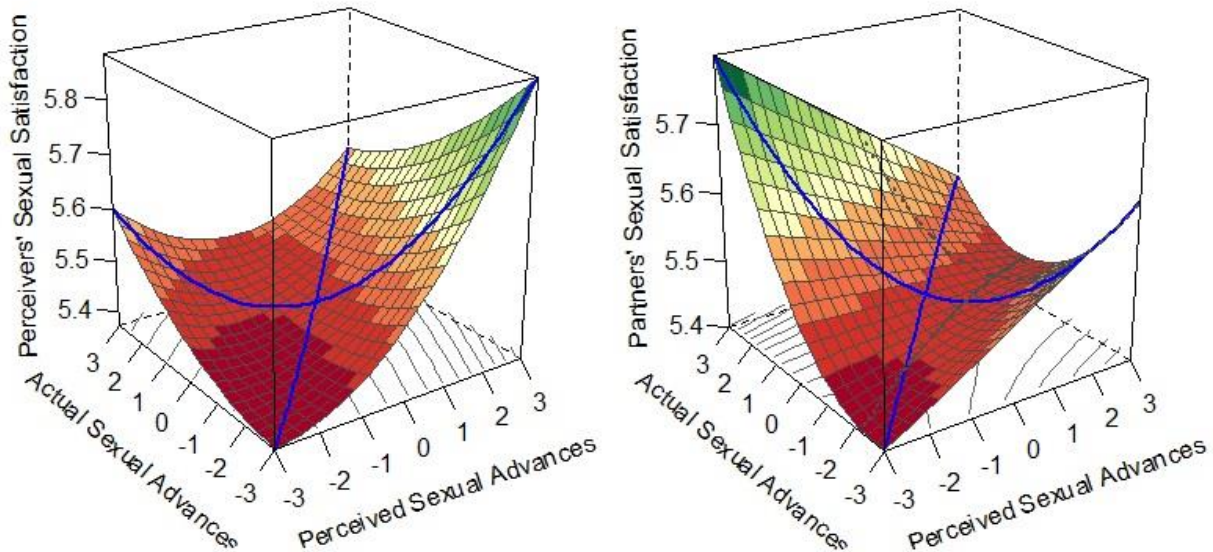
$+p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

Figure 3. Study 2 response surface analyses for bias and accuracy in perceptions of the partner's

sexual advances and the partner's actual advances predicting perceiver and partner sexual

satisfaction. The line of perfect agreement runs from the front to back corner, while the line of incongruence runs from the left to the right corner.

Bias in judgments of sexual advances was associated with love for partners, such that underestimation (compared to overestimation) of their advances by the perceivers was linked to increases in love. In Study 2, no effects of accuracy on love emerged, although matching at higher levels of sexual advances was associated with greater perceiver and partner love than matching at lower levels. (see Table 10 and Figure 4).

Table 10
Study 2: Associations of Bias and Accuracy with Love

Multilevel Polynomial Regression Estimates						
Love	b_0	b_1X	b_2Y	b_3X^2	$b_4X{\times}Y$	b_5Y^2
Actor (Perceiver) L	6.10 (.02)***	.01 (.01)	.02 (.01)	.01 (.01)	-.002 (.003)	-.01 (.003)**
Partner L	6.08 (.02)***	-.01 (.01)	.06 (.02)***	-.01 (.02)	-.01 (.01)+	.01 (.003)***
Pooled Multilevel Polynomial Regression Estimates						
Love	b_0	b_1X	b_2Y	b_3X^2	$b_4X{\times}Y$	b_5Y^2
Actor (Perceiver) L	6.05	.03	.01	.01	-.008	-.008
	{6.03, 6.08}	{.01, .05}	{-.01, .04}	{-.01, .03}	{-.01, -.002}	{-.01, -.004}
Partner L	6.04	-.01	.06	-.005	-.01	.01
	{6.01, 6.06}	{-.03, .002}	{.04, .09}	{-.02, .02}	{-.02, -.003}	{.003, .01}

Response Surface Analysis Estimates			
	Line of Perfect Agreement		Line of Incongruence	
Love	Slope a_1	Curvature a_2	Slope a_3	Curvature a_4
Actor (Perceiver) L	.03 (.01) [.20]*	.00 (.01) [.003]	.00 (.02) [.01]	.00 (.01) [.03]
Partner L	.05 (.02) [.23]*	-.01 (.01) [.06]	-.08 (.02) [.34]***	.01 (.02) [.05]

Note. We report unstandardized regression coefficients. L = love; X = perceptions of the partner's advances; Y = partner's actual advances (standard errors in parentheses, *r* in square brackets, 95% CI in braces). Approximate effect sizes were computed using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Overall & Hammond, 2013; Rosenthal & Rosnow, 2007). Pooled estimates calculated using pooled data from Study 1 and Study 2.
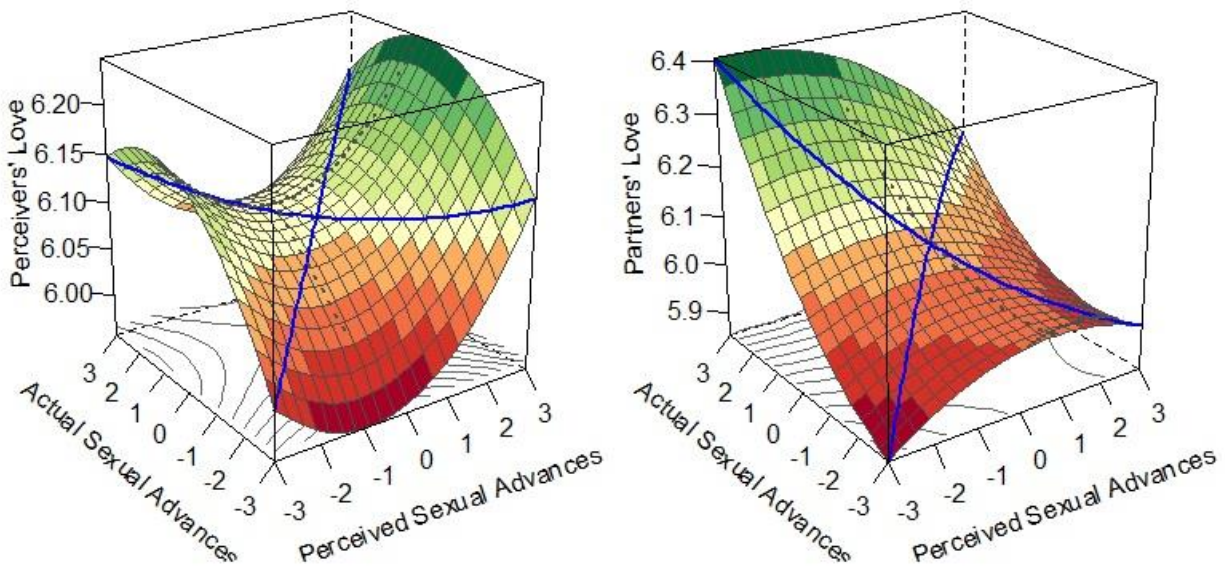+*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Figure 4. Study 2 response surface analyses for bias and accuracy in perceptions of the partner's

sexual advances and the partner's actual advances predicting perceiver and partner love. The line

of perfect agreement runs from the front to back corner, while the line of incongruence runs from

the left to the right corner.

To test an alternative explanation for these effects, specific points on the graphs were

compared. Comparing when perceptions of advances are high but actual advances are low (3, -3)

to when perceptions of sexual advances and actual advances are high (3, 3), we found that

perceiver sexual satisfaction is higher when actual advances are low, and the difference between

these points is significant ($t(120) = 1.80$, $p = .04$). Comparing when perceptions of advances are

low but actual advances are high (-3, 3) to when perceptions of sexual advances and actual

advances are high (3, 3), we found that the difference between these points is not significant

($t(120) = 1.17$, $p = .12$) for sexual satisfaction or love ($t(120) = 1.03$, $p = .15$). Therefore, similar

to Study 1, we cannot rule out the prospect that multiple processes are at play. Directional bias is

associated with sexual satisfaction and love, as evidenced by the a_3 proxy, but it also appears to

be the case that bias cannot explain the association between relationship outcomes and

perceptions of and actual sexual advances in its entirety.[7]

General Discussion

Across two pre-registered studies, partners displayed no directional bias or

underestimation and significant tracking accuracy overall. Men either displayed no directional

bias or underestimation, whereas women overestimated their partner's sexual advance

behaviours. No gender differences emerged for tracking accuracy. Overestimation was

consistently associated with greater *perceiver* sexual satisfaction, whereas underestimation was

associated greater *partner* sexual satisfaction. Finally, underestimation was consistently

associated with greater partner love.

Previous research has examined biased and accurate perceptions of sexual desire (Muise,

Stanton, et al., 2016), and although this may not always be the case, desire to engage in sexual

activity should temporally precede the use of sexual advance behaviours. Therefore, the current

research examined the next logical piece to the puzzle of how couples navigate sexual activity,

and combined with Muise, Stanton, et al. (2016), demonstrates that bias and accuracy in partner

judgments play a role at multiple stages of sexual experiences in relationships.

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[7] We thank anonymous reviewers and editors for their insights on additional analyses that could be run with these data. Based on their input, we tested whether the directness of the sexual advance behaviours used and sexual desire are associated with tracking accuracy and directional bias. Directness was not associated with directional bias ($b = -.004$, $t(1640.62) = -.19$, $p = .85$) or tracking accuracy ($b = .02$, $t(3065.87) = 1.47$, $p = .14$) in Study 1, but was marginally associated with directional bias ($b = -.04$, $t(1646.42) = -1.93$, $p = .053$) and was significantly associated with tracking accuracy (($b = .05$, $t(2751.75) = -3.38$, $p = .001$) in Study 2. Additionally, although *partners'* sexual desire was associated with positive directional bias (Study 1: $b = .04$, $t(141.17) = 3.32$, $p = .001$; Study 2: $b = .08$, $t(99.96) = 5.65$, $p < .001$; *actors'* sexual desire was not associated with directional bias or tracking accuracy), when actor and partner sexual desire were included in the model with gender, the association between gender and directional bias remained significant (Study 1: $b = -.13$, $t(1598.82) = -4.90$, $p < .001$; Study 2: $b = -.28$, $t(1679.00) = -10.42$, $p < .001$; see https://osf.io/7dvyw/ and https://osf.io/fhbiy/ for the syntax and results of Study 1 and Study 2 analyses, respectively).

Fletcher and Kerr (2010, 2013) suggested that partners should be motivated to accurately track each other's thoughts, feelings, and behaviours. Sexual activity offers unique opportunities for romantic partners to experience pair bonding, closeness, intimacy, and sexual satisfaction (Birnbaum, 2003; Birnbaum & Finkel, 2015; Birnbaum & Gillath, 2006; Meltzer et al., 2017; Meston & Buss, 2007; Muise, Kim, et al., 2016), but in order for partners to reap these benefits, they first must recognize when opportunities are being offered to them. Consistent with this notion, in both studies romantic partners accurately tracked the specific pattern of each other's sexual advance behaviours.

In addition to being accurate, previous research has demonstrated that judgments of partners and relationships are typically positively biased (e.g. Murray, Holmes, Bellavia, & Griffin, 2002; Murray, Holmes, & Griffin, 1996). However, the current study found either no directional bias or underestimation in perceptions of sexual advances. One explanation for a lack of overall consistent directional bias is that men and women err in opposite directions, likely cancelling out an overall effect. In contrast to the perceptual biases found outside of romantic relationships, our findings revealed that women consistently overestimated their partner's sexual advance behaviours, whereas men were either unbiased (Study 1) or underestimated (Study 2). These findings have implications for theories of perceptual biases, and for EMT in particular. According to this theory, the overall lack of directional bias implies false positives and false negatives are equally costly in this context, potentially due to differences in the costs of each error based on the perceiver's gender. However, the inconsistent nature of the overall effect of directional bias across our studies indicates that more research is needed to disentangle this effect and draw firm conclusions.

Additionally, these gender differences dovetail with sexual script theory (Simon & Gagnon, 1984, 1987, 2003), as research in this area has found differences in how men and women typically imagine sexual situations progressing (e.g., Grauerholz & Serpe, 1985; Ortiz-Torres et al., 2003), and their typical behaviour in these situations (e.g., Byers & Heinlein, 1989; Laumann et al., 1994). The messages supporting gender roles commonly displayed in society (e.g. Ward, 1995) may influence perceptions of how often partners actually make advances. That is, the media traditionally presents men as the initiators of sexual activity and women as desiring sex less often; this may be a contributing factor to men and women's biased perceptions of their partner's advances (cf. Diamond, 2013; Tolman, 2002).

Similarly, previous research has shown gender differences in sexual initiation and rejection (Byers & Heinlein, 1989; Laumann et al., 1994; Simon & Gagnon, 1984), which may explain gender differences in bias. Gender differences in frequency of initiation and rejection behaviours may make initiation behaviours more available in memory for heterosexual females than males, and vice versa for rejection behaviours, leading to biased perceptions of sexual advances in opposing directions (e.g., Attneave, 1953; Tversky & Kahneman, 1973). However, the gender differences in these studies remained robust even when accounting for sexual initiation and rejection. Therefore, there appears to be something unique in men and women's experiences, beyond the frequency of sexual initiation and rejection behaviours, which fuels opposing biases. The possibility that additional factors help explain these gender differences is readily amenable to future research.

Interestingly, we found no effects of accuracy on perceivers' or partners' sexual satisfaction and love, which could be attributed to a number of factors. The simplest explanation is that accurately perceiving which advance behaviours your partner uses is not enough to create

differences in relational outcomes. However it is also possible that relational outcomes are more strongly linked to accuracy regarding other sexual variables (e.g. perceptions of sexual desire; Muise, Stanton, et al., 2016) than to sexual advance behaviours.

Lastly, the current research found associations between biased sexual advance perceptions and relational outcomes. Specifically, *overestimation* of partners' sexual advance behaviours were consistently associated with greater sexual satisfaction for the *perceiver*. Perceivers overestimating the extent to which their partner approaches them may be associated with perceivers feeling attractive and desired by their partner, thereby having positive benefits (Dodrill, 2007; Pease, 2013). Previous research has indicated that being approached for sex and engaging in sexual activity can enhance feelings of attractiveness (Dodrill, 2007; Pease, 2013), which in turn is associated with greater sexual satisfaction (Erbil, 2013; Robbins, 2017). Conversely, *underestimating* partners' sexual advance behaviours was associated with *partners'* love and sexual satisfaction. Previous research has found that underestimation of traits that focus on the connection between perceivers and their partner may motivate perceivers to enact relationship maintenance behaviours (Fletcher & Kerr, 2010), which may make their partner feel more satisfied. Opposing biases being associated with positive benefits for perceivers and partners suggests that future research may benefit from exploring whether there are particular cases in which people tend to perceive what is good for them over what is good for their partner, and vice versa.

Conclusion

Navigating sexual activity can be difficult, especially when partners' behaviours that indicate their sexual interest are subtle. These studies demonstrate that partners exhibit bias and accuracy in their judgments of each other's sexual advance behaviours, reveal gender differences

in bias and accuracy, and link, for the first time, biased perceptions of sexual advances to sexual

satisfaction and love. Investigating these processes as they occur day-to-day and relate to

relationship success over time, or examining the mechanisms behind the differential effects of

bias on relational outcomes for perceivers and partners, are perhaps the next logical steps for

future research in this domain.

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