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Are you coming on to me? Accuracy and bias in couples' perceptions of sexual advances

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Abstract

Three preregistered studies examined how romantic partners make sexual advances, and how accurately these behaviours are perceived. Study 1 generated a list of 29 sexual advance behaviours common in romantic relationships. Studies 2a and 2b tested whether partners were able to track the pattern of their partner’s advances, if they over- or underestimated the extent to which their partner used those behaviours, whether this tracking accuracy and bias were moderated by individual differences, and whether tracking accuracy and bias predicted relational outcomes. Results revealed strong evidence for tracking accuracy, and mixed results for bias. In addition, there was strong evidence that gender and average frequency of sexual initiation and rejection moderate tracking accuracy and bias, and mixed evidence was found for the importance of attachment orientation. Finally, biased and accurate sexual advance perceptions were associated with love and sexual satisfaction. Implications for theory and relationship dynamics are discussed.

Keywords

Sexual advances, tracking accuracy, directional bias, romantic relationships
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Chapter 1

1 Introduction

Decades of research on romantic relationships has presented current researchers in the field with a paradox: “love is both blind and firmly rooted in the real world” (Fletcher & Kerr, 2010, p. 628). Judgments of partners and relationships are typically positively biased (e.g. Murray, Holmes, Bellavia, Griffin, & Dolderman, 2002; Murray, Holmes, & Griffin, 1996). That is, the level of commitment that is associated with long-term relationships often leads people to rate their partners and their relationships more positively. However, judgments of partners and relationships have also been found to be very accurate. For example, relationship evaluations are often consistent across partners (e.g. Campbell, Simpson, Kashy, & Fletcher, 2001).

The solution to this paradox lies in the proposition that it is possible to be both accurate and biased simultaneously. Two types of accuracy have been proposed in the recent literature: tracking accuracy and directional bias (Fletcher & Kerr, 2010, 2013; West & Kenny, 2011). To demonstrate these effects, take, for example, one of the first studies examining accuracy in intimate relationships conducted by Dymond (1954), who found that those in happier marriages were more accurate in their judgments of their partner’s personality. Participants were given a list of personality traits and asked to indicate if each trait was true of themselves, and also asked if it was true of their partner. A participant would display tracking accuracy if they recognized which traits were true of their partner, and which were not, as tracking accuracy represents the association between the judgment(s) (participants’ judgment of whether a trait is true of their partner) and a relevant reference point(s) (partners’ judgment of whether a trait is true of themselves).

Now consider if instead of indicating if a trait was simply true of themselves and their partner, Dymond (1954) asked participants to indicate the extent that each trait was true of themselves and their partner. Tracking accuracy could still be determined by determining if participants accurately judge which traits are true of their partner and which are not. In addition, whether participants over or underestimate the extent that each trait is true of their partner could be determined. The participant would display directional
bias (also referred to as mean-level bias, or simply bias; Fletcher & Kerr, 2010, 2013; West & Kenny, 2011) if they generally over or underestimate how true each trait is of their partner, as directional bias is a difference in mean-levels across a sample of judgments between each judgment and a relevant reference point (Fletcher & Kerr, 2010, p. 629). It is possible to display tracking accuracy and/or directional bias, or neither. In this way, it is possible to be both accurate and inaccurate simultaneously.

One area of romantic relationships in which accuracy may play an important role is sexual communication. Sexuality is an important feature of romantic relationships that differentiates them from other types of close relationships (Schwartz & Young, 2009). Sexual communication involves both the quality and quantity of discussions regarding issues such as sexual needs, desires, and health. Dyadic communication plays a critical role in the maintenance of satisfying long-term relationships (e.g. Noller & Feeney, 2002), and positive associations have been found between sexual communication and a number of relationship outcomes, such as sexual satisfaction (e.g. Byers & Demmons, 1999). In turn, sexual satisfaction positively predicts relationship satisfaction, while sexual dissatisfaction predicts relationship dissolution (Call, Sprecher, & Schwartz, 1995; Donnelly, 1993; Edwards & Booth, 1994; Oggins, Leber, & Veroff, 1993). The current research examines the ways that romantic partners communicate an interest in having sex, the accuracy with which partners perceive these sexual advance behaviours, how these processes may be moderated by other factors, and whether these processes are associated with relationship outcomes. This area of research has not yet been investigated, as previous research regarding sexual communication, and sexual advances specifically, has focused on the characterization and frequency of these behaviours. Therefore, the current research sought to investigate these factors in a dyadic study of romantic couples using an advanced statistical framework that can account for accuracy and bias in perceptions of interpersonal behaviour.

1.1 The Truth and Bias Model

Researchers in the field of romantic relationships have conducted several studies measuring accuracy and bias in a number of different relationship contexts, and many of these studies have been at the dyadic level. For example, Overall, Fletcher, and Kenny
(2012) asked couples to engage in a discussion about things that they wanted to change about each other while being recorded. Both members of the couple then reviewed the recordings and periodically reported their judgments of their partner’s regard and their regard for their partner during the discussion. These judgments were then used to assess tracking accuracy and directional bias, and it was found that participants generally underestimate their partner’s regard in conflict discussions, but do display substantial tracking accuracy.

This study by Overall and colleagues (2012) is a part of the minority of studies on tracking accuracy and directional bias in that it estimates the presence of these processes simultaneously. Simultaneously assessing these effects allows the researcher to examine the effect of one while taking into account the variance associated with the other, something the majority of previous research on these effects have not been able to achieve given the independent focus on each process (e.g. Karney & Frye, 2002; Sprecher, 1999).

Recently, West and Kenny (2011) proposed the Truth and Bias (T&B) Model of judgment, which allows for the simultaneous assessment of tracking accuracy and directional bias with dyadic data. In this model, the person making the judgment is called the perceiver, and the perceiver’s judgments are compared to their partner’s actual ratings (in this model, the partner’s actual ratings are considered the truth). The T&B Model details three effects that can be simultaneously tested.

The first effect is directional bias, discussed previously. Systematic overestimation of the truth reference point is referred to as positive directional bias, whereas systematic underestimation is referred to as negative directional bias.

The second effect is the truth force, and is comparable to tracking accuracy. The truth force “represents the extent to which judgments are attracted toward the truth value” (the actual value; West & Kenny, 2011, p. 360). A perceiver who can correctly report the pattern of the truth values displays positive truth force, or high tracking accuracy. A negative truth force is displayed when the perceiver’s judgments are being pushed away from the truth, likely by another psychological process (West & Kenny, 2011).
The third effect is the *bias force*, and it represents the extent to which perceivers’ perceptions of where they lie on the scale are associated with their judgments of the target. Therefore, the bias force represents the extent to which the perceiver *assumed similarity* between themselves and the target when making their judgments. A positive bias force is displayed when the perceiver projects their perceptions of themselves onto their judgments of the target’s truth value, and is measured through a correlation between the perceiver’s truth values and their judgments. A negative bias force is displayed when the perceiver assumes dissimilarity between themselves and the target of their judgments. Studies that utilize the T&B model have typically examined directional bias and tracking accuracy while controlling for the effects of assumed similarity (e.g., West, Dovidio, & Pearson, 2014).

### 1.2 Sexual Advance Behaviours

Although this number varies depending on factors such as relationship length, age, and presence of children, research has found that married, cohabiting, and college-aged samples of romantic couples engage in sexual activities an average of 2.5 times per week (Byers & Heinlein, 1989; Call et al., 1995; Laumann, Gagnon, Michael, & Michaels, 1994; Vannier & O’Sullivan, 2011). In addition, couples report a sexual advance by at least one partner occurring an average of 3.5 times per week (Byers & Heinlein, 1989).

One of the first formal descriptions of what behaviours a sexual advance typically entails came from Albert Scheflen (1965), who examined the quasi-courtship behaviours of therapists and clients during psychotherapy sessions. He proposed that there are four categories of courtship behavior—courtship readiness cues (ex. a healthier physique), preening behaviors (ex. stroking hair or adjusting clothing and makeup), positional cues (ex. leaning toward the target and closing off other individuals), and actions of appeal or invitation (ex. flirtatious glances). Givens (1978) also described specific sexual advance behaviours in the fourth of the five phases (sexual arousal) of courtship he proposed. The behaviours associated with this phase include exchanging affectionate gestures such as touching, stroking, caressing, and kissing. Similarly, later research found the most common behaviours to indicate sexual interest are kissing, hand linking, embracing, self-
grooming, smiling, laughing, food sharing, touching, playing, intimate gazing, and intimate touching (Jesser, 1978; Lockard & Adams, 1980; McCormick, 1979; McCormick & Jones, 1989).

The common thread amongst many of these behaviours is that they are nonverbal and can be indirect. Indeed, recent research found that most of the sexual initiations between romantic partners involve nonverbal rather than verbal behaviours, and the majority are indirect rather than direct (Vannier & O’Sullivan, 2011). Findings from some prior studies corroborate this assertion (Jesser, 1978; McCormick, 1979), while others suggest that verbal methods of initiation may be the most common, with nonverbal methods of initiation playing a significant but secondary role (Byers & Heinlein, 1989). The frequency of use of these behaviours is important, as indirect or nonverbal sexual advances may be more difficult for perceivers to accurately recognize. Therefore, barriers to the recognition of partners’ sexual advance behaviours may exist. Further research is required to determine the accuracy of partners’ recognition of sexual advance behaviours in one another, and to examine factors that may moderate this accuracy.

1.2.1 Directional Bias in Perceptions of Sexual Advance Behaviours

As discussed previously, judgments of partners and relationships are typically positively biased (e.g. Murray et al., 2002; Murray et al, 1996). In addition, these positive biases are associated with relationship benefits, such as feeling positively toward the relationship (Lackenbauer, Campbell, Rubin, Fletcher, & Trioster, 2010). However, research in this area has typically focused on partners’ biased perceptions of and feelings towards their partner and their relationship (e.g. Lackenbauer et al., 2010; Murray et al., 1996), as opposed to their biased perceptions of their partner’s behaviour. Positive directional bias (overestimation) with regards to perceptions of a partner’s sexual advances could also be beneficial for oneself and one’s relationship, as believing that their partner approaches them often may make the individual feel more desired. Positive directional bias could also have negative effects on the relationship, as it may lead the individual to feel that their partner is incessantly approaching them, and this may be interpreted as bothersome. It is unclear at this time which of these two interpretations is more likely, and therefore it
is unclear as to whether perceivers should be motivated to have biased perceptions of their partner’s sexual advances.

1.2.2 Tracking Accuracy in Perceptions of Sexual Advance Behaviours

Romantic partners should be accurate in their perceptions of their partner’s sexual advances to some extent, simply because romantic partners typically engage regular sexual activity (Byers & Heinlein, 1989; Call et al., 1995; Laumann et al., 1994; Vannier & O’Sullivan, 2011). In addition, this accuracy may be beneficial for their relationships as previous research has demonstrated that romantic partners who feel they are being accurately perceived by their partners feel more intimate and more positively about their relationship (Lackenbauer et al., 2010). In order to attain these relationship benefits, romantic partners should be motivated to accurately track their partner’s behaviours.

1.2.3 Assumed Similarity in Perceptions of Sexual Advance Behaviours

Previous research has shown that perceivers assume similarity between themselves and their partner when making judgments of their partner in a number of areas, including closeness, caring feelings, equity, enjoyment of sex, and job satisfaction (Kenny & Acitelli, 2001). In many of these areas, assuming similarity between partners may aid in making more accurate judgments of the partner or the relationship, as the factor being judged is likely to be inherently similar across partners (e.g. it is unlikely that one partner feels extremely close to the other, while the other feels very distant). This could be true of sexual advance behaviours as romantic partners may develop a sexual script or routine that they can each enact when they wish to demonstrate sexual desire. However, it is also possible that sexual advance behaviours are a domain in which personal preferences reign and there are likely to be greater differences between partners, in which case assuming similarity between oneself and one’s partner would not be an effective tool for increasing accuracy.

A factor that has not been significantly represented in the accuracy and bias literature is whether there are certain individual differences in people’s ability to make accurate
judgments or to be accurately judged. The current research will examine whether gender, attachment anxiety, and attachment avoidance have the potential to moderate the ability to accurately perceive a romantic partner’s sexual advances, or to be perceived by one’s partner.

1.3 Gender

Sexual script theory (Simon & Gagnon, 1984, 1987, 2003) proposes that men traditionally initiate sexual encounters and women traditionally restrict them in relationships. In addition to other factors such as biologically based differences in sex drive (Baumeister, Catanese, & Vohs, 2001), this phenomenon is largely attributed to messages supporting gender roles being displayed in society and internalized by perceivers. In fact, men report feeling more comfortable with the thought of being an initiator and have an easier time imagining these types of scenarios (Grauerholz & Serpe, 1985; Hickman & Muehlenhard, 1999), while women who are asked to imagine sexual initiation scenarios typically describe their partner as the initiator (Ortiz-Torres, Williams, & Ehrhardt, 2003). These preferences are also characteristic of actual behaviour, as a number of studies have found that men typically initiate sexual encounters more than women (e.g. Byers & Heinlein, 1989; Laumann, Gagnon, Michael, & Michaels, 1994).

However, when the sexual advance behaviours used by men and women were compared by Greer and Buss (1994), very few gender differences were found. The effectiveness of these tactics does appear to vary based on gender though. In general, men and women perceive sexual initiation strategies as more effective for women than for men, with the most effective tactics for women involving conveying immediate sexual access (Greer & Buss, 1994). However, the most effective tactics for men are perceived as investing time, attention, and expressions of love and commitment (Greer & Buss, 1994).

1.3.1 The Association of Gender with Accuracy and Bias in Perceptions

How might the traditionally different roles in the sexual initiation process create differences in accuracy and bias across genders? Outside of the relationship context, men
tend to perceive greater sexual interest in the actions of others than actually exists (Shotland & Craig, 1988). Therefore, men may perceive sexual advances from women more than is actually the case, creating positive directional bias. This phenomenon has recently been disputed for men in long-term romantic relationships, as it was found that men in this context display negative directional bias (underestimate) regarding their partner’s day-to-day sexual desire (Muise, Stanton, Kim, & Impett, 2016). This inconsistency with the previous research was explained by the researchers (Muise et al., 2016) by discussing the differences in the cost of missing an opportunity to engage in sexual activities in each context. They proposed that outside of the relationship context, men’s primary goal (from an evolutionary standpoint) is to increase their chances of reproductive success by mating with as many partners as possible. In this case, missing opportunities to engage in sexual activities is costlier than incorrectly perceiving sexual interest, thereby leading to overestimation of potential partners’ sexual interest. In contrast, within romantic relationships there are likely to be numerous opportunities to engage in sexual activities and therefore the cost associated with missing such a cue is low. In addition, the cost associated with being rejected by a partner is higher than that of being rejected by a stranger. Therefore, the costs associated with perceiving sexual desire that is in fact absent is believed to be costlier in the relationship context, and should motivate partners to underestimate their partner’s sexual desire. Based on this logic, males should underestimate their partner’s sexual advances in a relationship context. In contrast to the results for males, no directional bias was found by Muise et al. (2016) for females.

With regards to tracking accuracy, there is little reason to expect differences between genders. As discussed previously, accuracy in judgments of one’s partner and relationship have been associated with relationship benefits (e.g. Lackenbauer et al., 2010), and these benefits do not appear to vary based on gender. Therefore, both males and females should be motivated to accurately track their partner’s sexual advance behaviours. This is consistent with a number of previous studies that have found no gender differences in tracking accuracy (e.g. Eldesouky, English, & Gross, in press; Goh, Rad, & Hall, 2016; Overall & Hammond, 2013).
1.4 Attachment Theory

Attachment orientations are “the pattern[s] of relational expectations, emotions, and behaviors that results from internalizing a particular history of attachment experiences” (Mikulincer & Shaver, 2013, p. 67). Attachment orientations are distributed along two dimensions, attachment anxiety and attachment avoidance. Those who score low on both dimensions are considered securely attached, and tend to have positive conceptualizations of the self and others, and utilize positive and effective response strategies. Those who score high on one or both of the dimensions are considered insecurely attached, and tend to hold negative conceptualizations of the self, others, and relationships, and these beliefs lead to the use of ineffective strategies in navigating interactions.

According to attachment theory, these orientations are developed through early experiences with caregivers. Those who score high on attachment anxiety tend to rely on hyperactivating strategies, which are enthusiastic attempts to gain support and love, which are combined with low confidence that love and support will actually be provided, and anger and despair when they are not (Cassidy & Kobak, 1988). This is due to beliefs, reinforced through past experiences, that others will be unreliable when support is needed, that it is something about themselves that creates these situations, and that exaggeration and proximity-seeking occasionally succeed in gaining the needed support.

In contrast, those who score high on attachment avoidance tend to rely on deactivating strategies, which involve avoiding closeness with others when threatened, denying their need for other people, and when in relationships, avoiding closeness and interdependence in general (Ainsworth, Blehar, Waters, & Wall, 1978). This is due to beliefs that have been reinforced through past experiences that suggest others cannot be trusted to be supportive and responsive in times of need, and that expressions of need and closeness will be disapproved of or punished.

The adult attachment orientations that one develops over time has serious implications for the romantic relationship behaviours one experiences and enacts. For example, less secure individuals (those who score high on one or more of the dimensions) tend to be less confident in their ability to establish a successful romantic relationship (see
Mikulincer & Shaver, 2007, for a review). Beliefs such as this lead to differences in self-disclosure (e.g. Bradford, Feeney, & Campbell, 2002; Mikulincer & Nachshon, 1991), lying (e.g. Ennis, Vrij, & Chance, 2008; Gillath, Sesko, Shaver, & Chun, 2010), knowledge of a partner’s thoughts and feelings (Rholes, Simpson, Tran, Martin, & Friedman, 2007), and patterns of nonverbal communication (Guerrero, 1996; Tucker & Anders, 1998), all of which may impact the use of healthy sexual communication. In general, it is believed that people who score highly on attachment anxiety may not communicate effectively with their partners because they are highly self-focused and worried about being criticized or rejected by their partner (Mikulincer & Shaver, 2013). In contrast, those who score highly on attachment avoidance may not communicate effectively because their avoidance and lack of sensitive responding may decrease their partner’s interest in interactions, and may pose a barrier to their own expressions of concern and discussions of their own feelings (Mikulincer & Shaver, 2013). This is supported by research linking sexual communication and adult attachment, such that insecure attachment is negatively associated with satisfaction with sexual communication (Timm & Keiley, 2011) and positively associated with inhibited sexual communication (Davis et al., 2006).

1.4.1 The Association of Attachment Orientation with Accuracy and Bias in Perceptions

The strategies commonly associated with attachment insecurity may lead to differences in tracking accuracy. The hyperactivating strategies associated with attachment anxiety typically lead these individuals to closely monitor their significant others for signs of love and acceptance. In turn, closely monitoring one’s partner may lead to greater tracking accuracy. This is consistent with previous research that has shown higher attachment anxiety is associated with greater accuracy in perceptions of romantic partners (Simpson, Ickes, & Grich, 1999; Simpson et al., 2011). In contrast, the deactivating strategies commonly associated with attachment avoidance typically lead these individuals to withdraw from their relationships, and may make it particularly difficult to accurately track their partner’s behaviours. Consistent with this, research has shown that higher
attachment avoidance is associated with less accuracy in perceptions of romantic partners (Simpson et al., 2011).

It is common in sexual initiation contexts for a signal amplification bias to occur, whereby an actor believes their behaviours communicate more romantic interest than is actually the case. This phenomenon is enhanced by greater fears of rejection of the actor (Vorauer, Cameron, Holmes, & Pearce, 2003). Insecurely attached persons typically have greater fears of rejection, indicating that they may be more likely to display signal amplification bias. If this is the case, perceivers with more insecurely attached partners may appear to underestimate their partner’s sexual advances because their partner believes they are displaying greater sexual interest than they actually are, and the partner’s reports of their behaviour are considered the truth using the T&B Model.

1.5 The Current Research

1.5.1 Study 1

In order to utilize the T&B Model to examine the accuracy and bias with which romantic partners perceive each other’s sexual advance behaviours, a brief list of these behaviours is necessary. However, past research on behaviors used to approach others for sex has focused mainly on those used outside of the romantic relationship context (e.g. Greer & Buss, 1994) or on assigning behaviors within romantic relationships to broad categories (e.g. Vannier & O’Sullivan, 2011). Therefore, an inventory of the specific sexual advance behaviors that occur within romantic relationships does not yet exist. Study 1 aims to address this issue, and extend the literature on sexual advance behaviors by investigating which specific behaviors occur most frequently in romantic relationships. I made no formal hypotheses for Study 1 because the primary goal was to generate a list of approximately 30 sexual advance behaviours that were rated as frequently used by the general public.

1.5.2 Study 2a and Study 2b

The possible interplay between bias and accuracy in perceptions of partners' sexual advance behaviours and their capacity to influence romantic relationship outcomes has
yet to be investigated systematically. Using the list developed in Study 1, Studies 2a and 2b addressed this gap in the literature, and also examined how a number of individual difference variables may moderate the effects of accuracy and bias (e.g. gender, attachment orientation, etc.), utilizing the T&B Model (West & Kenny, 2011) to simultaneously test for the effects of tracking accuracy and directional bias. The goal of Study 2a was to conduct exploratory analyses and develop more concrete hypotheses to be tested in a confirmatory manner in Study 2b.
Chapter 2

2 Study 1

The goal of Study 1 was to compile a list of approximately 30 sexual advance behaviours that are commonly enacted by both men and women in the context of their romantic relationships. Reducing the number of items from Greer and Buss’s (1994) 122-item Tactics For Promoting Sexual Encounters allowed for ease of interpretation for Studies 2a and 2b, and allowed for a list of behaviours that is more practical for a dyadic study using the Truth & Bias Model (West & Kenny, 2011) for analyses. That is, it should be easier for partners to respond to a smaller list of questions, particularly given that they were asked to report their own and their partner’s typical behavior in the relationship for Studies 2a and 2b.

Adapting Greer and Buss’s (1994) Tactics For Promoting Sexual Encounters (a list of sexual advance behaviours commonly enacted outside of the relationship context), I first narrowed the list of 122 tactics down to 67 by removing items that were deemed inappropriate for a relationship-specific context. In particular, 55 items were removed that were deemed inappropriate for the relationship context by an informal group of six raters, and generally fell under the categories of utilizing the friendship network (ex. “He let her friends know he was interested in her”), getting the target drunk (ex. “He got her to drink a lot of alcohol”), displaying status cues (ex. “He casually mentioned he has a lot of money”), going to a private or secluded area (ex. “He asked if she wanted to study alone together”), dancing (ex. “He asked her to dance”), displaying strength (ex. “He displayed his strength by flexing his muscles”), asking for a date (ex. “He invited her to a party”), acting masculine or feminine (ex. “He acted manly”), implying commitment (ex. “He told her he didn’t do “one-night stands” because he liked relationships that lasted”), increasing perceived mate value through flirting with others (ex. “He flirted subtly with other women to make her jealous, but not so much that she lost interest”), and derogating competitors (ex. “He said that other guys were users”). The remaining items were restructured to be gender neutral and reflect a relationship context (ex. “I lean over and kiss my partner”, “I put my hand on my partner’s thigh”). Participants then rated how frequently they utilized each of the remaining 67 behaviours. A series of cut-off points
were created regarding the minimum frequency of use, and differences between males’ and females’ use. Behaviours that met these cut-offs were used in Studies 2a and 2b.

The secondary goal of this study was to use exploratory analyses regarding sexual advance use and potential moderating factors such as gender and attachment orientation to inform hypotheses for Study 2a.

2.1 Methods

2.1.1 Study Preregistration

This study was preregistered on the Open Science Framework (OSF). Study measures and the data analytic plan are available at https://osf.io/s9ten/.

2.1.2 Recruitment

Participants were recruited via an online advertisement on Amazon’s Mechanical Turk (MTurk) system. The advertisement told participants the study would involve reading brief behaviour descriptions and indicating how often they enact them within their relationship to approach their partner for sex. Interested parties who were over the age of 18, in a relationship of 3 months or more, and who have an approval rating on MTurk of 97% or more were asked to follow the link to the survey, and would receive $0.50 in compensation for their participation.

2.1.3 Participants

Five hundred and sixty-two participants responded to the online advertisement. Sixty-one participants were excluded for not responding to at least 5 of the sexual advance behaviour items, and 40 for indicating they were single. The remaining 461 participants (248 male, 208 female, 5 prefer not to say) were an average of 31.44 years of age and had

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1 Data were analyzed with all participants who reported being in a relationship included, regardless of reported relationship length. Reanalyzing the data with those in a relationship under 3 months (5 participants) excluded resulted in an additional item meeting the inclusion criteria (“I start to undress my partner”). Unfortunately, Studies 2a and 2b were already being conducted at the time of reanalysis and the additional item could not be added.
an average relationship length of 6.38 years. The vast majority of participants reported currently being sexually active with their partner (442 active, 14 not active, 5 prefer not to say).

2.1.4 Procedure

The entire study was completed online. Participants first completed demographic questionnaires about themselves and their relationship. They then read 67 short behavior descriptions that represent ways romantic partners may approach their significant other for sex. For each behavior description, participants indicated how often they enacted each behavior in their own relationship in an attempt to initiate sex with their partner.

2.1.5 Measures

2.1.5.1 Demographics

First, participants were asked to complete a number of demographic questions, including reporting their gender, age, ethnicity, relationship status, relationship length, and whether they are sexually active in their relationship.

2.1.5.2 Perceptions of Sexual Advance Behaviours

From the list of 122 general sexual advance behaviours compiled by Greer and Buss (1994), 67 sexual advance behaviours were selected as appropriate for the context of a romantic relationship ($\alpha = .97$). As mentioned previously, these items were restructured to be gender neutral and to reflect the romantic relationship context. The shortened and restructured list was given to the participants to report how often they believe they enact each behavior in their relationship on a 7-point scale ($1 = \text{Never}, 7 = \text{Always}$). An open response question was also included, which asked participants if there were any behaviours that were not included in the list that they enact in this context, and if so, to list these behaviours.
2.1.5.3  Relationship Satisfaction

Hendrick’s (1988) 7-item measure of relationship satisfaction was used. Responses for this measure fall on a 5-point scale (1 = Not at all/extremely poor, 5 = A great deal/extremely good). Relationship satisfaction scores were created by averaging participant responses across all items, with higher scores indicating greater relationship satisfaction (α = .86).

2.1.5.4  Attachment

The Adult Attachment Questionnaire (AAQ; Simpson, Rholes, & Phillips, 1996) was used to measure romantic attachment orientations. The AAQ is a 17-item measure which assesses attachment anxiety with nine items (e.g. “I often want to merge completely with others, and this desire sometimes scares them away”) and attachment avoidance with eight items (e.g. “Others often want me to be more intimate than I feel comfortable being”). Participants rated how much they agree with each item on a 7-point scale (1 = I strongly disagree, 7 = I strongly agree). Anxious and avoidant attachment scores were created by averaging participant responses across the relevant items, with higher scores indicating greater anxious (α = .77) and avoidant (α = .87) attachment.

2.2  Results

2.2.1  Low Mean Item Removal

In the first stage, the distribution of frequencies was examined and low frequency items (i.e. on a 1-7 scale, any item with an average frequency of less than or equal to 3) were removed. This removed 11 items from the list. See Table 1 for the low mean items.
Table 1. Study 1 items with low average frequency of use.

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I buy my partner flowers.</td>
<td>2.84</td>
<td>2.023</td>
</tr>
<tr>
<td>I lick my lips seductively.</td>
<td>2.92</td>
<td>1.997</td>
</tr>
<tr>
<td>I stick out my chest.</td>
<td>2.99</td>
<td>2.017</td>
</tr>
<tr>
<td>I eat my food seductively.</td>
<td>2.29</td>
<td>1.765</td>
</tr>
<tr>
<td>I walk seductively.</td>
<td>2.97</td>
<td>1.981</td>
</tr>
<tr>
<td>I act upset so that my partner will comfort me and then capitalize on that comforting.</td>
<td>2.19</td>
<td>1.722</td>
</tr>
<tr>
<td>I act uninterested in sex, like I just want to talk.</td>
<td>2.33</td>
<td>1.722</td>
</tr>
<tr>
<td>I rent a movie with sexual situations.</td>
<td>2.83</td>
<td>1.941</td>
</tr>
<tr>
<td>I make myself appear vulnerable.</td>
<td>2.86</td>
<td>1.991</td>
</tr>
<tr>
<td>I ask my partner if they have a condom.</td>
<td>2.28</td>
<td>1.977</td>
</tr>
<tr>
<td>I tell my partner I have condoms.</td>
<td>2.46</td>
<td>2.050</td>
</tr>
</tbody>
</table>

2.2.2 Gender Difference Item Removal

In the second stage, the frequencies reported by men versus women for each remaining item were compared. This scale will be used with both male and female participants in Studies 2a and 2b, and therefore it was considered ideal to keep items with similar frequencies for both genders. This removed 36 additional items from the list (ex. “I put my arm around my partner”). See Table 2 for the items that were removed due to gender differences in their average frequency of use.

2.2.3 Open Response Coding

In the third stage of the analysis, the open responses participants provided regarding any additional sexual advance behaviours not included in the list were evaluated. Only 141 participants responded to this question, and 67 of those indicated the list covered everything they could think of. The remaining responses were coded for content and frequency. Any behaviours indicated by only one participant were removed. The most common behaviour reported was asking your partner if they are interested in having sex (reported by 7 participants), followed by texting or sending photos (reported by 5 participants), showering with your partner, petting, grabbing their bottom, kissing their neck, rubbing against them, or touching their genitals (each reported by 3 participants),
and telling them you would like to have sex, cuddling, cleaning, role playing, and alcohol consumption (each reported by 2 participants). As asking your partner if they want to have sex was the highest frequency item in this stage, this was added to the final list of behaviours for Studies 2a and 2b (i.e. “I ask my partner if they want to have sex with me”).

2.2.4 Re-evaluating Removed Items

At the end of these three stages, 21 items remained. As the goal was approximately 30 items, the items that were removed due to there being a significant difference between males’ and females’ reported use were examined, and items with the highest frequency for males and females were added back in. First, the top five items with the highest frequency for females were added back in to the list, followed by the top five for males. Two of the top five items for males were already added back into the list as part of the top five items for females, so in total only eight items were added. This resulted in a total of 29 items in my list of sexual advance behaviours that are commonly used in the context of romantic relationships. See Table 2 for the items that were added back into the list during this stage. For the full list of 67 items included in Study 1, and the reduced list of 29 items, see Appendices B and E, respectively.
Table 2. Study 1 items with gender differences in average frequency of use.

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Male M (SD)</th>
<th>Female M (SD)</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>I put my hand on my partner’s thigh.</td>
<td>5.59 (1.429)</td>
<td>5.28 (1.673)**</td>
<td>2.116</td>
<td>.032</td>
</tr>
<tr>
<td>I put my arm around my partner.</td>
<td>5.54 (1.546)</td>
<td>5.02 (1.862)**</td>
<td>3.161</td>
<td>.001</td>
</tr>
<tr>
<td>I offer to give my partner a massage.</td>
<td>5.07 (1.746)</td>
<td>4.20 (2.048)</td>
<td>4.737</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I tickle my partner.</td>
<td>4.18 (1.962)</td>
<td>3.19 (1.970)</td>
<td>5.352</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I ask my partner if they want to sleep with me.</td>
<td>5.15 (1.809)</td>
<td>4.67 (2.107)</td>
<td>2.560</td>
<td>.111</td>
</tr>
<tr>
<td>I stare into my partner’s eyes passionately.</td>
<td>5.17 (1.682)</td>
<td>4.75 (1.991)</td>
<td>2.420</td>
<td>.016</td>
</tr>
<tr>
<td>I look at my partner intently in the eyes.</td>
<td>5.31 (1.701)</td>
<td>4.97 (1.921)</td>
<td>2.014</td>
<td>.045</td>
</tr>
<tr>
<td>I wear sexually provocative outfits.</td>
<td>2.49 (1.885)</td>
<td>3.88 (2.012)</td>
<td>7.558</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I wear tight fitting clothes that show off my body.</td>
<td>2.70 (2.070)</td>
<td>4.15 (1.968)</td>
<td>7.628</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I wear revealing clothing.</td>
<td>2.51 (1.846)</td>
<td>4.08 (1.986)</td>
<td>8.634</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I wear sexy underwear.</td>
<td>2.66 (1.972)</td>
<td>4.81 (1.995)</td>
<td>11.421</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I wear sexually provocative outfits.</td>
<td>3.94 (2.039)</td>
<td>3.02 (2.002)</td>
<td>4.842</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I tell sexual jokes.</td>
<td>5.12 (1.611)</td>
<td>4.67 (1.942)</td>
<td>2.665</td>
<td>.008</td>
</tr>
<tr>
<td>I hint constantly about sexual things.</td>
<td>3.74 (1.939)</td>
<td>2.69 (1.876)</td>
<td>5.852</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I spend a lot of money on my partner.</td>
<td>5.68 (1.519)**</td>
<td>5.20 (1.896)**</td>
<td>2.954</td>
<td>.033</td>
</tr>
<tr>
<td>I make a gourmet meal with wine and candlelight.</td>
<td>5.61 (1.480)**</td>
<td>4.18 (2.080)**</td>
<td>8.237</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I apply products to enhance my appearance.</td>
<td>4.80 (1.887)</td>
<td>4.40 (2.204)</td>
<td>2.018</td>
<td>.044</td>
</tr>
<tr>
<td>I dress nicely.</td>
<td>3.87 (2.071)</td>
<td>4.71 (1.866)</td>
<td>4.520</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I compliment my partner on how sexy they look.</td>
<td>5.75 (1.441)**</td>
<td>4.79 (1.986)</td>
<td>5.777</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I make myself “extra attractive”.</td>
<td>4.40 (1.963)</td>
<td>4.79 (1.770)</td>
<td>5.222</td>
<td>.027</td>
</tr>
<tr>
<td>I make a gourmet meal with wine and candlelight.</td>
<td>3.39 (2.044)</td>
<td>4.13 (2.014)</td>
<td>5.222</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I sit in a sexy, provocative pose.</td>
<td>3.13 (2.074)</td>
<td>2.84 (1.989)</td>
<td>2.827</td>
<td>.005</td>
</tr>
<tr>
<td>I arrange my hair in an attractive style.</td>
<td>3.48 (2.006)</td>
<td>3.01 (2.008)</td>
<td>2.449</td>
<td>.015</td>
</tr>
<tr>
<td>I turn on romantic music.</td>
<td>5.06 (1.822)</td>
<td>4.69 (1.862)</td>
<td>2.131</td>
<td>.034</td>
</tr>
<tr>
<td>I light some candles to create the right atmosphere.</td>
<td>5.29 (1.784)</td>
<td>4.87 (1.940)</td>
<td>2.363</td>
<td>.019</td>
</tr>
<tr>
<td>I tell my partner jokes to make them laugh.</td>
<td>3.17 (2.083)</td>
<td>4.04 (2.022)</td>
<td>4.888</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I undress in front of my partner.</td>
<td>4.82 (1.931)</td>
<td>5.47 (1.752)**</td>
<td>3.739</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I sit in a sexy, provocative pose.</td>
<td>3.02 (2.086)</td>
<td>3.73 (2.030)</td>
<td>3.671</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I tell my partner that I care about them deeply.</td>
<td>5.24 (1.739)</td>
<td>4.80 (1.991)</td>
<td>2.464</td>
<td>.014</td>
</tr>
<tr>
<td>I start to undress my partner.</td>
<td>5.24 (1.692)</td>
<td>4.90 (1.907)</td>
<td>1.966</td>
<td>.050</td>
</tr>
</tbody>
</table>

Note: ** indicates the item was added back into the list when re-evaluating removed items.
2.2.5 Additional Analyses to Inform Hypotheses

The scales for relationship satisfaction and adult attachment were originally included in the materials as they were intended to help inform hypotheses for Studies 2a and 2b. However, after greater examination it was decided that these measures would not be sufficient to inform hypotheses for these later studies as the current study was not dyadic, nor did it measure perceptions of one’s partner’s behaviour, which are key components of the following studies.

2.3 Discussion

A 29-item list of sexual advance behaviours was developed in Study 1 that romantic partners commonly enact to indicate to each other that they are interested in engaging in sexual activities. Most of the sexual advance behaviours were rated as being used sometimes, or between sometimes and always.

The sexual advance items retained for Studies 2a and 2b can be found in Appendix E.

It should be noted that this list is not intended to encompass all of the sexual advance behaviours that occur within all romantic relationships. There may be behaviours that are more or less common depending on context, including factors such as relationship length, age, and sexual orientation. This list was simply intended to describe approximately 30 behaviours that are determined by the general public to be commonly enacted by both men and women within romantic relationships. However, it should also be noted that the sample for this study involved a range of ages (18-73 years), relationship lengths (0.8-52.83 years), and recruitment did not focus on a particular sexual orientation. Therefore, although this is by no means an exhaustive list of all possible sexual advance behaviours in all romantic relationships, it should be generally applicable.
Chapter 3

3 Study 2a

The primary goal of this study was to examine the accuracy and bias in romantic partners’ judgments of each other’s sexual advance behaviours. Specifically, I investigated whether partners over- or underestimate each other’s sexual advances, whether they can accurately track their partner’s advances across a number of different behaviours, if they assume similarity between themselves and their partner in these judgments, and whether accuracy and bias are moderated by a subset of each partner’s traits (e.g. attachment orientation, gender, etc.). In this study, both partners reported their own and their perceptions of their partner’s sexual advances using the 29-item questionnaire developed in Study 1. A secondary goal of this study was to investigate whether accuracy and bias were associated with relationship outcomes for either partner.

Knowing that a number of the analyses I intended to run were exploratory, I adopted an approach to data collection and hypothesis generation/testing that is unique for this area of research. Prior to collecting any data, it was decided that the exploratory analyses of this study would require verification through a replication study involving confirmatory analyses. Due to this, it was decided that instead of two waves of data collection (one for the current exploratory study, one for the confirmatory study), I would conduct a single wave of data collection that would recruit enough participants for both an exploratory and confirmatory study. After collection was complete, the participants were randomly assigned to either the exploratory or confirmatory dataset. The confirmatory dataset was not examined until after all analyses for the exploratory dataset were conducted.

3.1 Methods

3.1.1 Study Preregistration

This study was preregistered on the OSF. Study measures and the data analytic plan are available at https://osf.io/4xcpy/.
3.1.2 Recruitment

Participants were recruited via flyers and newspaper advertisements on the University of Western Ontario campus and surrounding area. The advertisements told participants the study was about perceptions in romantic relationships. Interested parties who were over the age of 18, in a relationship of 3 months or more, and who were able to attend a one-hour session on Western’s campus with their romantic partner were asked to contact the email provided to set up an appointment. Each participant received $10 in compensation for their participation.

3.1.3 Participants

One hundred thirty-four couples were recruited for Studies 2a and 2b. The data from fourteen of these couples was excluded as one or both partners indicated that they are not sexually active. This left 120 couples to be divided evenly between Study 2a and Study 2b. The couples were arranged in the dataset by the date and time they completed the study and, following this order, every other couple was assigned to the same data set, beginning with Study 2a. The average relationship length of the 60 romantic couples assigned to Study 2a was 2.46 years, and participants’ average age was 22.34 years. Of the 60 couples in Study 2a, 52 were dating, and 8 were engaged, common-law, or married, 57 were opposite sex couples, 1 was female-female, and there were 2 couples in which at least 1 partner did not indicate their gender.

3.1.4 Procedure

All parts of the study were completed online. Upon arrival to the lab, partners were placed in separate rooms, and asked to complete questionnaires about themselves, their current romantic partner, and their relationship (e.g., demographics). They then read 29 short behavior descriptions that represent ways romantic partners may approach their significant other for sex (e.g., "I smile warmly at my partner"). For each behavior description, participants indicated how often they enact each behavior (“Own Sexual Advance Behaviours”) and their perceptions of how often their partner enacts each behavior (“Partner’s Sexual Advance Behaviours”) in their relationship in an attempt to
initiate sex. This was followed by a series of questionnaires assessing their attachment orientation, self-esteem, love for their partner, and relationship and sexual satisfaction.

3.1.5 Measures

3.1.5.1 Demographics

First, participants were asked to complete a number of demographic questions, including reporting their gender, age, ethnicity, relationship status, relationship length, whether they are sexually active in their relationship, and the sexual frequency in their relationship. In addition, participants were asked a series of questions regarding how often they and their partner attempt to initiate sex, how often they and their partner turn down sex, and how often they choose not to initiate sex because they believe their partner would say no.

3.1.5.2 Perceptions of Own and Partner’s Sexual Advance Behaviours

From Study 1, the list of 29 sexual advance behaviours was given to the participants twice, once to report how often they enact each behavior in their relationship to convey sexual interest (i.e. “I put my hand on my partner’s thigh”; α = .93), and once to report how often they believe their partner enacts each behavior to convey sexual interest (i.e. “My partner puts their hand on my thigh”; α = .93). Possible responses were on a 7-point scale (1 = *Never*, 7 = *Always*).

3.1.5.3 Love

Sternberg’s (1988) 36-item measure of love was used. Participants rated how much they agree with each item on a 7-point scale (1 = *I strongly disagree*, 7 = *I strongly agree*). Love scores were created by averaging participant responses across all items, with higher scores indicating greater love (α = .95).

3.1.5.4 Sexual Satisfaction

Hudson, Harrison, and Crosscup’s (1981) 25-item Index of Sexual Satisfaction was used. Responses for this measure fall on a 7-point scale (1 = *Never*, 7 = *All of the time*). Sexual
satisfaction scores were created by averaging participant responses across all items, with higher scores indicating greater sexual satisfaction (α = .84).

### 3.1.5.5  Relationship Satisfaction and Attachment

The same measures and scoring methods for relationship satisfaction (Hendrick, 1988; α = .86) and attachment orientation (Simpson et al., 1996; anxiety α = .78, avoidance α = .82) that were used in Study 1 were used in Study 2a.

### 3.1.5.6  Self-esteem

Rosenberg’s (1965) 10-item measure of self-esteem was used. Participants rated how much they agree with each item on a 9-point scale (1 = I strongly disagree, 9 = I strongly agree). Self-esteem scores were created by averaging participant responses across all items, with higher scores indicating greater self-esteem (α = .90).

### 3.2  Results

#### 3.2.1  Data Analytic Plan

To test whether perceptions of a partner’s sexual advances demonstrated directional bias, tracking accuracy, and assumed similarity, West and Kenny’s (2011) T&B Model of judgment was used. In the T&B Model, the person making judgments of their partner is termed the perceiver; the perceiver’s judgments are compared with their partner’s actual ratings. These data have a nested structure, with perceivers and partners’ multiple ratings of sexual advances across the 29 items (Level 1) nested within dyad (Level 2; with sixty dyads and 29 repeated measures, there are therefore 3480 data points). First, the associations across the perceivers’ judgments of their partner’s sexual advances and the partners’ actual reported sexual advances (the Level 1 repeated measures variables) were estimated using Multilevel Modeling (MLM) to test the degree to which judgments of the partner’s sexual advances were biased and accurate.

Consistent with the T&B Model (West & Kenny, 2011), the perceiver’s judgments of their partner’s sexual advances were centered on the partner’s actual sexual advance ratings by subtracting the grand mean of all the partners’ sexual advance ratings (i.e.,
mean across dyads) from the perceivers’ judgments for each behavior. By centering this way, the intercept represents the difference between the mean of the partners’ actual sexual advance rating and the mean of the perceivers’ judgments of that sexual advance rating. The average of this coefficient across perceivers tests whether their judgments differed from the partners’ actual ratings across all sexual advance items, as well as indicating the direction of that bias (i.e., directional bias). A negative average intercept indicates that perceivers generally underestimate partners’ sexual advances (i.e. demonstrate negative directional bias), whereas a positive average intercept indicates that perceivers generally overestimate partners’ sexual advances (i.e. demonstrate positive directional bias). The slope of the partner’s actual sexual advance ratings on the perceiver’s judgments of those ratings reflects tracking accuracy, and the slope of the perceiver’s own sexual advance ratings on their judgments of their partner’s sexual advances reflects assumed similarity. A positive slope indicates greater tracking accuracy or assumed similarity, respectively.

I begin my analyses with a general model to determine whether perceivers display directional bias, tracking accuracy, and assumed similarity in their judgments of their partner’s sexual advances. Then I incorporate moderators into the model, including gender and attachment orientation, to determine the effects of these moderators on directional bias and tracking accuracy. Furthermore, I use response surface analysis to determine the effects of directional bias and tracking accuracy on relational outcomes. Finally, I conduct additional auxiliary analyses that are purely exploratory and are not used to inform hypotheses for Study 2b.

3.2.2 General Model

Overall, perceivers did not display directional bias. However, they demonstrated tracking accuracy and projected their own levels of sexual advances (i.e., assumed similarity) when making judgments of their partner’s sexual advances. Results of this analysis are presented in Table 3.
Table 3. Study 2a effects of directional bias, tracking accuracy, and assumed similarity on perceptions of partners’ sexual advances using the T&B Model of judgment.

<table>
<thead>
<tr>
<th>Perceptions of Partners’ Sexual Advances</th>
<th>Truth and Bias Model Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
</tr>
<tr>
<td>Directional Bias</td>
<td>.06</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td>.15</td>
</tr>
<tr>
<td>Assumed Similarity</td>
<td>.52</td>
</tr>
</tbody>
</table>

Note. Degrees of freedom ranged from 56.94 to 58.83.  
***$p < .001$

3.2.3 Moderation

3.2.3.1 Data Analytic Plan

In the T&B model of judgment, a moderator influences the strength of the forces that determine judgment (West & Kenny, 2011). This model allows for the examination of the effects of the moderator on accuracy and bias simultaneously, and also for the moderator to affect accuracy and bias in opposing directions. In this way, a moderator can be seen to affect accuracy and bias in the same direction, in opposite directions, or affect one but not the other.

A main effect of the moderator indicates that the moderator has a statistically significant effect on directional bias, and the sign of the unstandardized regression coefficient (either positive or negative) determines the direction of this effect (positive or negative directional bias, respectively). For example, consider a model examining the accuracy and bias with which friends perceive each other’s hurt feelings during an argument, with closeness included as a moderator. If a significant positive main effect of closeness was found, this would indicate that higher closeness is associated with positive directional bias, such that those who report being closer to their friend tend to overestimate their friend’s hurt feelings during an argument. In contrast, a significant negative main effect would indicate that those who report being closer to their friend tend to display negative directional bias (i.e. underestimate) when perceiving their friend’s hurt feelings.
The interaction of the moderator with tracking accuracy and assumed similarity indicates the degree to which each of these forces change as a function of a one-unit change in the moderator. Using the closeness example discussed above, if a significant interaction of closeness and tracking accuracy were to be found, this would indicate that tracking accuracy increases or decreases as closeness increases. Simple slopes analyses provide an indication of the direction of this effect. High (+1SD) closeness can be substituted into the model for closeness, and the effect of high closeness on tracking accuracy can be determined by the main effect of tracking accuracy in this model. The same can then be completed for low (-1SD) closeness. In addition, the same analyses could be conducted if an interaction of the moderator and assumed similarity is found.

Studies utilizing the T&B Model often examine directional bias and tracking accuracy controlling for the effect of assumed similarity (see, e.g., West, Dovidio, & Pearson, 2014). By doing this, tracking accuracy reflects direct accuracy (i.e., accuracy once the perceiver’s own feelings are taken into account; West & Kenny, 2011; see also Dutra et al., 2014). Therefore, I include assumed similarity and its associated interactions with any moderators in the models run, but will not be interpreting its effects.

3.2.3.2 Gender

When gender was included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of gender emerged \( (b = -.15, t(1642.79) = -5.81, p < .001) \). Based on these results, another model was run with dummy coded variables for male and female, and their associated two-way interactions with tracking accuracy and assumed similarity. These results demonstrated that both males \( (t = 5.94, p < .001) \) and females \( (t = 6.23, p < .001) \) displayed tracking accuracy, and there was no significant difference between these two groups \( (b = -.003, t(2801.98) = -.19, p = .851) \). However, males displayed no statistically significant directional bias \( (t = -.717, p = .48) \), whereas females displayed significant positive directional bias \( (t = 4.61, p < .001; \) i.e., they overestimated the degree to which their partners engaged in the 29 behaviors to convey interest in sex). Results of this analysis are presented in Table 4.
Table 4. Study 2a effects of gender as a moderator in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>-.04</td>
<td>.06</td>
<td>-72</td>
<td>-.16, .08</td>
</tr>
<tr>
<td>Female</td>
<td>.28</td>
<td>.06</td>
<td>4.61***</td>
<td>.16, .40</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.17</td>
<td>.03</td>
<td>5.94***</td>
<td>.11, .22</td>
</tr>
<tr>
<td>Female</td>
<td>.17</td>
<td>.03</td>
<td>6.23***</td>
<td>.11, .22</td>
</tr>
</tbody>
</table>

*Note.* Degrees of freedom ranged from 91.55 to 118.67.
***$p < .001$**

3.2.3.3 Sexual Initiation and Rejection

Previous studies have shown that males have a tendency to make sexual advances more often than females, whereas females reject sexual advances more often than males (Byers & Heinlein, 1989; Laumann et al., 1994; Simon & Gagnon, 1984). From this, it was hypothesized that the bias associated with gender that was found could be due to differences in average frequency of sexual initiation and rejection.

To determine whether this is the case, I first sought to replicate the findings of previous research indicating a gender difference in average frequency of sexual initiation and rejection. To do this, I examined gender differences in people’s average own and perceptions of their partner’s sexual initiation and rejection behaviours using MLM adjusting for dyadic data. Results regarding participants’ actual reported initiation and rejection behaviours trended in the same direction as that of previous research, but the results were not statistically significant. That is, males ($M = 5.86, SD = 1.97$) reported initiating marginally more than females ($M = 5.30, SD = 1.98, b = .29, t(59.18) = 1.67, p = .10$), and results trended in the direction of females ($M = 2.58, SD = 1.12$) rejecting more than males ($M = 2.28, SD = 1.87, b = -.15, t(60.88) = -1.09, p = .28$). However, results regarding participants’ perceptions of their partner’s initiation and rejection behaviours were statistically significant. That is, females reported that their partners initiated more ($M = 6.15, SD = 1.92$) than males reported their partners initiated ($M = 5.02, SD = 1.94, b = -.56, t(60.15) = -3.40, p = .001$), whereas males reported that their
partners rejected more \((M = 2.98, SD = 1.78)\) than females reported their partners rejected \((M = 1.67, SD = 1.27, b = .66, t(60.52) = 4.58, p < .001)\).

From these results, it appeared that perceiver’s perceptions of their partner’s average frequency of initiation and rejection may be the most likely variables (versus actual initiation and rejection behaviours) to account for the gender difference in directional bias. Therefore, these variables were included in the T&B model to determine any effects they may have on judgment. Partner’s actual initiation and rejection behaviours were also included in their respective models to control for their potential effects.

When perceiver’s perceptions of their partner’s average frequency of initiation and the partner’s actual frequency of initiation were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of perceivers’ perceptions of their partner’s initiations emerged \((t = 4.88, p < .001)\), such that higher perceptions of their partner’s average initiation was associated with perceivers overestimating their partner’s sexual advances (i.e. positive directional bias). The main effect of partner’s actual initiation behaviours was also significant \((t = 5.56, p < .001)\), such that perceivers with partners who initiate more often overestimate their partner’s sexual advances. Results of this analysis are presented in Table 5.

Table 5. Study 2a effects of perceptions of and partner's actual sexual initiation as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>(b)</th>
<th>(SE)</th>
<th>(t)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directional Bias</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>(.08)</td>
<td>(.02)</td>
<td>(4.88^{***})</td>
<td>(.05, .12)</td>
</tr>
<tr>
<td>Partner’s Average Initiation</td>
<td>(.10)</td>
<td>(.02)</td>
<td>(5.56^{***})</td>
<td>(.06, .13)</td>
</tr>
<tr>
<td><strong>Tracking Accuracy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>(.01)</td>
<td>(.01)</td>
<td>(1.11)</td>
<td>(-.01, .03)</td>
</tr>
<tr>
<td>Partner’s Average Initiation</td>
<td>(-.01)</td>
<td>(.01)</td>
<td>(-1.10)</td>
<td>(-.03, .01)</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 1291.35 to 1543.87.*

\(***p < .001\)

When perceiver’s perceptions of their partner’s average frequency of rejection and the partner’s actual frequency of rejection were included in the model with associated two-
way interactions with tracking accuracy and assumed similarity, a significant main effect of perceivers’ perceptions of their partner’s rejections emerged ($t = -5.65, p < .001$), such that higher perceptions of their partner’s average rejection was associated with perceivers underestimating their partner’s sexual advances (i.e. negative directional bias). The main effect of partner’s actual rejection behaviours was also significant ($t = -2.25, p = .03$), such that perceivers with partners who reject more often underestimate their partner’s sexual advances. Results of this analysis are presented in Table 6.

Table 6. Study 2a effects of perceptions of and partner's actual sexual rejection as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directional Bias</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.13</td>
<td>.02</td>
<td>-5.65***</td>
<td>-.17, -.08</td>
</tr>
<tr>
<td>Partner’s Average Rejection</td>
<td>-.06</td>
<td>.03</td>
<td>-2.25*</td>
<td>-.11, -.01</td>
</tr>
<tr>
<td><strong>Tracking Accuracy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.02</td>
<td>.01</td>
<td>-1.46</td>
<td>-.04, .01</td>
</tr>
<tr>
<td>Partner’s Average Rejection</td>
<td>.02</td>
<td>.01</td>
<td>1.39</td>
<td>-.01, .05</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 901.17 to 1416.42. 
* $p < .05$, *** $p < .001$

3.2.3.4 Perceptions of Sexual Initiation, Rejection, and Gender

When perceiver’s perceptions of their partner’s average frequency of initiation, perceiver’s perceptions of their partner’s average frequency of rejection, and gender were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, significant main effects of perceptions of partner’s initiation ($t = 2.84, p = .005$), perceptions of partner’s rejection ($t = -3.07, p = .002$), and gender ($t = -2.90, p = .004$) emerged. Therefore, including perceptions of partner’s sexual initiation and rejection in the model did not account for the effect of gender on directional bias.

---

2 This model was also run with partner’s actual reported initiation and rejection scores instead of the perceiver’s perceptions of their partner’s initiation and rejection, and the results remained the same.
These factors appear to have significant, independent effects on directional bias. Results of this analysis are presented in Table 7.

### Table 7. Study 2a effects of perceptions of partner's sexual initiation, rejection, and gender as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directional Bias</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>.05</td>
<td>.02</td>
<td>2.84**</td>
<td>.02, .08</td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.07</td>
<td>.02</td>
<td>-3.07**</td>
<td>-.11, -.02</td>
</tr>
<tr>
<td>Gender</td>
<td>-.08</td>
<td>.03</td>
<td>-2.90**</td>
<td>-.14, -.03</td>
</tr>
<tr>
<td><strong>Tracking Accuracy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>.01</td>
<td>.01</td>
<td>.56</td>
<td>-.01, .02</td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.01</td>
<td>.01</td>
<td>-.53</td>
<td>-.03, .02</td>
</tr>
<tr>
<td>Gender</td>
<td>-.01</td>
<td>.02</td>
<td>.52</td>
<td>-.02, .04</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 344.32 to 2334.28.*

* p < .05, ** p < .01, *** p < .001

### 3.2.3.5 Adult Attachment

When perceiver and partner attachment anxiety were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a marginally significant interaction of partner attachment anxiety and tracking accuracy emerged (t = 1.85, p = .068).

An analysis of the simple slopes indicated that tracking accuracy was associated with both low (-1SD; b = .12, t(62.92) = 3.80, p < .001) and high (+1SD; b = .19, t(73.24) = 5.86, p < .001) partner attachment anxiety, but was stronger for those with a more anxiously attached partner. No other significant main effects or interactions with tracking accuracy emerged. Results of this analysis are presented in Table 8.

---

3 This effect was still marginally significant when perceiver and partner attachment anxiety and avoidance were all included in the model (p = .062).
When perceiver and partner attachment avoidance were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a marginally significant main effect of partner attachment avoidance emerged ($t = -1.69, p = .094$). This indicates that individuals were marginally more likely to underestimate the degree to which their more avoidant partners enacted these behaviors to convey an interest in having sex (i.e., display negative directional bias). No other significant main effects or interactions with tracking accuracy emerged. Results of this analysis are presented in Table 9.

Table 8. Study 2a effects of perceiver and partner attachment anxiety as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety</td>
<td>-.05</td>
<td>.05</td>
<td>-.95</td>
<td>-.15, .05</td>
</tr>
<tr>
<td>Partner Attachment Anxiety</td>
<td>.05</td>
<td>.05</td>
<td>.91</td>
<td>-.06, .15</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety</td>
<td>-.03</td>
<td>.02</td>
<td>-1.28</td>
<td>-.08, .02</td>
</tr>
<tr>
<td>Partner Attachment Anxiety</td>
<td>.04</td>
<td>.02</td>
<td>1.85$^+$</td>
<td>-.003, .09</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 80.59 to 92.13. $^+p < .10$

This effect was still marginally significant when perceiver and partner attachment anxiety and avoidance were all included in the model ($p = .085$).

Table 9. Study 2a effects of perceiver and partner attachment avoidance as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance</td>
<td>.03</td>
<td>.04</td>
<td>.79</td>
<td>-.04, .10</td>
</tr>
<tr>
<td>Partner Attachment Avoidance</td>
<td>-.06</td>
<td>.04</td>
<td>-1.69$^+$</td>
<td>-.13, .01</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance</td>
<td>.004</td>
<td>.02</td>
<td>.24</td>
<td>-.03, .04</td>
</tr>
<tr>
<td>Partner Attachment Avoidance</td>
<td>.01</td>
<td>.02</td>
<td>.51</td>
<td>-.02, .04</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 100.25 to 108.77. $^+p < .10$
When perceiver attachment anxiety and partner attachment avoidance were included in the model with associated three-way interactions with tracking accuracy and assumed similarity, a significant interaction effect of perceiver attachment anxiety and partner avoidance emerged ($t = -5.22, p < .001$). Results of this analysis are presented in Table 10. An analysis of the simple slopes indicated that when the perceiver’s attachment anxiety was low (-1SD), having a partner who was higher (versus lower) in attachment avoidance was not associated with directional bias ($b = .08$, $t(563.02) = 1.61$, $p = .109$). However, when the perceiver’s attachment anxiety was high (+1SD), having a partner who was lower in attachment avoidance was associated with positive directional bias (overestimation; $b = .16$, $t(648.73) = 2.88$, $p = .004$), whereas having a partner who was higher in attachment avoidance was associated with negative directional bias (underestimation; $b = -.20$, $t(696.34) = -5.64$, $p < .001$). No other significant main effects or interactions with tracking accuracy emerged.

Table 10. Study 2a effects of the interaction of perceiver attachment anxiety and partner attachment avoidance as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directional Bias</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety x Partner Attachment Avoidance Tracking Accuracy</td>
<td>-.17</td>
<td>.03</td>
<td>-5.22***</td>
<td>-.23, -.11</td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety x Partner Attachment Avoidance</td>
<td>.02</td>
<td>.02</td>
<td>1.07</td>
<td>-.01, .05</td>
</tr>
</tbody>
</table>

*Note.* Degrees of freedom ranged from 515.11 to 725.36.

***$p < .001$***

When perceiver attachment avoidance and partner attachment anxiety were included in the model with associated three-way interactions with tracking accuracy and assumed similarity, a significant interaction of perceiver attachment avoidance and partner anxiety emerged ($t = 4.06$, $p < .001$). Results of this analysis are presented in Table 11. An analysis of the simple slopes indicated that when the perceiver’s attachment avoidance was low (-1SD), having a partner who was higher (versus lower) in attachment anxiety was associated with positive directional bias (overestimation; $b = -.13$, $t(694.16) = -2.33$,***
However, when the perceiver’s attachment avoidance was high (+1SD), having a partner who was lower in attachment anxiety was associated with negative directional bias (underestimation; \( b = -.10, t(572.24) = -2.03, p = .043 \)), whereas having a partner who was higher in attachment anxiety was associated with positive directional bias (overestimation; \( b = .17, t(1296.65) = 3.25, p = .001 \)). No other significant main effects or interactions with tracking accuracy emerged.

**Table 11. Study 2a effects of the interaction of perceiver attachment avoidance and partner attachment anxiety as moderators in the T&B Model.**

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance x Partner Attachment Anxiety</td>
<td>.14</td>
<td>.03</td>
<td>4.06***</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance x Partner Attachment Anxiety</td>
<td>.01</td>
<td>.02</td>
<td>.38</td>
</tr>
</tbody>
</table>

*Note.* Degrees of freedom ranged from 614.12 to 783.41.

***p < .001

When perceiver attachment anxiety and partner attachment anxiety were included in the model with associated three-way interactions with tracking accuracy and assumed similarity, a marginally significant interaction effect of perceiver attachment anxiety and partner attachment anxiety emerged \( (t = 1.82, p = .074) \). The results of this analysis are presented in Table 12. An analysis of the simple slopes indicated that when the perceiver’s attachment anxiety was low (-1SD), having a partner who was higher (versus lower) in attachment anxiety was not associated directional bias \( (b = -.06, t(60.68) = -.79, p = .435) \). However, when the perceiver’s attachment anxiety was high (+1SD), having a partner who was lower in attachment anxiety was marginally associated with negative directional bias (underestimation; \( b = -.16, t(60.23) = -1.99, p = .051 \)), whereas having a partner who was higher in attachment anxiety was associated with positive directional bias (overestimation; \( b = .19, t(57.93) = 2.04, p = .046 \)). No other significant main effects or interactions with tracking accuracy emerged.
When perceiver attachment avoidance and partner attachment avoidance were included in the model with associated three-way interactions with tracking accuracy and assumed similarity, no significant interactions emerged. Results of this analysis are presented in Table 13.

### Table 13. Study 2a effects of the interaction of perceiver and partner attachment avoidance as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver x Partner Attachment Avoidance</td>
<td>.06</td>
<td>.05</td>
<td>1.35</td>
<td>-.03, .15</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver x Partner Attachment Avoidance</td>
<td>-.02</td>
<td>.02</td>
<td>-1.09</td>
<td>-.06, .02</td>
</tr>
</tbody>
</table>

*Note.* Degrees of freedom ranged from 50.86 to 58.84.

### 3.2.4 Effects on Relational Outcomes

#### 3.2.4.1 Data Analytic Plan

To explore the relational consequences of directional bias and tracking accuracy in perceptions of sexual advances, I conducted analyses using multilevel polynomial regression with response surface analyses (RSA; Edwards, 2002) following the guidelines of Shanock, Baran, Gentry, Pattison, and Heggestad (2010). These analyses allowed me to test how the degree of agreement between partners (i.e., tracking accuracy) and how the direction of disagreement (i.e., directional bias) was associated with sexual
satisfaction, relationship satisfaction, love, and sexual frequency. As per the guidelines outlined in Shanock et al. (2010), I centered the scores for perceptions of a partner’s sexual advances and the partner’s actual reported advances on the midpoint of the scale. Next, I created squared versions of these variables and a product term (perceptions of the partner’s advances × the partner’s actual advances) and entered all five variables as predictors (see Table 14).

I evaluated the results of these analyses with four surface test values ($a_1$, $a_2$, $a_3$, and $a_4$). $a_1$ represents the slope of the line of agreement; a significant positive value indicates that when perceptions of and partner’s actual advances are in agreement and increase, the relationship outcome increases, whereas a significant negative value indicates that when perceptions of and partner’s actual advances are in agreement and increase, the relationship outcome decreases. $a_2$ indicates whether the association is linear or nonlinear; a significant value suggests nonlinearity. $a_3$ represents the slope of the line of disagreement; a significant positive value indicates that overestimation of the partner’s advances (compared to underestimation) predicts greater values of the relationship outcome, whereas a significant negative value indicates that underestimation (compared to overestimation) predicts greater values of the relationship outcome. $a_4$ indicates the curvature of the line of disagreement; a significant positive value indicates a convex surface, such that as the degree of over- or underestimation increases, the relationship outcome increases more sharply, whereas a significant negative value indicates a concave surface, such that the relationship outcome decreases more sharply as the degree of over- or underestimation increases. I entered the five coefficients obtained from the MLM analyses and their respective standard errors into an Excel spreadsheet provided by Shanock et al. (2010) to test the significance of the surface values.

3.2.4.2 Sexual Satisfaction

Results from the multilevel polynomial regression with response surface analyses revealed no significant effects of tracking accuracy on sexual satisfaction. Directional bias in judgments of sexual advances was associated with sexual satisfaction, but the effects were different for perceivers and partners. For perceivers, overestimation (compared to underestimation) of the partner’s sexual advances was linked to increases in
sexual satisfaction (a₃). For partners, however, underestimation (compared to overestimation) of their advances by the perceivers was linked to increases in sexual satisfaction (a₃). Results of these analyses are displayed in Table 14. Graphs were plotted of the effects on perceivers’ and partners’ sexual satisfaction using the R package RSAPlots; the graphs are presented in Figure 1.

Table 14. Study 2a effects of directional bias and tracking accuracy in perceptions of the partner’s advances on sexual satisfaction using multilevel polynomial regression with response surface analyses.

<table>
<thead>
<tr>
<th>Sexual Satisfaction</th>
<th>Multilevel Polynomial Regression Estimates</th>
<th>Response Surface Analysis Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b₀</td>
<td>b₁P</td>
</tr>
<tr>
<td>Actor (Perceiver) SS</td>
<td>5.65 (.01)***</td>
<td>.02 (.01)+</td>
</tr>
<tr>
<td>Partner SS</td>
<td>5.64 (.01)***</td>
<td>-.01 (.01)</td>
</tr>
</tbody>
</table>

Note. I report unstandardized regression coefficients. SS = sexual satisfaction; P = perceptions of the partner’s advances; B = partner’s actual advances (standard errors in parentheses).

+p < .10, *p < .05, **p < .01, ***p < .001
3.2.4.3 Relationship Satisfaction

No significant effects of tracking accuracy or directional bias on perceivers’ or partners’ relationship satisfaction were found.

3.2.4.4 Love

No significant effects of tracking accuracy or directional bias on perceivers’ love were found. However, effects of tracking accuracy on partners’ love did emerge, such that as perceptions of and partners’ actual sexual advances were in agreement and increased, partners’ love increased ($a_1$); this association was linear ($a_2$). Directional bias in judgments of sexual advances was also associated with love for partners, such that underestimation (compared to overestimation) of their advances by the perceivers was linked to increases in love ($a_3$). These results are displayed in Table 15. Graphs were plotted of the effects on perceivers’ and partners’ love using the R package RSAPlots; the graphs are presented in Figure 2.
Table 15. Study 2a effects of directional bias and tracking accuracy in perceptions of the partner’s advances on love using multilevel polynomial regression with response surface analyses.

<table>
<thead>
<tr>
<th></th>
<th>Multilevel Polynomial Regression Estimates</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( b_0 )</td>
<td>( b_1P )</td>
<td>( b_2B )</td>
<td>( b_3P^2 )</td>
<td>( b_4P \times B )</td>
<td>( b_5B^2 )</td>
</tr>
<tr>
<td>Actor (Perceiver) L</td>
<td>6.03 (.02)***</td>
<td>.02 (.01)+</td>
<td>.003 (.02)</td>
<td>.02 (.01)</td>
<td>-.01 (.004)+</td>
<td>-.01 (.003)*</td>
</tr>
<tr>
<td>Partner L</td>
<td>6.01 (.02)***</td>
<td>-.01 (.01)</td>
<td>.06 (.02)***</td>
<td>-.001 (.01)</td>
<td>- .01 (.01)*</td>
<td>.003 (.003)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Line of Agreement</th>
<th></th>
<th></th>
<th>Line of Disagreement</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slope a_1</td>
<td>Curvature a_2</td>
<td>Slope a_3</td>
<td>Curvature a_4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actor (Perceiver) L</td>
<td>.02 (.02)</td>
<td>.00 (.01)</td>
<td>.03 (.03)</td>
<td>.02 (.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner L</td>
<td>.05 (.02)**</td>
<td>-.01 (.01)</td>
<td>-.08 (.02)**</td>
<td>.01 (.02)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. I report unstandardized regression coefficients. L = love; P = perceptions of the partner’s advances; B = partner’s actual advances (standard errors in parentheses).

+\( p < .10 \), *\( p < .05 \), **\( p < .01 \), ***\( p < .001 \)

Figure 2. Study 2a response surface analyses for directional bias and tracking accuracy in perceptions of the partner’s sexual advances predicting actor (perceiver) and partner love.
3.2.4.5 Sexual Frequency

The multilevel polynomial regression analyses revealed no effects of tracking accuracy or directional bias on sexual frequency.

3.2.5 Auxiliary Analyses

The following analyses were completely exploratory. As this was largely an exploratory study and the opportunity existed to examine these variables as potential moderators of truth and bias, these analyses were conducted. However, the results were not used to inform hypotheses for Study 2b.

3.2.5.1 Relationship Length

When relationship length was included in the model as a moderator with associated two-way interactions with tracking accuracy and assumed similarity, no significant main effect or interaction with tracking accuracy emerged.

3.2.5.2 Sexual Frequency

When sexual frequency was included in the model as a moderator with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of sexual frequency emerged ($b = .02, t(163.62) = 3.36, p = .001$), such that higher sexual frequency was associated with perceivers overestimating their partner’s sexual advances (i.e. positive directional bias). No significant interaction with tracking accuracy emerged.

3.2.5.3 Age

When perceiver and partner age were included in the model as moderators with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of perceiver age emerged ($b = -.02, t(132.30) = -2.67, p = .009$), such that higher perceiver age was associated with perceivers underestimating their partner’s sexual advances (i.e. negative directional bias). No significant interaction with tracking accuracy emerged.
3.2.5.4 Self-esteem

When perceiver and partner self-esteem were included in the model as moderators with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of perceiver self-esteem emerged ($b = -.05, t(90.19) = -2.14, p = .035$), such that higher perceiver self-esteem was associated with perceivers underestimating their partner’s sexual advances (i.e. negative directional bias). In addition, a marginally significant main effect of partner self-esteem emerged ($b = .05, t(90.89) = 1.79, p = .078$), such that higher partner self-esteem was marginally associated with perceivers overestimating their partner’s sexual advances (i.e. positive directional bias). A significant interaction of partner self-esteem and tracking accuracy also emerged ($b = -.03, t(108.42) = -2.37, p = .020$), and an analysis of the simple slopes indicated that although those with both high (+1SD; $b = .11, t(71.90) = 3.33, p = .001$) and low (-1SD; $b = .20, t(69.82) = 6.30, p < .001$) self-esteem partners displayed tracking accuracy, this effect was stronger for those with lower self-esteem partners.

3.3 Discussion

Study 2a demonstrated that romantic partners are able to accurately track each other’s sexual advance behaviours, adjusting for assumed similarity. In addition, partners did not exhibit directional bias.

A positive directional bias was found to be displayed by females (i.e., they overestimated the degree to which their partners enacted each behavior to indicate interest in sex). This may be explained by sexual script theory (Simon & Gagnon, 1984, 1987, 2003), and I discuss this in further detail in Chapter 5, the general discussion.

Positive directional bias was found to be associated with greater perceptions of one’s partner’s average frequency of initiation, whereas negative directional bias was associated with greater perceptions of one’s partner’s average frequency of rejection. Intuitively, this makes sense. The more often perceivers believe their partner initiates sexual encounters, the more likely they are to believe that their partner makes sexual advances over and above what they actually make. In contrast, the more perceivers
believe their partner rejects sexual encounters, the more likely they are to believe their partner makes sexual advances less than they actually do.

Perceivers with more anxious partners displayed greater tracking accuracy. This effect could be due to those with higher attachment anxiety being easier to track, or the costs associated with missing sexual advance cues from a more anxiously attached partner (potentially causing the partner to feel rejected) being higher than those for perceivers with a less anxious partner. Either of these explanations seems plausible, as those who score higher on attachment anxiety typically display enthusiastic attempts to gain support and love, which may make them easier to track, and anger and despair when they are not provided (Cassidy & Kobak, 1988), which makes the cost of missing these cues extremely high.

Greater partner attachment avoidance was marginally associated with perceivers underestimating their partner’s sexual advances. This could simply be due to the fact that those who have higher attachment avoidance tend to initiate sex less and reject more (Pink et al., 2016). Other results from Study 2a regarding perceptions of one’s partner’s average frequency of initiation and rejection suggest that those who believe their partners reject more tend to underestimate, which may therefore explain the underestimation associated with having a more avoidant partner.

The interaction between perceiver attachment anxiety and partner avoidance (showing that when the perceiver’s attachment anxiety was high, having a partner who was higher in attachment avoidance was associated with negative directional bias), may be due to the tendency for those with higher attachment anxiety to constantly desire love and reassurance from their partners, while those with higher attachment avoidance consistently distance themselves from their partner and their relationship. That is, the anxiously attached perceiver may desire that their partner make sexual advances quite often as a means of displaying feelings of intimacy and desire, something the avoidantly attached partner, desiring distance from their partner, does not do very frequently. This discrepancy between the highly anxiously attached perceiver’s desires and the highly
avoidantly attached partner’s actual behaviour may be creating the negative directional bias perceivers display in these instances.

Similarly, an interaction of perceiver attachment avoidance and partner attachment anxiety was found. When the perceiver’s attachment avoidance was high, having a partner who was higher in attachment anxiety was associated with positive directional bias. This could also be due to a discrepancy in the desires of each partner. The highly anxiously attached partner may approach the highly avoidantly attached perceiver frequently, seeking out reassurance and love that the avoidant perceiver does not wish to give. This could lead to the avoidant perceivers feeling as though they constantly have to fend off advances from their partner, thereby establishing positive directional bias.

An interaction of perceiver attachment anxiety and partner attachment anxiety was also found. When the perceiver’s attachment anxiety was high, having a partner who was higher in attachment anxiety was associated with positive directional bias. These results could not be explained by discrepancies in the desires of each partner, as both partners are higher in attachment anxiety and thereby desire frequent acts of reassurance and love. These results also do not appear to be consistent with previous literature demonstrating that higher attachment anxiety is associated with desiring greater closeness and intimacy in relationships (Mashek & Sherman, 2004), and is also associated with perceiving sex as a means to reduce insecurity and establish intense closeness (Schachner & Shaver, 2004). When considering this previous research, it seems as though the tendency to believe their relationship is not as close as they would like should lead those with higher attachment anxiety to underestimate their partner’s sexual advances, not overestimate. Therefore, I could not reconcile the previous literature with the current findings, and decided that for Study 2b these analyses would remain exploratory.

With regards to relational outcomes, positive directional bias was associated with greater sexual satisfaction for the perceiver, whereas negative directional bias was associated with greater sexual satisfaction and love for the partner. In addition, tracking accuracy was associated with greater love for the partner. It appears then that overestimation is good for oneself, perhaps due to increased feelings of being desired. However,
underestimation is good for one’s partner, perhaps due to the partner feeling as though they could make sexual advances more without being perceived as bothersome. In addition, tracking accuracy was associated with greater love for the partner, which is consistent with previous research indicating that romantic partners who feel they are being accurately perceived by their partners feel more intimate and more positively about their relationship (Lackenbauer et al., 2010). It should also be noted that the average level of sexual satisfaction and love was relatively high (see Appendix F for the means and standard deviations with the full sample of 120 couples). However, higher levels of these outcomes were associated with differences in directional bias and tracking accuracy of the perceiver.
Chapter 4

4 Study 2b

4.1 Hypothesis 1: Directional Bias, Tracking Accuracy, and Assumed Similarity in Sexual Advance Perceptions

The primary goal of this study was to test the hypotheses generated from the results of Study 2a in a confirmatory manner. In particular, I predicted that no significant directional bias would emerge, that perceivers would accurately track their partner’s sexual advance behaviours (i.e. demonstrate a positive truth force), and that partners would assume similarity in their judgments of each other’s sexual advance behaviours (i.e., demonstrate a positive bias force).

4.2 Hypothesis 2: Moderation of Directional Bias and Tracking Accuracy by Gender

In addition, I predicted that bias and accuracy in judgments of partner’s sexual advances would be moderated by gender. Specifically, I predicted that males would demonstrate no directional bias, significant positive tracking accuracy, and significant positive assumed similarity. In contrast, I hypothesized that females would demonstrate positive directional bias (i.e. overestimate the extent to which their partner enacts each behaviour in an attempt to gain sex), significant positive tracking accuracy, and significant positive assumed similarity.

4.3 Hypothesis 3: Moderation of Directional Bias by Average Sexual Initiation and Rejection Behaviours

I also predicted that partner sexual initiation attempts would moderate directional bias, such that greater perceptions of and actual partner initiation attempts would be associated with perceiver’s overestimating their partner’s sexual advance behaviours (displaying positive directional bias). In contrast, I hypothesized that partner sexual rejection would moderate bias such that greater perceptions of and actual partner sexual rejection would
be associated with perceiver’s underestimating their partner’s sexual advance behaviours (displaying negative directional bias).

4.4 Hypothesis 4: Association Between Gender and Average Sexual Initiation and Rejection Behaviours

I predicted that, on average, women would perceive a greater number of sexual initiations from their partner than men, whereas men would perceive a greater number of sexual rejections from their partner than women. In addition, it was hypothesized that results would trend in the direction of men reporting actually initiating more often than women, and women reporting actually rejecting more than men. It was also hypothesized that although gender and sexual initiation and rejection would be related to each other and to accuracy and bias in perceptions of partners’ sexual advances, when all of these factors are included in the truth and bias model the effects of all of these factors would remain significant (i.e. none of these factors would fully account for the effects of the other).

4.5 Hypothesis 5: Moderation of Directional Bias and Tracking Accuracy by Attachment Orientation

I predicted that partner’s level of attachment anxiety would interact with perceiver’s tracking accuracy, such that perceiver’s with a more anxious partner would display more tracking accuracy (positive truth force) than those with a less anxious partner. That is, significant tracking accuracy would be displayed in both cases, however the effect would be stronger for those with a more anxious partner.

I predicted that partner’s level of attachment avoidance would be associated with directional bias, such that those with a more avoidant partner would display negative directional bias (i.e. underestimate their partner’s sexual advance behaviours).

I also hypothesized that perceivers’ and partners’ level of attachment avoidance and anxiety would interact, showing differences in directional bias. In particular, I expected that when the perceiver’s anxiety is higher and their partner’s avoidance is higher, the perceiver would display negative directional bias (i.e. underestimation). However, when
perceiver’s avoidance is higher and their partner’s anxiety is higher, the perceiver would display positive directional bias (i.e. overestimation).

4.6 Hypothesis 6: Implications of Directional Bias and Tracking Accuracy on Relationship Outcomes

I predicted that positive directional bias would be associated with greater actor sexual satisfaction. No other significant effects on actors’ outcomes were expected. In addition, negative directional bias was expected to be associated with greater partner sexual satisfaction and love. Tracking accuracy was anticipated to be associated with greater partner love.

4.7 Exploratory Analyses

I anticipated similar results to Study 2a with regards to the effects of the interaction of perceiver and partner anxiety on directional bias, although I made no claims as to the anticipated strength of said effect. That is, I expected that results would trend in the direction of higher attachment anxiety perceivers with more attachment anxious (vs. less attachment anxious) partners displaying positive directional bias (i.e. overestimating), and more (vs. less) attachment anxious perceivers with lower attachment anxiety partners displaying negative directional bias (i.e. underestimating).

4.8 Auxiliary Analyses

Other significant results were found in the exploratory analyses, and although they were not included in my main hypotheses for Study 2b, I expected similar results in these cases as well. For example, age was found to be associated with directional bias, such that greater age was associated with negative directional bias. I expected this effect to occur again, but it was not part of my main focus for the confirmatory analyses. In addition, effects of actor and partner self-esteem, sexual frequency, and null effects of relationship length were found that were anticipated to be replicated.
4.9 Methods

4.9.1 Study Preregistration

This study was preregistered on the Open Science Framework (OSF). Study measures, hypotheses, and the data analytic plan are available at https://osf.io/4xcpy/.

4.9.2 Recruitment and Participants

The recruitment methods used for Study 2b are identical to those of Study 2a. The average relationship length of the 60 romantic couples assigned to Study 2b was 2.66 years, and participants’ average age was 22.31 years. Forty-nine of these couples were dating, and 11 were common-law or married, 54 were opposite-sex couples, 5 were female-female couples, and 1 was a male-male couple.

4.9.3 Procedure and Measures

The procedure used for Study 2b is identical to that of Study 2a. In addition, the same measures and scoring methods for own sexual advance behaviours (α = .94), perceptions of partner’s sexual advance behaviours (α = .95), love (Sternberg, 1988; α = .95), relationship satisfaction (Hendrick, 1988; α = .80), sexual satisfaction (Hudson et al., 1981; α = .89), attachment (Simpson et al., 1996; anxiety α = .78, avoidance α = .79), and self-esteem (Rosenberg, 1965; α = .92) that were used in Study 2a were used in Study 2b.

4.10 Results

4.10.1 Hypothesis 1: General Model

Overall, perceivers displayed negative directional bias, tracking accuracy, and projected their own sexual advance behaviours (i.e., assumed similarity) when making judgments of their partner. Although the results for directional bias differ from Study 2a, the results regarding tracking accuracy and assumed similarity are consistent. Results of this analysis are presented in Table 16.
Table 16. Study 2b effects of directional bias, tracking accuracy, and assumed similarity on perceptions of partners’ sexual advances using the truth and bias model of judgment.

<table>
<thead>
<tr>
<th>Perceptions of Partners’ Sexual Advances</th>
<th>Truth and Bias Model Estimates</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td>-.13 (SE = .06)</td>
<td>-2.31*</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td>.18 (SE = .03)</td>
<td>6.28***</td>
</tr>
<tr>
<td>Assumed Similarity</td>
<td>.51 (SE = .04)</td>
<td>14.44***</td>
</tr>
</tbody>
</table>

*Note: Degrees of freedom ranged from 53.52 to 55.99.  *p < .05, ***p < .001

4.10.2 Hypotheses 2-5: Moderation

4.10.2.1 Hypothesis 2: Gender

When gender was included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of gender emerged \((b = -.30, t(1742.79) = -11.34, p < .001)\). Based on these results, another model was run including dummy coded variables for male and female, and their associated two-way interactions with tracking accuracy and assumed similarity. These results demonstrated that both males \((t = 5.99, p < .001)\) and females \((t = 7.09, p < .001)\) displayed tracking accuracy, and there was no significant difference between these two groups \((b = -.01, t(2618.16) = -.98, p = .33)\). However, males displayed significant negative directional bias \((t = -7.12, p < .001)\), whereas females displayed significant positive directional bias \((t = 2.17, p = .03)\). Although directional bias was not evident for males in Study 2a, all other results are consistent. Results of this analysis are presented in Table 17.
Table 17. Study 2b effects of gender as a moderator in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directional Bias</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>-.46</td>
<td>.07</td>
<td>-7.12***</td>
<td>-0.59, -0.33</td>
</tr>
<tr>
<td>Female</td>
<td>.14</td>
<td>.06</td>
<td>2.17*</td>
<td>.01, .27</td>
</tr>
<tr>
<td><strong>Tracking Accuracy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.18</td>
<td>.03</td>
<td>5.99***</td>
<td>.12, .24</td>
</tr>
<tr>
<td>Female</td>
<td>.21</td>
<td>.03</td>
<td>7.09***</td>
<td>.15, .27</td>
</tr>
</tbody>
</table>

Note. Degrees of freedom ranged from 78.89 to 92.84.
*p < .05, ***p < .001

4.10.2.2 Hypothesis 3: Sexual Initiation and Rejection

Results regarding participants’ actual reported initiation and rejection behaviours were consistent with that of previous research, and were in the same direction as Study 2a. That is, males reported initiating more (M = 6.04, SD = 1.77) than females (M = 5.16, SD = 1.88, b = .46, t(65.20) = 3.30, p = .002), and females reported rejecting more (M = 2.64, SD = 1.37) than males (M = 1.68, SD = .85, b = -.48, t(70.71) = -4.57, p < .001). Results regarding participants’ perceptions of their partner’s initiation and rejection behaviours were consistent with Study 2a. That is, females reported that their partners initiated more (M = 6.16, SD = 1.76) than males reported their partners initiated (M = 4.20, SD = 2.00, b = -.98, t(70.62) = -5.77, p < .001), whereas males reported that their partners rejected more (M = 2.71, SD = 1.53) than females reported their partners rejected (M = 1.83, SD = .96, b = .45, t(69.61) = 3.99, p < .001).

When perceivers’ perceptions of their partner’s average frequency of initiation and the partner’s actual frequency of initiation were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of perceivers’ perceptions of their partner’s initiations emerged (t = 10.86, p < .001), such that higher perceptions of their partner’s average initiation was associated with perceivers overestimating their partner’s sexual advances (i.e. positive directional bias). The main effect of partners’ actual initiation behaviours was also significant (t = 4.00, p < .001), such that perceivers with partners who initiate more often overestimate their partner’s
sexual advances. These results are consistent with Study 2a. Results of this analysis are presented in Table 18.

Table 18. Study 2b effects of perceptions of and actual partner sexual initiation as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>.17</td>
<td>.02</td>
<td>10.86***</td>
<td>.14, .20</td>
</tr>
<tr>
<td>Partner’s Average Initiation</td>
<td>.08</td>
<td>.02</td>
<td>4.00***</td>
<td>.04, .12</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>.01</td>
<td>.01</td>
<td>1.64</td>
<td>-.003, .03</td>
</tr>
<tr>
<td>Partner’s Average Initiation</td>
<td>-.0002</td>
<td>.01</td>
<td>-.02</td>
<td>-.02, .02</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 806.28 to 2308.57.***p < .001

When perceivers’ perceptions of their partner’s average frequency of rejection and the partner’s actual frequency of rejection were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a significant main effect of perceivers’ perceptions of their partner’s rejections emerged (t = -7.75, p < .001), such that higher perceptions of their partner’s average frequency of rejection was associated with perceivers underestimating their partner’s sexual advances (i.e. negative directional bias). The main effect of partners’ actual rejection behaviours was also significant (t = -5.32, p < .001), such that perceivers with partners who reject more often underestimate their partner’s sexual advances. These results are consistent with Study 2a. Not found in Study 2a, an interaction of partner’s sexual rejection and tracking accuracy emerged (t = 2.49, p = .01). These results are presented in Table 19. An analysis of the simple slopes indicated that tracking accuracy was associated with both low (-1SD; b = .13, t(107.61) = 3.68, p < .001) and high (+1SD; b = .24, t(117.56) = 6.66, p < .001) partner sexual rejection, but was stronger for those with a partner who rejects more.
Table 19. Study 2b effects of perceptions of and partner's actual average sexual rejection as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.22</td>
<td>.03</td>
<td>-7.75***</td>
<td>-.28, -.17</td>
</tr>
<tr>
<td>Partner’s Average Rejection</td>
<td>-.16</td>
<td>.03</td>
<td>-5.32***</td>
<td>-.22, -.10</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.03</td>
<td>.02</td>
<td>-1.67+</td>
<td>-.05, .004</td>
</tr>
<tr>
<td>Partner’s Average Rejection</td>
<td>.04</td>
<td>.02</td>
<td>2.49*</td>
<td>.01, .08</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 684.42 to 1450.71.

$p < .10$, $p < .05$, $*** p < .001$

4.10.2.3 Hypothesis 4: Perceptions of Average Sexual Initiation, Rejection, and Gender

When perceivers’ perceptions of their partner’s average frequency of initiation, perceivers’ perceptions of their partner’s average frequency of rejection, and gender were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, significant main effects of perceptions of partners’ initiation ($t = 6.10$, $p < .001$) perceptions of partners’ rejection ($t = -5.42$, $p < .001$) and gender ($t = -3.58$, $p < .001$) emerged. Therefore, including perceptions of partners’ sexual initiation and rejection in the model did not account for the effect of gender on directional bias.5 These factors appear to have significant, independent effects on directional bias. Results of this analysis are presented in Table 20.

5 This model was also run with partner’s actual reported sexual initiation and rejection instead of perceiver’s perceptions of their initiation and rejection, and the results were the same.
Table 20. Study 2b effects of perceptions of partner’s average sexual initiation, rejection, and gender as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>.11</td>
<td>.02</td>
<td>6.10***</td>
<td>.08, .15</td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.15</td>
<td>.03</td>
<td>-5.42***</td>
<td>-.21, -.10</td>
</tr>
<tr>
<td>Gender</td>
<td>-.11</td>
<td>.03</td>
<td>-3.58***</td>
<td>-.18, -.05</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Initiation</td>
<td>.01</td>
<td>.01</td>
<td>.91</td>
<td>-.01, .03</td>
</tr>
<tr>
<td>Perceptions of Partner’s Average Rejection</td>
<td>-.01</td>
<td>.02</td>
<td>-.85</td>
<td>-.04, .02</td>
</tr>
<tr>
<td>Gender</td>
<td>.004</td>
<td>.02</td>
<td>.25</td>
<td>-.03, .04</td>
</tr>
</tbody>
</table>

*Note.* Degrees of freedom ranged from 331.90 to 2205.08.

***p < .001

4.10.2.4 Hypothesis 5: Adult Attachment

When perceiver and partner attachment anxiety were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, a significant interaction of partner attachment anxiety and tracking accuracy emerged ($t = 3.30, p = .001$). Results of this analysis are presented in Table 21. Consistent with Study 2a, an analysis of the simple slopes indicated that tracking accuracy was associated with both low (-1SD; $b = .11, t(56.51) = 3.21, p = .002$) and high (+1SD; $b = .25, t(61.12) = 7.16, p < .001$) partner attachment anxiety, but was stronger for those with a more anxiously attached partner. Not found in Study 2a, a main effect of partner attachment anxiety emerged ($t = 2.69, p = .009$), such that perceivers with a more (versus less) anxiously attached partner tended to overestimate their partner’s sexual advances.

---

6 This effect was still significant when perceiver and partner attachment anxiety and avoidance were all included in the model ($p = .001$).

7 This effect was still significant when perceiver and partner attachment anxiety and avoidance were all included in the model ($p = .005$).
Table 21. Study 2b effects of perceiver and partner attachment anxiety as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety</td>
<td>-.09</td>
<td>.06</td>
<td>-1.67</td>
<td>-.20, .02</td>
</tr>
<tr>
<td>Partner Attachment Anxiety</td>
<td>.15</td>
<td>.06</td>
<td>2.69**</td>
<td>.04, .26</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety</td>
<td>-.01</td>
<td>.03</td>
<td>.45</td>
<td>-.04, .06</td>
</tr>
<tr>
<td>Partner Attachment Anxiety</td>
<td>.09</td>
<td>.03</td>
<td>3.30**</td>
<td>.03, .14</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 77.00 to 84.72. *p < .10, **p < .01

When perceiver and partner attachment avoidance were included in the model with associated two-way interactions with tracking accuracy and assumed similarity, no main effect of partner attachment avoidance emerged (t = .09, p = .925). This is inconsistent with the findings of Study 2a. In addition, a main effect of perceiver attachment avoidance was found (t = -2.24, p = .028), such that higher (versus lower) perceiver attachment avoidance was associated with perceivers underestimating their partner’s sexual advances\(^8\), which was not found in Study 2a. Results of this analysis are presented in Table 22.

Table 22. Study 2b effects of perceiver and partner attachment avoidance as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance</td>
<td>-.10</td>
<td>.04</td>
<td>-2.24*</td>
<td>-.19, -.01</td>
</tr>
<tr>
<td>Partner Attachment Avoidance</td>
<td>.004</td>
<td>.04</td>
<td>.09</td>
<td>-.08, .09</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance</td>
<td>-.01</td>
<td>.02</td>
<td>-.45</td>
<td>-.05, .03</td>
</tr>
<tr>
<td>Partner Attachment Avoidance</td>
<td>.01</td>
<td>.02</td>
<td>.33</td>
<td>-.04, .05</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 69.17 to 76.96
*p < .05

\(^8\) This effect was marginally significant when actor and partner attachment anxiety and avoidance were all included in the model (p = .086).
When perceiver attachment anxiety and partner attachment avoidance were included in the model with associated three-way interactions with tracking accuracy and assumed similarity, a marginally significant interaction of perceiver attachment anxiety and partner attachment avoidance emerged ($t = -1.84, p = .07$). Results of this analysis are presented in Table 23. An analysis of the simple slopes indicated that when the perceiver’s attachment anxiety was low (-1SD), having a partner who was higher (versus lower) in attachment avoidance was associated with positive directional bias (overestimation; $b = .10, t(743.43) = 2.16, p = .031$), which is the direction the results of Study 2a trended in, but were not statistically significant. In addition, when the perceiver’s attachment anxiety was higher (versus lower), having a partner who was high (+1SD) in attachment avoidance was associated with negative directional bias (underestimation; $b = -.26, t(962.72) = -4.29, p < .001$). This is also consistent with the findings of Study 2a. Inconsistent with Study 2a, when perceivers’ attachment anxiety was higher (versus lower), having a partner who was low (-1SD) in attachment avoidance was not associated with directional bias ($b = -.10, t(766.19) = -1.56, p = .119$). No other significant main effects or interactions with tracking accuracy emerged.

Table 23. Study 2b effects of the interaction of perceiver attachment anxiety and partner attachment avoidance as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>SE</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety x Partner Attachment Avoidance</td>
<td>-.08</td>
<td>.04</td>
<td>-1.84*</td>
<td>-.16, .005</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Anxiety x Partner Attachment Avoidance</td>
<td>.02</td>
<td>.02</td>
<td>1.16</td>
<td>-.01, .06</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 457.74 to 944.30.*

+$p < .10$

When perceiver attachment avoidance and partner attachment anxiety were included in the model with associated three-way interactions with tracking accuracy and assumed similarity, no significant interaction effect of perceiver attachment avoidance and partner
anxiety emerged ($t = 1.23, p = .221$). This is inconsistent with the findings of Study 2a. No other significant main effects or interactions with tracking accuracy emerged. Results of this analysis are presented in Table 24.

Table 24. Study 2b effects of the interaction of perceiver attachment avoidance and partner attachment anxiety as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance x Partner Attachment Anxiety</td>
<td>.05</td>
<td>.04</td>
<td>1.23</td>
<td>-.03, .13</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver Attachment Avoidance x Partner Attachment Anxiety</td>
<td>-.02</td>
<td>.02</td>
<td>-.93</td>
<td>-.06, .02</td>
</tr>
</tbody>
</table>

*Note.* Degrees of freedom ranged from 533.86 to 844.43.

4.10.3 Hypothesis 6: Effects on Relational Outcomes

4.10.3.1 Sexual Satisfaction

Results from the multilevel polynomial regression with response surface analyses revealed no significant effects of tracking accuracy on sexual satisfaction. Directional bias in judgments of sexual advances was associated with sexual satisfaction, but the effects were different for perceivers and partners. Similar to Study 2a, for perceivers, overestimation (compared to underestimation) of the partner’s sexual advances was linked to increases in sexual satisfaction. Although results trended in the same direction as Study 2a, no significant effect of directional bias on sexual satisfaction was found for partners. These results are displayed in Table 25. Graphs were plotted of the effects on perceivers’ and partners’ sexual satisfaction using the R package RSAPlots; these graphs are displayed in Figure 3.
Table 25. Study 2b effects of directional bias and tracking accuracy in perceptions of the partner’s advances on sexual satisfaction using multilevel polynomial regression with response surface analyses.

<table>
<thead>
<tr>
<th>Sexual Satisfaction</th>
<th>Multilevel Polynomial Regression Estimates</th>
<th>Response Surface Analysis Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b_0$ $b_1P$ $b_2B$ $b_3P^2$ $b_4P\times B$ $b_5B^2$</td>
<td>Line of Agreement</td>
</tr>
<tr>
<td>Actor (Perceiver) SS</td>
<td>5.45 (.02)*** .04 (.01)** -0.004 (.02) .01 (.01) -.01 (.01) .01 (.01)</td>
<td>Slope $a_1$ Curvature $a_2$</td>
</tr>
<tr>
<td>Partner SS</td>
<td>5.48 (.02)*** -.002 (.02) .03 (.01)* .0004 (.01) -.01 (.01) .01 (.01)</td>
<td>.04 (.03) .00 (.01)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.02 (.02) .00 (.01)</td>
</tr>
</tbody>
</table>

Note. I report unstandardized regression coefficients. SS = sexual satisfaction; P = perceptions of the partner’s advances; B = partner’s actual advances (standard errors in parentheses).

$p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

Figure 3. Study 2b response surface analyses for directional bias and tracking accuracy in perceptions of the partner’s sexual advances predicting actor (perceiver) sexual satisfaction and partner sexual satisfaction.
4.10.3.2 Love

Effects of tracking accuracy on perceivers’ and partner’s love were found, such that as perceptions of and partners’ actual sexual advances were in agreement and increased, perceivers’ and partners’ love increased ($a_1$); this association was linear ($a_2$). This effect was found for partners in Study 2a, but not perceivers. Directional 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 ($a_3$). These results are displayed in Table 26. Graphs were plotted of the effects on perceivers’ and partners’ love using the R package RSAPlots; these graphs are displayed in Figure 4.

Table 26. Study 2b effects of directional bias and tracking accuracy in perceptions of the partner’s advances on love using multilevel polynomial regression with response surface analyses.

<table>
<thead>
<tr>
<th>Love</th>
<th>Multilevel Polynomial Regression Estimates</th>
<th>Response Surface Analysis Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b_0$</td>
<td>$b_1P$</td>
</tr>
<tr>
<td>Actor (Perceiver) L</td>
<td>6.10 (.02)***</td>
<td>.01 (.01)</td>
</tr>
<tr>
<td>Partner L</td>
<td>6.08 (.02)***</td>
<td>-.01 (.01)</td>
</tr>
</tbody>
</table>

Note. I report unstandardized regression coefficients. L = love; P = perceptions of the partner’s advances; B = partner’s actual advances (standard errors in parentheses). $+p < .10, *p < .05, **p < .01, ***p < .001$
Figure 4. Study 2b response surface analyses for directional bias and tracking accuracy in perceptions of the partner’s sexual advances predicting actor (perceiver) and partner love.

4.10.4 Exploratory Analyses

When perceiver attachment anxiety and partner attachment anxiety were included in the T&B model as moderators with associated three-way interactions with tracking accuracy and assumed similarity, no significant interaction of perceiver attachment anxiety and partner anxiety emerged ($t = -.72, p = .473$). This is inconsistent with the findings of Study 2a, which found a significant effect. No other significant main effects or interactions with tracking accuracy emerged. Results of this analysis are presented in Table 27.
Table 27. Study 2b effects of the interaction of perceiver and partner attachment anxiety as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver x Partner Attachment Anxiety</td>
<td>-.06</td>
<td>.08</td>
<td>-.72</td>
<td>-.22, .10</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver x Partner Attachment Anxiety</td>
<td>.05</td>
<td>.04</td>
<td>1.23</td>
<td>-.03, .12</td>
</tr>
</tbody>
</table>

Note. Degrees of freedom ranged from 48.40 to 54.61.

4.10.5 Auxiliary Analyses

4.10.5.1 Moderation

To determine if the results of the auxiliary analyses of Study 2a could be replicated, analyses examining the effects of relationship length, sexual frequency, age, and self-esteem on judgment were run. Results were largely consistent with those of Study 2a. That is, relationship length had no significant effect on either directional bias or tracking accuracy, higher sexual frequency was associated with perceivers overestimating their partner’s sexual advances ($b = .02, t(130.65) = 3.35, p = .001$), and higher perceiver age was associated with perceivers underestimating their partner’s advances ($b = -.02, t(63.98) = -1.99, p = .051$). However, the results regarding self-esteem were in direct opposition to those of Study 2a. That is, higher perceiver self-esteem was associated with perceivers overestimating their partner’s sexual advances ($b = .10, t(91.68) = 3.71, p < .001$), whereas higher partner self-esteem was marginally associated with perceivers underestimating their partner’s sexual advances ($b = -.05, t(92.12) = -1.83, p = .070$), and no significant interactions of self-esteem with tracking accuracy emerged.

In addition, when perceiver attachment avoidance and partner attachment avoidance were included in the model with associated three-way interactions with tracking accuracy and assumed similarity, a significant interaction of perceiver attachment avoidance and partner attachment avoidance emerged ($t = -2.35, p = .022$). The results of this analysis are presented in Table 28. An analysis of the simple slopes indicated that when the perceiver’s attachment avoidance was low (-1SD), having a partner who was higher (versus lower) in attachment avoidance was marginally associated with positive
directional bias (overestimation; $b = .14$, $t(59.55) = 1.94$, $p = .057$). However, when the perceiver’s attachment avoidance was higher (versus lower), having a partner who was low (-1SD) in attachment avoidance was not associated with directional bias ($b = .03$, $t(59.37) = .48$, $p = .634$), whereas having a partner who was high (+1SD) in attachment avoidance was associated with negative directional bias (underestimation; $b = -.28$, $t(59.02) = -3.24$, $p = .002$). In addition, a marginal three-way interaction of perceiver attachment avoidance, partner attachment avoidance, and tracking accuracy emerged. These results were not found in Study 2a.

Table 28. Study 2b effects of the interaction of perceiver and partner attachment avoidance as moderators in the T&B Model.

<table>
<thead>
<tr>
<th>Judgments of Partner’s Sexual Advances</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver x Partner Attachment Avoidance</td>
<td>-.15</td>
<td>.06</td>
<td>-2.35*</td>
<td>-.28, -.02</td>
</tr>
<tr>
<td>Tracking Accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceiver x Partner Attachment Avoidance</td>
<td>-.06</td>
<td>.03</td>
<td>-1.91*</td>
<td>-.12, .003</td>
</tr>
</tbody>
</table>

*Note. Degrees of freedom ranged from 47.07 to 53.55
$^p < .10$, $^*p < .05$

4.10.5.2 Effects on Relational Outcomes

Consistent with Study 2a, no significant effects of tracking accuracy or directional bias on perceivers’ or partners’ relationship satisfaction or sexual frequency were found.

4.11 Discussion

Study 2b partially supported Hypothesis 1. That is, partners accurately tracked each other’s sexual advance behaviours, and assumed similarity in their judgments. However, negative directional bias emerged, an effect that was not predicted based on the results of Study 2a.

Hypothesis 2 was also partially supported. I predicted that females would demonstrate positive directional bias, and that both males and females would display significant positive tracking accuracy, which was supported. However, the prediction that males
would demonstrate no directional bias was not supported, as a negative directional bias was found for males.

Hypothesis 3 was fully supported. Partners’ sexual initiation attempts moderated directional bias, such that greater perceptions of and actual partner initiation attempts were associated with perceivers’ overestimation (positive directional bias) of their partner’s sexual advance behaviours. In contrast, partner sexual rejection moderated bias such that greater perceptions of and actual partner sexual rejection were associated with perceivers’ underestimation (negative directional bias) of their partner’s sexual advance behaviours.

Hypothesis 4 was largely supported. Females perceived a greater number of sexual initiations from their partner than males, whereas males perceived a greater number of sexual rejections from their partner than females. In addition, it was hypothesized that results would trend in the direction of males reporting actually initiating more often than females, and females reporting actually rejecting more than males, and this prediction was supported. Although these results were trending in this direction in Study 2a, they were statistically significant in Study 2b. It was also hypothesized that although gender and sexual initiation and rejection would be related to each other and to accuracy and bias in perceptions of partners’ sexual advances, neither of these factors would fully account for the effects of the other, which was supported.

There was mixed support for Hypothesis 5. I predicted that partners’ level of attachment anxiety would interact with perceivers’ tracking accuracy, such that perceivers with a more anxious partner would display more tracking accuracy (positive truth force) than those with a less anxious partner. This prediction was supported.

I predicted that partners’ level of attachment avoidance would be associated with directional bias, such that those with a more avoidant partner would display negative directional bias, and this hypothesis was not supported.

I also hypothesized that perceivers’ and partners’ level of attachment avoidance and anxiety would interact to create differences in directional bias. In particular, I expected
that when the perceiver’s anxiety was higher and their partner’s avoidance was higher, the perceiver would display negative directional bias (i.e. underestimation), and this prediction was supported. However, my hypothesis that when the perceiver’s avoidance was higher and their partner’s anxiety was higher that the perceiver would display positive directional bias (i.e. overestimation) was not supported.

Finally, Hypothesis 6 was largely supported. I predicted that positive directional bias would be associated with greater actor (perceiver) sexual satisfaction, which was found. No other significant effects on actors’ outcomes were expected. In addition, negative directional bias was expected to be associated with greater partner sexual satisfaction and love, and results trended in this direction and supported the hypothesis, respectively. Tracking accuracy was anticipated to be associated with greater partner love, which was supported. Not predicted in Hypothesis 6, tracking accuracy was also associated with greater perceiver love in Study 2b. Presented in Table 29 is a summary of hypotheses that were, or were not, supported, as well as the estimate of the effect with the entire sample of 120 couples from Studies 2a and 2b.
Table 29. Study 2b summary of which hypotheses were supported by the results, and the estimate of the effect with all 120 couples from Studies 2a and 2b.

<table>
<thead>
<tr>
<th>Hypothesis Number</th>
<th>Hypothesis Description</th>
<th>Supported/Not Supported</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No directional bias in the general model</td>
<td>Not supported</td>
<td>-.03</td>
</tr>
<tr>
<td></td>
<td>Positive tracking accuracy in the general model</td>
<td>Supported</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>Positive assumed similarity in the general model</td>
<td>Supported</td>
<td>.51</td>
</tr>
<tr>
<td>2</td>
<td>Males will display no directional bias</td>
<td>Not supported</td>
<td>-.25</td>
</tr>
<tr>
<td></td>
<td>Males will display positive tracking accuracy</td>
<td>Supported</td>
<td>.17</td>
</tr>
<tr>
<td></td>
<td>Males will display positive assumed similarity</td>
<td>Supported</td>
<td>.44</td>
</tr>
<tr>
<td></td>
<td>Females will display positive directional bias</td>
<td>Supported</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>Females will display positive tracking accuracy</td>
<td>Supported</td>
<td>.19</td>
</tr>
<tr>
<td></td>
<td>Females will display positive assumed similarity</td>
<td>Supported</td>
<td>.54</td>
</tr>
<tr>
<td>3</td>
<td>Higher perceptions of and partner’s actual sexual initiation will be associated with positive directional bias</td>
<td>Supported</td>
<td>.14, .14</td>
</tr>
<tr>
<td></td>
<td>Higher perceptions of and partner’s actual sexual rejection will be associated with negative directional bias</td>
<td>Supported</td>
<td>-.18, -.14</td>
</tr>
<tr>
<td>4</td>
<td>Females will perceive greater sexual initiation in their partners than males</td>
<td>Supported</td>
<td>-.77</td>
</tr>
<tr>
<td></td>
<td>Males will perceive greater sexual rejection in their partners than females</td>
<td>Supported</td>
<td>.55</td>
</tr>
<tr>
<td></td>
<td>Females will report sexually rejecting more than males</td>
<td>Supported</td>
<td>-.32</td>
</tr>
<tr>
<td></td>
<td>Males will report sexually initiating more than females</td>
<td>Supported</td>
<td>.38</td>
</tr>
<tr>
<td></td>
<td>Perceptions of partner’s sexual initiations and rejections will not fully account for the effects of gender on directional bias</td>
<td>Supported</td>
<td>.10, -.12, -.10</td>
</tr>
<tr>
<td>5</td>
<td>Perceivers with a more anxious partner will display more tracking accuracy than those with a less anxious partner</td>
<td>Supported</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>Perceivers with a more avoidant partner will display negative directional bias</td>
<td>Not supported</td>
<td>-.02</td>
</tr>
<tr>
<td></td>
<td>When the perceiver’s anxiety is higher and their partner’s avoidance is higher, the perceiver will display negative directional bias</td>
<td>Supported</td>
<td>-.25</td>
</tr>
<tr>
<td></td>
<td>When the perceiver’s avoidance is higher and their partner’s anxiety is higher, the perceiver will display positive directional bias</td>
<td>Not supported</td>
<td>.23</td>
</tr>
<tr>
<td>6</td>
<td>Positive directional bias will be associated with greater actor sexual satisfaction</td>
<td>Supported</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Negative directional bias will be associated with greater partner sexual satisfaction</td>
<td>Not supported</td>
<td>-.04</td>
</tr>
<tr>
<td></td>
<td>Negative directional bias will be associated with greater partner love</td>
<td>Supported</td>
<td>-.08</td>
</tr>
<tr>
<td></td>
<td>Tracking accuracy will be associated with greater partner love</td>
<td>Supported</td>
<td>.05</td>
</tr>
</tbody>
</table>

*Note.* Estimates of each effect were calculated using the full sample of 120 couples from Studies 2a and 2b. I report unstandardized regression coefficients.
The results of the exploratory analyses in Study 2b were inconsistent with the results of Study 2a. That is, no significant interaction of perceiver attachment anxiety and partner anxiety emerged in Study 2b.

In addition, the auxiliary analyses were somewhat supportive of the results of Study 2a. The analyses including relationship length, sexual frequency, and perceiver age as moderators were consistent with Study 2a. In addition, the analyses regarding the effects of tracking accuracy and directional bias on perceiver and partner’s relationship satisfaction and sexual frequency were consistent with Study 2a. However, the analyses including perceiver and partner self-esteem, and perceiver and partner attachment avoidance as moderators were inconsistent with Study 2a.
Chapter 5

5 General Discussion

Three preregistered studies were conducted to examine the interplay of tracking accuracy and directional bias in perceptions of romantic partners’ sexual advances. Study 1 identified 29 sexual advance behaviours that romantic partners commonly enact to indicate sexual interest in one another. Studies 2a and 2b used the T&B Model (West & Kenny, 2011) to simultaneously test whether romantic partners displayed tracking accuracy or directional bias in their perceptions of how often their partner utilizes those 29 behaviours to indicate an interest in engaging in sexual activities. Studies 2a and 2b also examined whether individual differences (gender and attachment orientation in particular) moderated perceivers’ accuracy and bias. These two studies examined whether perceivers’ accurate and biased sexual advance perceptions were associated with relationship outcomes. Lastly, Study 2b provided the opportunity to test, in a truly confirmatory manner, hypotheses partly derived from the results of Study 2a.

My approach to collecting and analyzing the data for Studies 2a and 2b was unique. The process of collecting data in a single wave for both exploratory and confirmatory datasets, preregistering the analyses for the exploratory dataset, generating and preregistering hypotheses for the confirmatory dataset based on the results of the exploratory analyses, and then attempting to confirm these hypotheses with the confirmatory data, is unique for this area of research. However, adopting this perspective towards collecting and analyzing the data has allowed me to gain perspective on the consistency and strength of the results through replication. For decades scientists have been preaching the importance of replication for the advancement of psychology (e.g. Amir & Sharon, 1990; Lamal, 1990; Muma, 1993; Schmidt, 2009), and reproducibility is gaining popularity as a core principle of scientific progress (Open Science Collaboration, 2015). Therefore, in addition to collecting dyadic data that allows for the simultaneous examination of directional bias, tracking accuracy, and assumed similarity, the rigorous methods used in the current studies allows for greater confidence in the effects found.
In many ways, the current research is also consistent with or extends upon the previous literature. For example, previous research has found that people respond positively to feeling as though their romantic partner accurately perceives them (e.g. Lackenbauer et al., 2010), and Fletcher and Kerr (2013) suggested that romantic partners should be motivated to accurately track each other’s thoughts, feelings, and behaviours. Across two studies, the current research was consistent with this notion, as romantic partners were able to accurately track each other’s sexual advance behaviours. In addition, no individual differences examined in this research negated the perceiver’s ability to track their partner’s sexual advance behaviours.

Across the two samples women consistently overestimated the degree to which their partners were expressing an interest in sex, whereas men underestimated (in one sample) how often their partners expressed an interest in sex. These gender differences may be explained by sexual script theory (Simon & Gagnon, 1984, 1987, 2003). The messages supporting gender roles that are commonly displayed in society (e.g. Ward, 1995), may be influencing perceptions of how often partners actually make advances. That is, males are traditionally presented as the initiators of sexual activities in the media. In addition, some argue that there are biologically based differences in sex drive (Baumeister, Catanese, & Vohs, 2001), although others suggest that the presentation of women in the media as desiring sex less often is a major contributing factor to these gender differences (Diamond, 2013; Tolman, 2002). The combination of presenting males as initiators and desiring sex more than females may be contributing to females’ and males’ biased perceptions of their partner’s advances. The current research extends the work of the previous literature by demonstrating that the effects of these sexual scripts may go beyond creating differences in how males and females typically imagine sexual situations progressing (e.g. Grauerholz & Serpe, 1985; Ortiz-Torres et al., 2003), or their typical behaviour in these situations (e.g. Byers & Heinlein, 1989; Laumann et al., 1994), and affect their perceptions of the behaviour of their partners. In addition, although previous research has shown gender differences in sexual initiation and rejection behaviours (Byers & Heinlein, 1989; Laumann et al., 1994; Simon & Gagnon, 1984), I found no evidence to suggest that these effects account for the gender differences in directional bias. Therefore, there appears to be something unique in the experiences of each gender,
beyond the frequency of sexual initiation and rejection behaviours, responsible for these opposing biases.

In contrast to the effects of gender, mixed evidence was found for the effects of attachment orientation on tracking accuracy and directional bias. Of the four hypotheses regarding the effects of attachment orientation generated from Study 2a, only two of these were confirmed in Study 2b. In addition, the results of the exploratory and auxiliary analyses regarding attachment orientation in Study 2b were inconsistent with that of Study 2a. Taken together, this lack of consistency may suggest that individual differences in attachment orientation may not play a large role in people’s (in)accurate perceptions of their partner’s interest in sex. However, the effects that were consistently found do appear to logically flow from attachment theory. That is, attachment theory suggests that those who score higher on attachment anxiety typically display enthusiastic attempts to gain support and love, and anger and despair when they are not provided (Cassidy & Kobak, 1988). Both of these factors could explain why having a more anxious partner is associated with greater tracking accuracy, as their extreme behaviours may make them easier to track, and also makes the cost of missing cues associated with them seeking love and support extremely high. In addition, attachment theory suggests that those who are high attachment anxiety constantly desire love and reassurance from their partners, while those with high attachment avoidance consistently distance themselves from their partner and their relationship. This discrepancy between the highly anxiously attached partner’s desires and the highly avoidantly attached partner’s actual behaviour may account for the negative directional bias shown when perceivers are higher in attachment anxiety and their partners are higher in attachment avoidance.

Finally, Muise et al. (2016) investigated whether under- or overestimating one’s partner’s sexual desire was associated with relationship outcomes. They found that partners of perceivers who underestimated their sexual desire were more satisfied and committed to the relationship. The authors suggested that the underestimation of traits that focus on the connection between the perceiver and their partner (interaction traits) can motivate perceivers to enact relationship maintenance behaviours, such as trying to attract their partner or maintain closeness. These relationship maintenance behaviours enacted by the
perceiver then make their partner feel more satisfied. Presumably, the basis for perceivers’ estimates of how their partner is feeling is largely based on their partner’s actual behaviour. My research therefore extends the findings of past research beyond the effects of perceivers’ thoughts about how their partner is feeling to their biased perceptions of their partner’s actual behaviour. I consistently found that underestimating partners’ sexual advance behaviours was associated with partners’ love, and trended towards being associated with greater sexual satisfaction. Therefore, it is not just biased perceptions of interaction traits that can affect partners’ relationship outcomes. It is possible that the effects of interaction traits found in previous research could be explained by biases in perceptions of the partner’s actual behaviour, which are then used as an indicator of the partner’s thoughts and feelings. In addition, my research suggests that the bias that has positive benefits for one’s partner and relationship may not be the bias that has positive benefits for oneself. It was overestimation of partners’ sexual advance behaviours, not underestimation, that was consistently associated with greater sexual satisfaction for the perceiver. This could be due to overestimation being associated with increased feelings of being desired by one’s partner, thereby having positive benefits for oneself. This indicates that future research may benefit from further exploration of which scenarios or personality traits are associated with over- and underestimation, and determining if 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.

5.1 Implications

These studies demonstrate the accuracy and bias with which romantic partners perceive each other’s sexual advance behaviours, individual differences that may contribute to greater or less accuracy and bias, and the effects of these factors on relationship outcomes. Accuracy and bias in sexual advance perceptions appear to be related to important aspects of relationship evaluation for perceivers and partners. Therefore, if the reported effects are representative of the functioning of relationships in the real world, then these effects may have important implications for the success of romantic relationships.
5.2 Limitations

A major limitation of this study is that it relied on partners’ retrospective self-reports of their own and their partner’s sexual advances. The current studies did not allow for the investigation of whether perceivers actually notice when their partner makes a sexual advance towards them. Instead, perceiver’s and partners’ feelings about the general frequency of the use of each behaviour was reported and compared.

In addition, the sample used for the development of the sexual advance questionnaires in Study 1 may not be representative of the samples for Studies 2a and 2b. The sample for Study 1 was older ($M = 31.44$ years) and had been in their relationships for longer ($M = 6.38$ years) on average than Studies 2a ($M = 22.34$ years, $M = 2.46$ years, respectively) and 2b ($M = 22.31$ years, $M = 2.66$ years, respectively). In addition, the sample for Studies 2a and 2b was largely made up of students from the University of Western Ontario community, whereas MTurk participants are more likely to be a part of the workforce, and may use MTurk as their part- or full-time job. It is possible that these samples utilize different behaviours when attempting to initiate sex, and therefore some of the items included in Studies 2a and 2b may not have been relevant for this population, or some behaviours that are common for this population may not have been included on the final list of behaviours. However, given the range of responses to each behaviour included in the final list, this is not likely to be a significant limitation.

Finally, none of the current studies measured participants’ general level of sexual communication. It is possible that romantic partners who have a higher quality and quantity of sexual communication are better at accurately perceiving their partner’s sexual advance behaviours due to having greater sexual knowledge of their partner. However, the current studies do not have data to statistically control for these potential effects.

5.3 Future Directions

These studies provide evidence for accurate and biased sexual advance knowledge in romantic relationships. However, whether these effects exist in partners’ everyday lives
has yet to be explored. Previous research has shown that romantic partners make sexual advances towards each other an average of 3.5 times per week (Byers & Heinlein, 1989), and a day-to-day report of the advances that the partner makes and if the perceiver noticed those advances could meaningfully contribute to the current research. In addition, future research could examine any potential effects of greater sexual communication on accuracy and bias in sexual advance perceptions. This could be included in a replication of the current research, a dyadic daily experience study, or another method.

Additionally, future research could examine biased and accurate sexual advance perceptions in other types of sexual relationships. The current studies specifically recruited those in committed romantic relationships, but accurate and biased advance perceptions could also apply to when relationships are just forming, or short-term sexual relationships. Particularly in short-term sexual relationships, differences in bias perceptions could be found as a large portion of the behaviours enacted in these relationships are sexual in nature, which could lead to a general positive directional bias not found in the current samples.

Finally, although the current standard in the accuracy and bias literature is to control for assumed similarity (e.g., West et al., 2014), it may be meaningful to determine when assumed similarity does and does not occur, and why. There may be times in romantic relationships that assuming similarity with one’s partner is adaptive as it may aid in accurate perceptions of one’s partner and relationship, such as when the factor being judged is inherently similar between partners. However, there are other times that assuming similarity could be detrimental to accuracy, such as when individual differences play an important role in the factor being perceived. Determining when each of these situations may occur could prove both interesting and informative moving forward with accuracy and bias research.

5.4 Summary and Concluding Remarks

In conclusion, three studies were conducted that meaningfully contribute to the existing knowledge on accuracy and bias in romantic partner perceptions, and sexuality in
romantic relationships. Romantic partners’ biased perceptions varied by gender, their perceptions of their partner’s average frequency of initiation and rejection, and attachment orientation. In addition, partners’ accurate and biased perceptions were associated with relationship outcomes for both the perceiver and their partner. Future research could extend the current studies using dyadic daily experience methodology, and determining if general quality of sexual communication may influence accuracy and bias in this domain.
References


Appendices

Appendix A. Study 1: Ethics approval form.

Western University Health Science Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Prof. Lorne Campbell
Department & Institution: Social Science/Psychology, Western University
NMREB File Number: 105947
Study Title: Sexual Advances in Romantic Relationships
Sponsor:
NMREB Initial Approval Date: December 02, 2014
NMREB Expiry Date: December 02, 2015

Documents Approved and/or Received for Information:

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The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Ethics Officer, on behalf of Riley Hinson, NMREB Chair

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Appendix B. Study 1: 67-Item Relationship-Specific Sexual Advance questionnaire
(adapted from Greer & Buss, 1994).

In relationships, there are many different ways that individuals can communicate to their partner that they are “in the mood” for sexual activity. Below are listed some behaviours that one might perform to promote a sexual encounter with a romantic partner. Think about your relationship, and take a moment to think about the different behaviours that you use to indicate to your partner that you are interested in having sex with him or her. Then, using the scale below please rate the degree to which you use each of the behaviors to communicate you are interested in having sex with your partner.

1  2  3  4  5  6  7  Prefer not to say

Never  Sometimes  Always

1. I smile warmly at my partner.
2. I flirt with my partner openly.
3. I brush against my partner softly as they pass by.
4. I lean over and kiss my partner.
5. I put my hand on my partner’s thigh.
6. I guide my partner’s hands to my genital area.
7. I put my arm around my partner.
8. I hold my partner’s hand.
9. I offer to give my partner a massage.
10. I tickle my partner.
11. I ask my partner if they could cuddle for a while.
12. I ask my partner if they want to sleep with me.
13. I tell my partner directly that I want to have sex with them.
14. I stare into my partner’s eyes passionately.
15. I look at my partner intently in the eyes.
16. I look directly and knowingly into my partner’s eyes.
17. I wear sexually provocative outfits.
18. I wear tight fitting clothes that show off my body.
19. I wear revealing clothing.
20. I wear sexy underwear.
21. I tell sexual jokes.
22. I hint constantly about sexual things.
23. I buy my partner flowers.
24. I spend a lot of money on my partner.
25. I tell my partner that they look really good.
26. I compliment my partner on how beautiful they look.
27. I tell my partner that I find them extremely attractive.
28. I make my partner a gourmet meal with wine and candlelight.
29. I treat my partner to a dinner.
30. I increase the amount of attention I pay to my partner.
31. I lavish attention on my partner.
32. I call or text my partner frequently.
33. I compliment my partner on how sexy they look.
34. I tell my partner that I am sexually attracted to them.
35. I tell my partner I want to kiss them.
36. I make myself "extra attractive."
37. I apply products to enhance my appearance.
38. I dress nicely.
39. I arrange my hair in an attractive style.
40. I turn on romantic music.
41. I light some candles to create the right atmosphere.
42. I dim the lights.
43. I turn out the lights.
44. I act extra nice to my partner.
45. I treat my partner with respect.
46. I act interested in what my partner has to say.
47. I act genuinely caring and kind.
48. I wear perfume or cologne.
49. I display a good sense of humor.
50. I tell my partner jokes to make them laugh.
51. I laugh in an easy, relaxed manner.
52. I lick my lips seductively.
53. I stick out my chest.
54. I show an increasing amount of skin by unbuttoning my shirt.
55. I eat my food seductively.
56. I undress in front of my partner.
57. I walk seductively.
58. I sit in a sexy, provocative pose.
59. I tell my partner that I really love them.
60. I tell my partner that I really care about them deeply.
61. I act upset so that my partner will comfort me and then capitalize on their comforting.
62. I act uninterested in sex, like I just want to talk.
63. I rent a movie with sexual situations.
64. I make myself appear vulnerable.
65. I ask my partner if they have a condom.
66. I start to undress my partner.
67. I tell my partner I have condoms.

If there are any behaviours that you feel you engage in regularly to indicate sexual interest in your partner that were not on this list, please include them below:
Appendix C. Studies 2a and 2b: Initial ethics approval.
Appendix D. Studies 2a and 2b: Approval of revision to ethics application.

Western University Non-Medical Research Ethics Board
NMREB Amendment Approval Notice

Principal Investigator: Prof. Lorne Campbell
Department & Institution: Social Science/Psychology, Western University
NMREB File Number: 106205
Study Title: A Study of Romastic Couples
Sponsor: Social Sciences and Humanities Research Council

NMREB Revision Approval Date: March 27, 2015
NMREB Expiry Date: February 05, 2016

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The Western University Non-Medical Science Research Ethics Board (NMREB) has reviewed and approved the amendment to the above named study, as of the NMREB Amendment Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCP52), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Ethics Officer, on behalf of Riley Hing, NMREB Chair

Grace Kelly
Mina Mihail
Vikki Tran

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Appendix E. Studies 2a and 2b: 29-item Own Sexual Advance Behaviours questionnaire based on the results of Study 1 (adapted from Greer & Buss, 1994).

In relationships, there are many different ways that individuals can communicate to their partner that they are “in the mood” for sexual activity. Below are listed some behaviours that one might perform to promote a sexual encounter with a romantic partner. Think about your relationship, and take a moment to think about the different behaviours that you use to indicate to your partner that you are interested in having sex with him or her. Then, using the scale below please rate the degree to which you use each of the behaviors to communicate you are interested in having sex with your partner.

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8. I hold my partner’s hand.
9. I ask my partner if they could cuddle for a while.
10. I tell my partner directly that I want to have sex with them.
11. I look directly and knowingly into my partner’s eyes.
12. I tell my partner that they look really good.
13. I compliment my partner on how beautiful they look.
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15. I increase the amount of attention I pay to my partner.
16. I lavish attention on my partner.
17. I call or text my partner frequently.
18. I compliment my partner on how sexy they look.
19. I tell my partner that I am sexually attracted to them.
20. I dim the lights.
21. I turn out the lights.
22. I treat my partner with respect.
23. I act interested in what my partner has to say.
24. I act genuinely caring and kind.
25. I wear perfume or cologne.
26. I laugh in an easy, relaxed manner.
27. I undress in front of my partner.
28. I tell my partner that I really love them.
29. I ask my partner if they want to have sex with me.
Appendix F. Means and intercorrelations of moderators and relational outcome variables with the full sample of couples from Studies 2a and 2b.

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<td>1.66</td>
<td>7.45</td>
<td>1.94</td>
<td>1.26</td>
<td>1.85</td>
<td>1.13</td>
<td>.71</td>
<td>.52</td>
<td>.65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. These analyses were conducted with the full sample of 120 couples, unless otherwise specified. Values above the diagonal represent the correlations within females, below the diagonal represent the correlations within males, and on the diagonal represent the correlations between males and their female partner using only opposite-sex couples. The rows of means and standard deviations represent the values for females, whereas the columns of means and standard deviations represent the values for males.
Curriculum Vitae

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Post-secondary Education and Degrees:
The University of Western Ontario
London, Ontario, Canada
2014-2016 M.Sc.

Wilfrid Laurier University
Waterloo, Ontario, Canada
2009-2013 H.B.A.

Honours and Awards:
Joseph-Armand Bombardier Canada Graduate Scholarship
2015-2016

Social Sciences and Humanities Research Council (SSHRC)

Michael Levesque Memorial Award
Wilfrid Laurier University
2012-2013

Dean’s Honour Roll
Wilfrid Laurier University
2009-2013

Academic In-Course Scholarships
Wilfrid Laurier University
2010-2013

Entrance Scholarship
Wilfrid Laurier University
2009-2010

Presentations:
Are You Tired of “Us”? Accuracy and Bias in Couples’ Perceptions of Relational Boredom
Talk accepted at the International Association for Relationship Research 2016 conference
Toronto, Ontario

Are You Tired of “Us”? Accuracy and Bias in Couples’ Perceptions of Relational Boredom Poster presented at the Society for Personality and Social Psychology 2016 convention San Diego, California


**Teaching Experience**

Teaching Assistant Psychology 3723: Attitudes and Attitude Change The University of Western Ontario 2016

Teaching Assistant Psychology 2070: Introduction to Social Psychology The University of Western Ontario 2015

Teaching Assistant Psychology 3724: The Science of Romantic Relationships The University of Western Ontario 2014

**Related Work Experience**

Research Assistant Wilfrid Laurier University 2013-2014

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