

Temporal Dynamics in the Interpersonal Behaviour and Perceptions of Romantic Partners

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

The current study investigates romantic partners' perceptions of their own and their partner's interpersonal behaviour as they unfold continuously over the course of an interaction. In particular, we examine the types of biases that affect partners' perceptions of themselves and each other. Using a joystick-based assessment program, 59 romantic couples rated moment-to-moment fluctuations in dominance and affiliation in themselves and their partners as they watched a video of their own behaviour in a previous, relatively unstructured collaborative task. To provide a benchmark of comparison, independent observers applied the same coding technique to provide continuous ratings of behaviour for each participant. Partners also completed several paper-and-pencil measures, which tapped their levels of trait dominance and affiliation, as well as other characteristics of each person and their relationship. Joystick data for both participants and observers were used to calculate overall (mean) and moment-to-moment indices of dominance and affiliation. Indices were also derived across partners for overall and moment-to-moment reciprocity and correspondence. Findings for overall levels of dominance and affiliation suggest that partners' perceptions reflected several types of bias. For instance, apart from the presence of the well-established positivity and projection biases, our results for perceptions of one's partner's dominance revealed a presumed reciprocity bias in which the partner was perceived to have behaved in a manner more opposite to one's own overall level of dominance than was actually true. Nonetheless, we found that such biases occurred in the context of considerable accurate understanding in perceptions of oneself and one's partner. At the moment-to-moment level, findings revealed that partners were able to reliably track interpersonal behaviour for both targets as it was unfolding continuously across time. However, large individual differences in partners' moment-to-moment tracking ability emerged. Finally, we

demonstrated that partners' interpersonal behaviours and perceptions were related to relationship satisfaction in important ways. Specifically, partners' overall affiliation during the task and the extent to which their affiliation levels matched each other were related positively to relationship satisfaction. In addition, partners who were able to pass control skillfully throughout the course of the interaction, a phenomenon termed *reciprocity*, reported being more satisfied. Similarly, couples with greater ability to track moment-to-moment fluctuations in their levels of dominance also reported higher relationship satisfaction.

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To my nearest and dearest partner, Marko Mačar, for noticing and loving and noticing and understanding that,

the hidden

harmony is better than

the visible

– Heraclitus

for the pillars of the temple stand apart,

and the oak tree and the cypress grow

not in each other's shadow.

– Kahlil Gibran

Finally, to my dear friends,

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who continue to grace me with their friendship.

Dedication

To my parents, Sandra and Vitomir Lizdek.

Table of Contents

AUTHOR’S DECLARATION.....	ii
Abstract.....	iii
Acknowledgements.....	v
Dedication.....	vii
Table of Contents.....	viii
List of Figures.....	xi
List of Tables.....	xii
CHAPTER I. GENERAL INTRODUCTION.....	1
Bias.....	1
Accuracy.....	5
Paradox.....	8
Re-Examining the Concepts of Bias and Accuracy.....	8
Studying multiple traits of each target.....	12
Studying multiple occasions.....	13
Examining people’s ratings within an interaction.....	14
Studying Partners’ Interpersonal Behaviour.....	18
Interpersonal Theory.....	19
Studying dominance and affiliation within interactions.....	22
Studying partners’ own perceptions of affiliation and dominance.....	23
Joystick-based continuous assessment technique.....	24
Summary and Overarching Aims of Current Research.....	24
CHAPTER II. METHOD.....	27
Participants.....	27
Procedure.....	27
Measures.....	29
The Social Behavior Inventory, Self and Partner.....	29
The Interpersonal Qualities Scale.....	29
The Relationship Assessment Scale.....	30
Coding of Interactions.....	30
The joystick apparatus.....	30
Training of participants.....	32
Training of observers.....	33
Procedure for participant ratings.....	34
Procedure for observer ratings.....	35

CHAPTER III. PERCEPTIONS OF PARTNERS' OVERALL LEVELS OF INTERPERSONAL BEHAVIOUR.....	38
Introduction.....	38
Projection bias.....	39
Perceptions of Partner's Typical Levels of Interpersonal Behaviour.....	42
Modeling strategy.....	42
Results.....	50
Perceptions of Partner's Interpersonal Behaviour during a Specific Interaction....	54
Modeling strategy.....	55
Results.....	58
Perceptions of One's Own Interpersonal Behaviour during a Specific Interaction.	62
Modeling strategy.....	63
Results.....	63
Summary of Findings.....	66
 CHAPTER IV. PARTNERS' PERCEPTIONS OF MOMENT-TO-MOMENT INTERPERSONAL BEHAVIOUR.....	 69
Introduction.....	69
The importance of examining perceptions of behaviour on a finer timescale	72
Previous work examining partners' momentary perceptions during interactions.....	74
The advantages afforded by the joystick method for capturing moment-to-moment perceptions of interpersonal behaviour.....	75
Aims of Upcoming Analyses.....	76
Specified benchmarks for the measurement of reliability.....	77
Research questions.....	79
Results.....	79
Moment-to-moment tracking ability.....	79
Degree of agreement between partners' moment-to-moment tracking.....	82
Individual differences in participants' moment-to-moment tracking ability..	84
Individual differences in the degree of agreement between partners in moment-to-moment tracking.....	87
Summary of Findings.....	89

CHAPTER V. RELATING INDICES OF PARTNERS' INTERPERSONAL BEHAVIOUR TO RELATIONSHIP OUTCOMES.....	91
Introduction.....	91
Relation of overall levels of behaviour to relationship outcomes.....	91
Affiliation as rated by outside observers.....	91
Dominance as rated by outside observers.....	93
Affiliation as rated by the participants themselves.....	94
Dominance as rated by the participants themselves.....	95
Summary of findings for overall levels of behaviour.....	96
Relation of complementarity to relationship outcomes.....	96
Complementarity based on ratings provided by outside observers.....	96
Complementarity based on ratings provided by the participants.....	98
Summary of findings for complementarity.....	100
Partners' quality of tracking of interpersonal behaviour.....	100
Aims of Upcoming Analyses and Research Questions.....	102
Method for Obtaining Joystick Indices for Each Dyad.....	103
Indices of complementarity of overall levels.....	103
Indices of moment-to-moment complementarity.....	104
Indices of participants' moment-to-moment tracking ability.....	104
Index of relationship satisfaction.....	105
Index of relationship longevity.....	105
Results.....	106
Relationship satisfaction.....	107
Relationship longevity.....	110
Summary of Findings.....	113
CHAPTER VI. GENERAL DISCUSSION.....	117
Summary of Main Findings.....	117
Overall levels of interpersonal behaviour.....	117
Moment-to-moment interpersonal behaviour.....	119
Perceptions of interpersonal behaviour and relationship outcomes.....	121
Implications.....	123
Limitations.....	126
Future Directions.....	126
Conclusions.....	130
References.....	132

List of Figures

Figure 1.	Example illustrating ratings of overall interpersonal qualities provided by one romantic couple for the female.....	12
Figure 2.	Example illustrating affiliation ratings collected across situations provided by one romantic couple for the female.....	14
Figure 3.	Example using data gathered from a continuous coding technique showing moment-to-moment ratings provided by one romantic couple for the female’s affiliation (y-axis) across 10 minutes (x-axis).....	17
Figure 4.	The Cartesian plane depicting the location of 16 interpersonal behaviours.	20
Figure 5.	Joystick monitoring program interface displaying the interpersonal Cartesian plane during data collection.....	31
Figure 6.	APIM for partners’ perceptions.....	41
Figure 7.	APIM for partners’ perceptions (Intercept shown).....	43
Figure 8.	Model for predicting perceptions of partner’s typical level of affiliation....	49
Figure 9.	Model for predicting perceptions of partner’s affiliation during the interaction.....	57
Figure 10.	Model for predicting perceptions of one’s own affiliation during the interaction.....	64
Figure 11.	Example showing moment-to-moment ratings of dominance provided by one female participant and outside observers for the participant’s male partner.....	71
Figure 12.	The degree of moment-to-moment tracking ability for male participants (white bars), female participants (striped bars), and a single observer (black bars).....	81
Figure 13.	The degree of agreement in moment-to-moment ratings between the female and male participants (white bars) and between two observers (black bars).....	84
Figure 14.	Results for moment-to-moment tracking ability for dominance (top) and affiliation (bottom): Four histograms showing the distribution of correlations between the averaged time-series of five observers with the ratings of females and males.....	86
Figure 15.	Results for moment-to-moment agreement between partners for dominance (top) and affiliation (bottom): Two histograms showing the distribution of correlations between the female and male partners.....	88
Figure 16.	Model depicting correlation for overall levels of affiliation, based on the observers’ data, with partners’ average relationship satisfaction.....	107

List of Tables

Table 1.	Means and Standard Deviations of the Overall Level Variables for Females and Males.....	47
Table 2.	Bivariate Correlations for the Overall Level Variables for Females (top) and Males (bottom).....	48
Table 3.	Perceptions of Partner’s Overall Interpersonal Quality.....	51
Table 4.	Perceptions of Partner’s Typical Levels of Affiliation and Dominance (SBI).....	53
Table 5.	Questions Addressed in the Model for Predicting Perceptions of Partner’s Affiliation during the Interaction.....	58
Table 6.	Perceptions of Affiliation and Dominance during a Specific Interaction....	61
Table 7.	Perceptions of One’s Own Affiliation and Dominance during the Interaction.....	65
Table 8.	Correlations of Observers’ Joystick Indices with Relationship Satisfaction	108
Table 9.	Correlations of Participants’ Joystick Indices with Relationship Satisfaction.....	109
Table 10.	Means of Observers’ Joystick Indices for Different Levels of Relationship Longevity.....	111
Table 11.	Means of Participants’ Joystick Indices for Different Levels of Relationship Longevity.....	112

CHAPTER I

GENERAL INTRODUCTION

In romantic relationships, partners devote considerable attention to evaluating themselves and their relationship, including ongoing perceptions of both their own and their partner's behaviours. As individuals form these perceptions, there is a very interesting tension between two contrary possibilities. One is for partners to adopt a positive bias, which puts them and their relationship in a rosy, flattering light. The other possibility is for partners to adopt a more "objective" perspective, seeing things more as they actually are, warts and all. As reviewed below, these contrary possibilities may have different adaptive advantages for the couple.

Most previous work on bias in romantic relationships has used paper-and-pencil trait-rating scales. This approach tends to ignore the important dynamics unfolding in people's behaviours over time. Partners' perceptions regarding the natural ebb and flow that occurs in behaviour during an interaction can be investigated with an innovative, continuous joystick-based assessment technique. Using this technique, the present work addresses the issues of bias and accuracy in romantic partners' perceptions as their behaviours unfold over the course of an interaction.

Bias

A broad array of empirical evidence suggests that most individuals' perceptions of self, partner, and their romantic relationship tend to be positively biased (e.g., Agnew, Loving, & Drigotas, 2001; Hall & Taylor, 1976; Murray, Holmes, & Griffin, 1996a, 1996b). This *positivity bias* refers to a positive prejudice in which individuals tend to see themselves, their partner, and relationship more positively than seems warranted.

First, support for rosy perceptions of the self in romantic relationships is found in research examining how people's evaluations of themselves compare to their perceptions of an average person, or typical partner. For example, in a study conducted by Murray and colleagues (1996a) on the association between relationship satisfaction and biased perceptions, both partners of married and dating heterosexual couples were asked to rate themselves, their actual partner, the typical partner, and their ideal partner on a number of interpersonal qualities (e.g., understanding, kind and affectionate, critical and judgmental). After the four sets of ratings were made by the participants, each person's evaluations of themselves and the typical partner were compared. The findings revealed that both married and dating partners tended to rate themselves much more favourably than they rated the typical partner (e.g., more kind and affectionate, less critical and judgmental). In addition, the study found that participants tended to see their own attributes as ideal, which suggests that their own self-perceptions were quite positively biased. Similar results have been found in a number of studies (e.g., Conley, Roesch, Peplau, & Gold, 2009; Gordon, Johnson, Heimberg, Montesi, & Fauber, 2013; Murray et al., 1996b). More recent work by Morry, Kito, and Dunphy (2014) examining biased perceptions in romantic relationships demonstrated that individuals self-enhanced relative to a typical partner by rating themselves more positively on all interpersonal traits studied (e.g., more loving, less selfish).

Second, empirical evidence suggests that apart from holding positively biased perceptions of oneself, people also tend to hold rosy perceptions of their romantic partner. Both Murray et al. (1996a, 1996b) and Morry et al. (2014) found support for this effect; namely, when each person's ratings of their partner and the typical partner were compared, findings revealed that individuals perceived their partners in a more favourable light. In addition, earlier research has demonstrated that even when the partner's self-perceptions are employed as the benchmark

of comparison, participants' reports indicate that they tend to view their partner in a more positive light than the partner views himself or herself (e.g., Morry et al., 2014; Murray et al., 1996a, 1996b). Recent work has also revealed that people's perceptions of their spouse may be largely based on how they evaluate themselves (i.e., a projection effect). For example, Lemay and colleagues (2007) tested a social projection model of perceived partner responsiveness to needs. They argued that people project their own care and supportiveness for a spouse onto their perceptions of their spouse's caring and supportiveness. When the model was tested, results showed that participants' self-reported responsiveness to the needs of the spouse predicted how they evaluated the spouse's responsiveness to the self more strongly than the spouse's actual self-reported responsiveness. Thus, projection of one's *own* responsiveness appeared to be driving people's perceptions of how supported they felt by their partner. The authors concluded that projection of responsiveness is a means by which caring perceivers maintain satisfying and subjectively communal relationships.

Third, the literature on romantic relationships has produced results demonstrating that individuals' perceptions of their romantic relationship also tend to be biased. A large body of research shows that partners systematically evaluate their own relationship through rosy filters (e.g., Agnew, Loving, & Drigotas, 2001; Buunk & Van der Eijnden, 1997; Fowers, Veingrad, & Dominicis, 2002; Hall & Taylor, 1976; Murray & Holmes, 1997; Van Lange & Rusbult, 1995). For instance, work investigating people's perceptions of their relationships has revealed that individuals exaggerate the extent to which their relationships have improved over time (Karney & Frye, 2002). Moreover, people routinely rate the chance of their own marriages failing as significantly less likely than their perceptions of the population base rates (Fowers, Lyons, Montel, & Shaked, 2001).

Given the prevalence of the positivity bias about the self, partner, and relationship, it is interesting to contemplate why individuals hold these positive illusions in romantic relationships. Such illusions in relationships may serve a motivational and functional purpose. First, individuals may be motivated by the fundamental need to feel good about the self, which, by extension, comprises one's immediate network, such as romantic partners (see Taylor & Brown, 1988). Also, to maintain a sense of security in one's relationship, people may be highly motivated to exaggerate their partners' virtues and to minimize the importance of their partners' maladaptive behaviours (Murray & Holmes, 1993). Second, biased perceptions may also contain a functional significance. Due to the high prevalence of biased perceptions, some researchers have argued that engaging in a leap of faith regarding a partner – that is, seeing the partner more positively than he or she views himself or herself – is important for relationship functioning (e.g., Murray et al., 1996a, 1996b; Murray, Holmes, Bellavia, Griffin, & Dolderman, 2002). Holding biased perceptions is seen as adaptive because such biases may allow perceivers to justify the belief that their partner is the “right one” and to counteract the attractiveness of possible alternative partners (e.g., Murray et al., 1996a). Further, positive perceptions are likely to make the targets of such perceptions feel valued and trusted, especially when they are given the benefit of the doubt in stressful or ambiguous situations (e.g., Brickman, 1987). Studies examining potential biases in perceptions have provided robust support that individuals who perceive their partners positively tend to report a number of positive relationship outcomes (e.g., Fowers, Lyons, & Montel, 1996; Murray et al., 1996a, 1996b; Murray & Holmes, 1997; Rusbult, Bissonnette, Arriaga, & Cox, 1998; Rusbult, Van Lange, Wildschut, Yovetich, & Verette, 2000).

Accuracy

Research and theory dealing with bias in romantic relationships have largely emerged in the context of extensive scientific work concerning people's general perceptions of the self (e.g., Baumeister, 1998; Brown, 1998; Dunning, 1993; S. Epstein, 1990; Sedikides & Gregg, 2003; Taylor & Brown, 1988). Indeed, the conventional wisdom that people's judgments of the self are accurate has been powerfully challenged over the last several decades. Notably, in their review of the then-current social psychological literature, Taylor and Brown (1988) revealed that positively biased perceptions of oneself (i.e., self-enhancement) occur prominently. For instance, the authors documented people's tendency to perceive themselves more positively than others see them (e.g., Lewinsohn, Mischel, Chaplin, & Barton, 1980), and to perceive the self as better than peers on positive qualities and not as likely as peers to possess negative personal qualities (e.g., Alicke, 1985; Brown, 1986). The findings from the review even seemed to suggest that individuals who are depressed or have low self-esteem tend to hold more accurate perceptions than nondepressed individuals or those with high self-esteem. Given such findings, the authors proposed that individuals who engage in self-enhancing positive illusions are more disposed to be psychologically healthy.

However, this evidence and conclusions in the literature on self-perceptions have undergone critical reevaluation. An alternative viewpoint has maintained that, rather than being associated with good outcomes, such positively biased judgments might not always be adaptive (Colvin & Block, 1994). Consistent with this perspective, a recent line of research and argument has sought to demonstrate that people's self-perceptions are surprisingly accurate much of the time and that holding accurate perceptions does not set people up for experiencing negative outcomes (for examples of reviews, see Colvin & Block, 1994; Funder, 1995). Furthermore,

strong support for the importance of valid evaluations emerged in research investigating people's perceptions of behaviour during interpersonal transactions, such as in the literature on interpersonal theory, which addresses the nature of social interaction (Carson, 1969; Kiesler, 1983, 1996). A central theme in interpersonal theory is that in order to be able to interact with others effectively, individuals need to perceive interpersonal behaviour accurately. For instance, within romantic relationships, the inability to make such appropriate evaluations may ultimately set partners up for experiencing unwanted outcomes because such inaccurate perceptions, over time, may produce unwanted behaviours from the other, and undesired consequences for one's relationship. In interpersonal theory, this process has been labeled as *self-fulfilling prophecy* (Carson, 1982), the *cyclical maladaptive pattern* (Strupp & Binder, 1984), and the *maladaptive transaction cycle* (Kiesler, 1996). To illustrate, consider the process that tends to generally unfold between a romantic pair, Sarah and Illya, in their everyday exchanges. Specifically, interpersonal theorists argue that if Sarah's perceptions are largely inaccurate, she will expect Illya to behave in particular ways towards her, such as with more hostility (e.g., Tracey, 1993). As a result, during her interactions with Illya, she may express behaviours that are incongruent, or more rigid and extreme than what may be appropriate. As a result of her inability to perceive his behaviour accurately, she places a greater demand on *him* to respond to her own behaviour that is not congruent with the situation at hand. Importantly, Sarah's behaviour during the interaction not only places this demand on her partner, but also greatly constricts the range of possible behaviours Illya may express towards her. As the couple continues to replay this cycle, Illya may increasingly begin to experience the negative impact that results from being restricted by Sarah's inability to perceive his behaviour accordingly, and the rigid control she holds in their relationship. Importantly, as time passes, Illya's behavioural stance may shift to one that actually

confirms his partner's early expectancies, but one that is nonetheless undesired and unrewarding by both. Over time, the interactions between the pair become locked into recurrent enactments of the cycle of maladaptive self-fulfilling prophecy and behaviour.

In sum, existing theorizing in the interpersonal theory domain stresses the importance of holding accurate perceptions, and the potential negative impact inaccurate judgments may have on people's relationships. In romantic relationships, partners' inaccurate perceptions of self, partner, or their relationship may become self-fulfilling; that is, over time, perceiving inaccurately may lead to the development of negative consequences because such perceptions may eventually produce behaviours and outcomes partners wished to avoid in the first place.

In the context of romantic relationships, there also exists evidence for accuracy of partner and relationship evaluations. For example, dating and married couples are relatively accurate when asked to judge their partner's interpersonal qualities. In two correlational studies, the evaluations made by participants of their romantic partner were moderately related to their partner's self-perceptions, which was used as the benchmark for accuracy (Murray et al., 1996a, 1996b). Other work has also shown that partners tend to be relatively accurate when asked to evaluate their partner's thoughts and feelings in the relationship. For instance, investigators have found consistent evidence for moderate to high levels of agreement between married partners' perceptions of their spouse's commitment (Adams & Jones, 1997), values about marriage (Acitelli, Kenny, & Weiner, 2001), and the spouse's self-reported commitment and values.

Furthermore, some authors have argued that holding accurate self- and other-perceptions is critical to one's own (Kobak & Hazan, 1991), and the partner's (Swann, De La Ronde, & Hixon, 1994) satisfaction. For instance, holding accurate perceptions of a partner's attributes allows perceivers to accurately judge the needs of the partner and anticipate their behaviours,

which fosters a sense of control, predictability, and security in the perceiver (Kenny & Acitelli, 2001; Swann et al., 1994). In addition, holding accurate perceptions allows partners to coordinate activities and reconcile conflicting goals effectively, which may lead to more satisfying interactions (Kobak & Hazan, 1991; Neff & Karney, 2005). Research has also shown that accurate perceptions are important to targets because they provide a feeling of being validated, which is an important component of intimacy (Reis & Shaver, 1988). Thus, it is not surprising that the presence of accurate perceptions in romantic relationships has generally been associated with a number of positive relationship outcomes (e.g., Kobak & Hazan, 1991; Neff & Karney, 2005; Swann et al., 1994).

Paradox

In light of the current review, we are left with a paradox. On the one hand, there exists considerable evidence in the close relationship literature suggesting that positively biased perceptions are common and even adaptive for one's relationship and well-being. By instilling a sense of security in the relationship (Murray, 1999), they promote and sustain feelings of love, trust, and satisfaction (Murray & Holmes, 1997). Yet, on the other hand, the literature on interpersonal theory and studies examining the accuracy of perceptions in romantic relationships paint a different portrait, namely, one that reveals how partners' judgments are accurate much of the time and that holding a more objective perspective fosters relationship quality (e.g., De La Ronde & Swann, 1998; Kobak & Hazan, 1991; Noller & Ruzzene, 1991; Swann, De La Ronde, & Hixon, 1994).

Re-Examining the Concepts of Bias and Accuracy

To a large extent, previous work tends to assume that bias and accuracy are mutually exclusive and necessarily opposed to each other. However, it is important to recognize that these terms can be used in a variety of different ways that need to be carefully distinguished.

First, bias is actually not inconsistent with some types of accuracy. To illustrate, consider two columns of ratings of a positive characteristic, in which each row is for a couple. One column contains people's perception of their partner and the other column contains the corresponding partner's self-perception. If we compare the means for these two columns, a higher mean for perceptions of partners than for those partners' self-perceptions would demonstrate bias. However, consider the correlation between the values in the two columns. If this correlation is high, it indicates that partner perceptions are accurate, in terms of correctly mapping onto individual differences. Thus, bias and accuracy, defined in this way, are quite separable phenomena, rather than necessary opposites. This example demonstrates that we need to be careful to define clearly what we mean by terms like bias and accuracy, and not simply assume they are opposites.

Second, there is another sense in which it is unproductive to think of bias and accuracy as dichotomous alternatives. Let us restrict our attention only to bias as represented in the difference between the means of the two columns of data above, and define "accuracy" as absence of bias (equal means). Asking, "which is better – bias or accuracy?" may represent a false dichotomy. This is because several theorists have argued that what is best may be neither a complete lack of bias nor a great deal of bias, but instead a modest amount of bias. For instance, both clinicians (e.g., Wachtel, 2011) and theorists (e.g., Baumeister, 1988; Janoff-Bulman, 1989) have proposed that there is an optimal level of bias; namely, it may be small amounts of bias that are most adaptive, compared to no bias and much bias. For example, Baumeister (1988) notes that:

There is an optimal margin of illusions. The advantages of illusions seem to be associated with small illusions: seeing things slightly better than they are, overestimating one's

capabilities and self-worth slightly, and so forth. The disadvantages seem to be associated with larger distortions. There may be a certain bandwidth of illusion, within which the individual can generally reap the benefits of illusions while avoiding most of the negative consequences. (p. 182)

In romantic relationships, we can conceive how large distortions between partners' views may create significant stresses and strains on both individuals and their relationship. For instance, if Sarah views Illya as highly extraverted and Illya perceives himself as highly introverted, the large discrepancy in their perceptions of him may produce challenges for the couple, as they coordinate responsibilities in daily life, and interact with each other, as well as others, in their social environment. Thus, where possible, the dichotomy between bias versus accuracy should be avoided by more finely characterizing the amount of bias in people's perceptions of themselves, their partner, and the relationship, such that we think of bias along a reasonably continuous scale. When this perspective is adopted, the degree of bias and its potential impact on relationship outcomes may be explored, as opposed to solely thinking of bias as being present versus absent.

Third, bias and accuracy may differ, and have distinct outcomes, in different circumstances. For example, the existence of threatening events or threatening relationship interactions may increase the accessibility and importance of the positivity bias, thereby undermining accuracy because partners may be driven by the need to protect or enhance their evaluations (Ickes & Simpson, 2001). Moreover, Fletcher, Simpson, and Boyes (2006) took an evolutionary approach to delineate under what specific conditions (e.g., short-term vs. long-term relationships) people may be more positively biased or accurate. The authors argued that during the early stages of the relationship (e.g., courting in romantic relationships), partners may closely

monitor behaviour because during such circumstances, the level of mutual commitment may be uncertain, but the decisions that are made could have profound and enduring effects on people's well-being and reproductive fitness. However, once the relationship is regarded as committed, such close monitoring may decline. In this context, holding positively biased perceptions may help justify and fortify the relationship, which in turn should encourage individuals to meet relationship goals, such as meeting the needs of one's partner and sustaining the long-term emotional connection and commitment needed to raise children successfully. Thus, we need to pay close attention to differing circumstances and how they may affect the presence and effects of bias and accuracy.

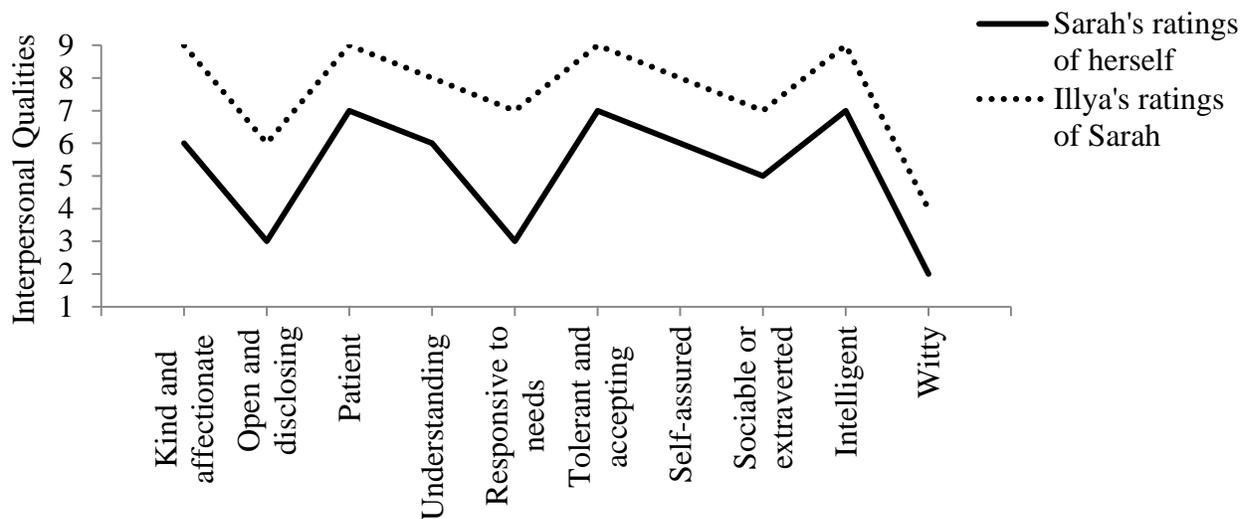
Fourth, interpersonal behaviour occurs at multiple, coexisting levels, and it is important to pay close attention to these levels in studying the presence and consequences of bias and accuracy. For example, over time a person's level of affiliation can be characterized at two important levels: an overall, *central tendency*, and *occasion-to-occasion fluctuations* (Fleeson, 2001; Mischel & Shoda, 1995). When such levels are distinguished and examined individually, observations that perceivers are, for example, biased in their perceptions at one level (e.g., they have a biased central tendency), but accurate at a different level (e.g., they show appropriate occasion-to-occasion fluctuations) is conceivable. Thus, there would be no paradox, because bias and accuracy would be occurring at distinct, co-existing levels.

The distinction between multiple levels is not new, having been highlighted by several researchers over the years both in the relationship domain (e.g., Fletcher, 2002; Fletcher & Kerr, 2010; Gagné & Lydon, 2004; Overall, Fletcher, Simpson, & Fillo, 2015), and in other areas of research (e.g., Cronbach, 1955; Kenny & Albright, 1987). However, its importance has largely gone unrecognized, and the distinction is often blurred or ignored in empirical work. What

contributes to the lack of clarity and confusion is a neglect to define what specific levels such processes could be operating at and, subsequently, how bias and accuracy may be operationalized. In order to appreciate the distinction between multiple levels more fully, the section that follows will describe each separately (i.e., multiple traits, multiple occasions, multiple time points within an interaction), using Sarah and Illya’s ratings.

Studying multiple traits of each target. One of the most straightforward ways by which investigators are able to examine bias and accuracy separately is to ask participants to provide ratings of a target individual on multiple traits. For instance, let us imagine that we are interested in how accurately Illya rates Sarah on a number of interpersonal traits and whether his judgments of her are biased in a particular direction. Both partners may complete a questionnaire designed to assess their unique perceptions of Sarah’s various overall interpersonal qualities and, subsequently, their ratings may be compared. The two patterns of responses may be plotted on a graph shown in *Figure 1*.

Figure 1. Example illustrating ratings of overall interpersonal qualities provided by one romantic couple for the female.

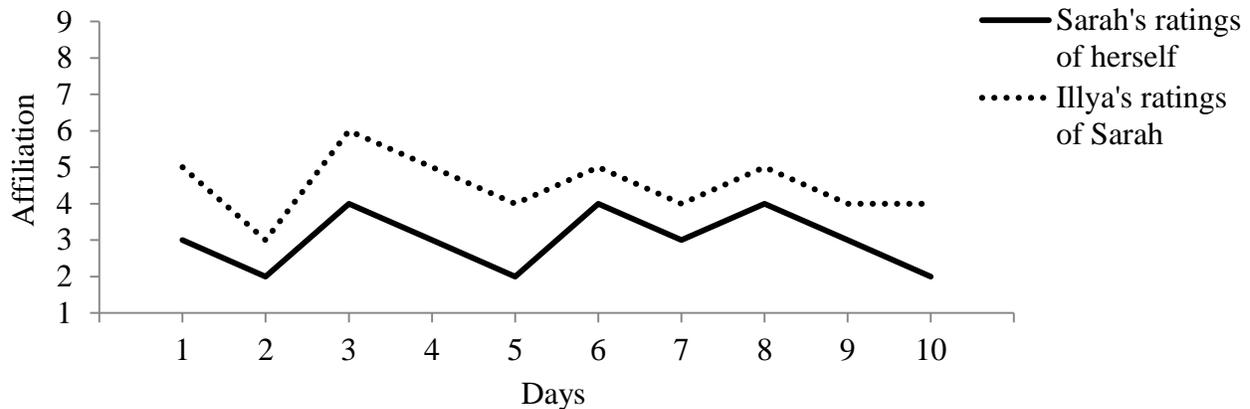


First, the graph shows that Illya's ratings are *elevated* in comparison to Sarah's, which can be seen on the graph by the dotted line being visually shifted upward overall. Thus, Illya's ratings reflect a positive bias at the mean level. Second, apart from noting differences in their overall mean levels, more fine-grained information about the partners' ratings of Sarah may also be extracted; that is, whether Illya and Sarah's general *shape* or pattern in ratings matches. Here we find that although Illya has a tendency to rate Sarah more positively (i.e., displays a mean-level bias), he nevertheless is able to discriminate between subtler distinctions in his partner's qualities because his ratings match the fluctuations observed in Sarah's own trait ratings. This indicates that mean-level perceptions of his partner's traits are also highly accurate.

In this example, bias and accuracy were assessed for one couple rating multiple traits. This approach could be applied to the study of each couple within a sample, and then the overall sample may be evaluated in terms of the degree of mean-level bias and occasion-to-occasion accuracy in participants' evaluations.

Studying multiple occasions. Another approach to studying bias and accuracy in partners' perceptions involves asking raters to assess one item of interest (e.g., affiliation) across multiple occasions. Clear illustrations of this approach can be found in the domain of personality assessment. For example, researchers such as Mischel and Shoda (1995) stress the importance of examining people's perceptions across situations, because this approach provides useful information about exactly where and when people differ in their unique pattern with regard to each perception studied. In the romantic relationship context, consider another example of data collected from Sarah and Illya (*Figure 2*), showing the partners' perceptions of Sarah's affiliation across 10 consecutive days.

Figure 2. Example illustrating affiliation ratings collected across situations provided by one romantic couple for the female.



This example illustrates that Illya, once again, is biased at the mean level; that is, he tends to rate Sarah more positively than she rates herself. Further, although he has a tendency to perceive Sarah as being more affiliative overall (i.e., mean-level bias), he is nonetheless able to differentiate between more fine-grained distinctions in her behaviour across the occasions studied. Importantly, his evaluations match the pattern observed in Sarah's own ratings, which suggests that his perception of Sarah's affiliation across occasions is highly accurate.

Examining people's ratings within an interaction. Finally, at a much more granular level of analysis, bias and accuracy may be distinguished within a single interaction by obtaining continuous ratings of interpersonal behaviour across the course of the interaction. This method provides us with very intriguing information regarding how people's behaviours unfold continuously, which has important implications for partners' communication as it unfolds naturally through time. To illustrate, we can highlight the distinction between bias and accuracy when Sarah and Illya's ratings within one single interaction are compared.

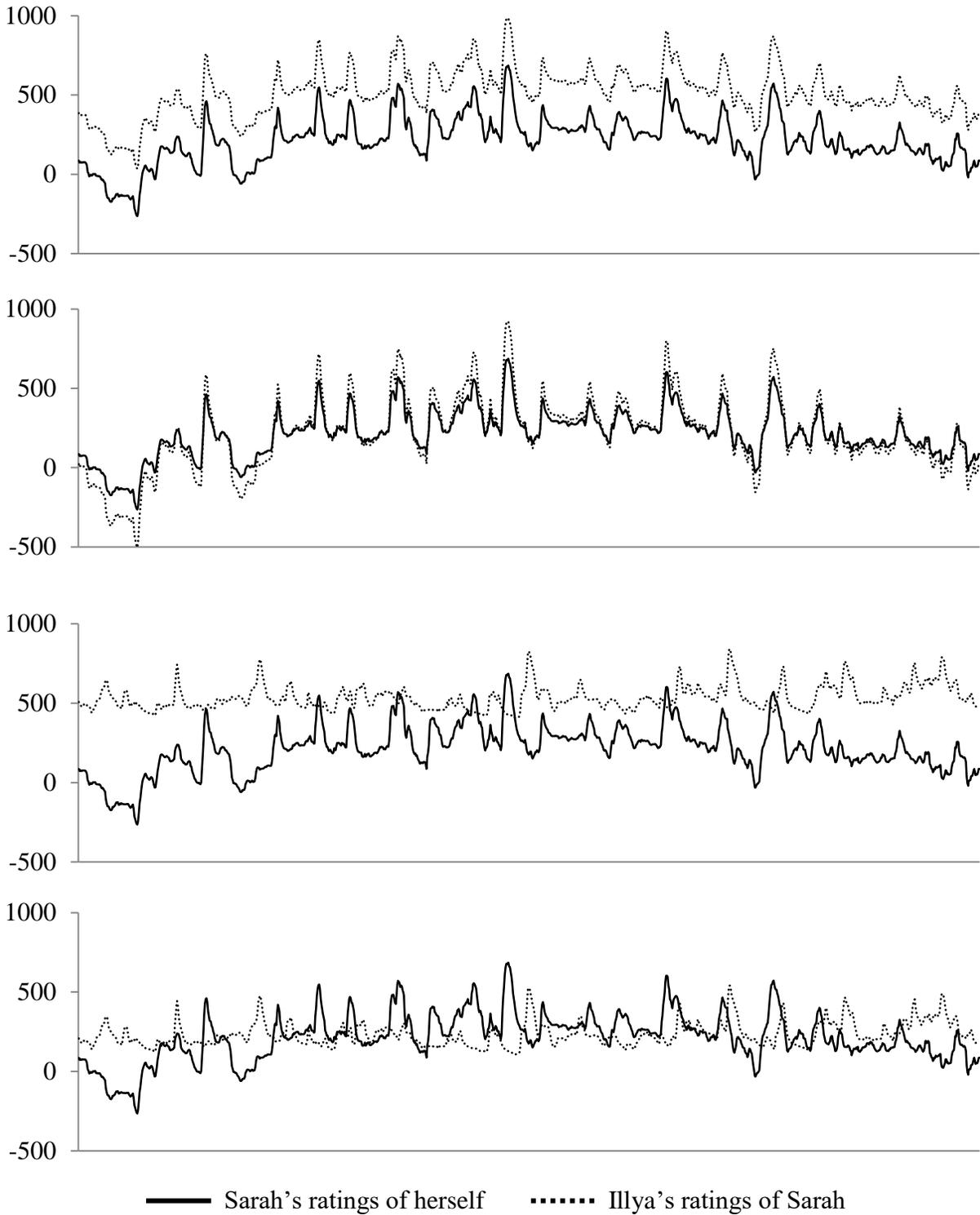
Here, let us imagine that we are interested in evaluating how accurately Illya rates Sarah's affiliation during the course of one interaction and whether his assessment of her affiliation is biased. In order to obtain such ratings, Illya and Sarah interact for a short duration (e.g., 10 minutes) in the laboratory while being video-recorded and, subsequently, both partners provide continuous ratings of Sarah's affiliation independently as the video of their interaction is being replayed. The partners' continuous ratings are shown in *Figure 3*.

At the very top, we see a pattern of Sarah and Illya's ratings already familiar to the reader. Consistent with the previous examples, Illya's ratings are *elevated*; that is, during the 10-minute period, he continuously tends to perceive Sarah's behaviour to be more affiliative than she does. Thus, Illya's ratings reflect an overall tendency to see his partner more positively (i.e., mean-level bias). Apart from identifying differences in their overall mean levels within the interaction, more microscopic information about the moment-to-moment fluctuations is also evident. The first plot also depicts how, although Illya is biased in his evaluations of Sarah's affiliation overall, he nonetheless tracks his partner's moment-to-moment changes in behaviour fairly well. For instance, his ratings show how, although Sarah begins the interaction being somewhat affiliative, she quickly thereafter becomes colder, and then a short while afterwards returns to being affiliative. Importantly, his moment-to-moment ratings match the pattern found in Sarah's own self-ratings across time, where she perceives herself to be a bit affiliative at the start of the interaction, then rates herself as being somewhat cold, and shortly thereafter evaluates herself as being affiliative once again. Thus, Illya's perception of his partner's moment-to-moment fluctuations in affiliation across the course of the interaction is highly accurate.

Up to now, Sarah and Illya's example has demonstrated a mean-level bias and high accuracy. However, other possibilities, shown in the lower portion of *Figure 3*, are also

conceivable. For instance, the second plot illustrates what Sarah and Illya's ratings may look like if they were showing no mean-level bias and high accuracy. This plot shows that the partners' mean levels across the 10 minutes are fairly similar and that their perceptions of moment-to-moment fluctuations track each other exceedingly well. Moreover, the third plot provides an illustration of mean-level bias and inaccuracy. Mean-level bias is shown by an upward shift in Illya's perceptions in comparison to Sarah's, and inaccuracy is evident by highly dissimilar moment-to-moment tracking of Sarah's behaviour. Finally, the fourth graph provides an example of no mean-level bias and inaccuracy. Note that in this last case, Illya's overall mean is approximately the same as Sarah's; however, their individual moment-to-moment fluctuations do not track each other well.

Figure 3. Example using data gathered from a continuous coding technique showing moment-to-moment ratings provided by one romantic couple for the female's affiliation (y-axis) across 10 minutes (x-axis).



Studying Partners' Interpersonal Behaviour

Within the existing literature on romantic relationships, various distinct qualities and behaviours of the partners have received attention. Recently, Fletcher and Kerr (2010) conducted a meta-analysis and showed that the relevant research examining bias, accuracy, or both, could be reliably categorized into six separate categories: judgments of partner personality traits, judgments of negative attitudes, beliefs, or behaviours directed at the partner or the relationship (e.g., aggression), judgments of positive attitudes, beliefs, or behaviours that are specifically directed at the partner or the relationship (e.g., love), partners' perceptions of thoughts and feelings experienced during an interaction (e.g., intentions), memories of past events or relationship states, and predictions of future events or relationship states such as satisfaction or longevity.

Most of the 98 studies reviewed by the authors measured judgments of personality traits, "mind-reading" judgments, memories, and predictions. However, they emphasized that studying judgments of negative and positive attitudes, beliefs, and behaviours may be crucial in romantic relationships because they are specifically tied to the partners' interdependence (Fletcher & Kerr, 2010). Close relationships theorists have also argued that a central element in developing intimacy are the ways in which partners respond to each other: specifically, the extent to which each partner communicates that he or she understands, validates, and cares for the other (Reis & Patrick, 1996; Reis & Shaver, 1988).

Furthermore, it may be argued that within these two categories, studying couples' interpersonal behaviours may be especially valuable because partners are continually interacting with one another in daily life. The study of interpersonal behaviour – as opposed to the partners' more global attitudes and beliefs – may be imperative for identifying both the distinct types of

behaviours and unique patterns of behaviour that may be associated with important relationship outcomes. Therefore, to broaden our understanding of the ways in which partners interact with one another, the present work's main focus is on the study of partners' perceptions of interpersonal behaviours during a specific interaction across the overall (mean) and moment-to-moment level of analysis. However, before this investigation may be undertaken, a framework within which to conceptualize people's interpersonal behaviours, and how they may be intertwined, is needed.

Interpersonal Theory

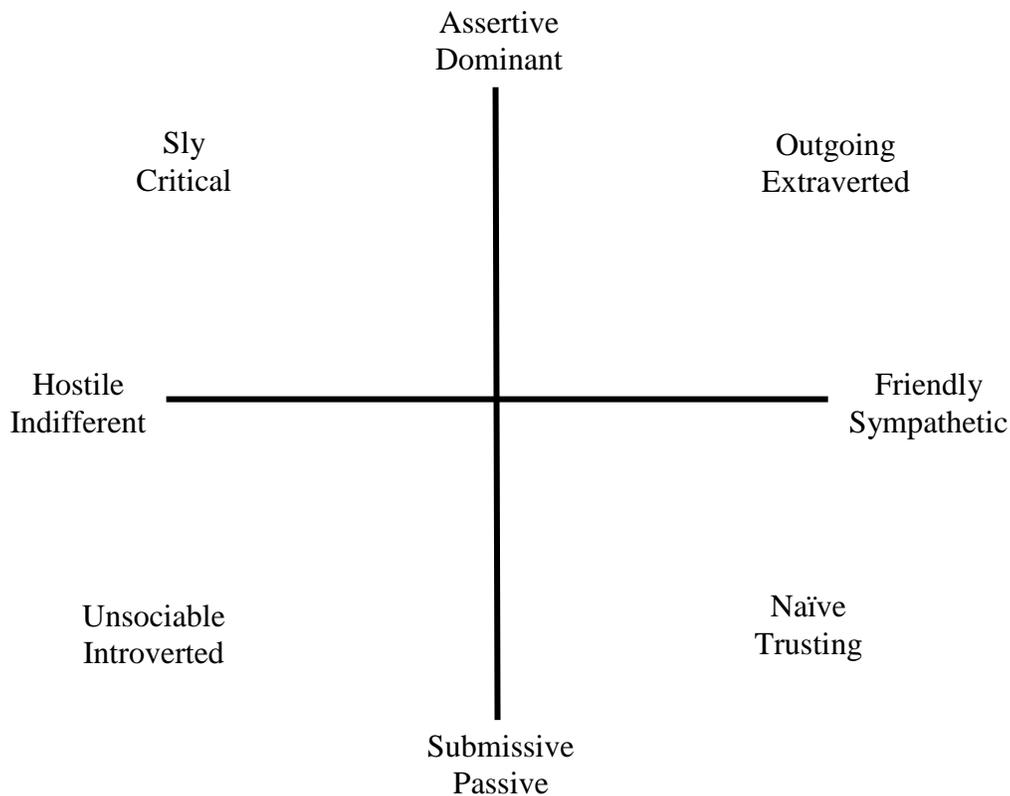
Interpersonal theory provides a useful theoretical framework within which to study people's interaction behaviours (Carson, 1969; Kiesler, 1983, 1996). This theory brings forth two major principles: the first offering content and organization of interpersonal behaviour, and the second providing prediction of people's behaviours during interactions.

First, interpersonal theorists postulate that the most important variations in people's interpersonal behaviour tend to be captured by two major orthogonal and intersecting dimensions: dominance versus submissiveness, and affiliation versus hostility. To help organize behaviour, these two dimensions may be depicted in a Cartesian plane (*Figure 4*). The vertical dimension represents dominance, with dominant at the top and submissive at the bottom, and the horizontal dimension represents affiliation, with hostile (or unfriendly) on the left and affiliative (or friendly) on the right. Although the two dimensions may appear to simplify the repertoire of behaviours persons may engage in, dominance and affiliation may be thought of as two latent variables that give rise to a whole circular continuum in which the most important interpersonal characteristics in people's behaviours can be thought of as being composed of a blend of these two basic dimensions. The dimensions of dominance and affiliation have very broad relevance

and are closely linked to Bakan's (1966) overarching meta-concepts of agency (i.e., need for autonomy) and communion (i.e., need for connection with others).

Apart from allowing description and organization of interpersonal behaviour, interpersonal theory also proposes predictions regarding how individuals may behave during their interactions with others. This idea first emerged in the work of Sullivan and Leary. By studying recurring patterns of social relations, Sullivan (1953) and Leary (1957) noted that each person's interpersonal behaviour carries with it information about how one's interaction partner should respond. As such, each behaviour enacted invites or constrains subsequent behaviour from the other, a concept referred to as *complementarity*. However, although this notion was discussed by both theorists, no clear direction was presented that demonstrated exactly what the predicted responses would actually be in social interactions.

Figure 4. The Cartesian plane depicting the location of 16 interpersonal behaviours.



Using the two main dimensions of interpersonal theory, Carson (1969) and Kiesler (1983) specified the particular directions in which complementarity occurs. Specifically, they argued that complementary responses tend to be opposite (“reciprocal”) with respect to the dominance dimension, but similar (“correspondent”) with regard to the affiliation dimension. For example, during an interaction, if Sarah behaved in a dominant-affiliative manner (e.g., asking Illya to pass her a pen while offering a smile), the complementary response would be for Illya to act in a submissive-affiliative manner (e.g., passing the object to Sarah while offering a smile). However, there are important differences in how strongly these complementary pairings of behaviour characterize particular pairs.

Interpersonal theorists suggest that when partners complement each other’s behaviours, they experience a sense of self-validation and security (Carson, 1969; Kiesler, 1983; Tracey, 1994). Further, complementarity has theorized ramifications for how rewarding people feel the interaction to be (e.g., Carson, 1969; Kiesler, 1983). People involved in complementary pairings (e.g., a person behaving in a dominant-affiliative manner and their partner behaving in a submissive-affiliative manner) are predicted to experience the most rewarding interpersonal interactions, and thus the highest levels of interpersonal satisfaction and enjoyment with the interaction. Research broadly supports the principle of interpersonal complementarity (see Sadler, Ethier, & Woody, 2011, for a review). Complementarity predictions, along with the maladaptive transaction cycle described earlier using Sarah and Illya’s example, offer a sophisticated framework for identifying the links that exist between the partners’ interpersonal behaviours, and how difficulties in the ways in which they negotiate issues of dominance and affiliation may emerge.

Studying dominance and affiliation within interactions. Traditionally, two main approaches have been employed to the study of dominance and affiliation during interactions. Using the first approach, a number of investigations have studied interpersonal behaviour macroscopically, by averaging the behaviour of each partner, into overall (mean) levels (e.g., Dryer & Horowitz, 1997; Sadler & Woody, 2003; Locke & Sadler, 2007; Moskowitz, Ho, & Turcotte-Tremblay, 2007). For example, observers may watch a participant during an interaction and at the end be asked to complete a questionnaire about that participant's interpersonal behaviour. The overall score on the measure would provide information about how dominant and affiliative the target person was overall during the coded time period. However, although useful information may be captured on this macro level of analysis, other very important information about the interactants' behaviour and complementarity is simply lost, such as the more nuanced information regarding the behavioural exchange unfolding between the partners (Tracey, 2004).

To circumvent this limitation, some researchers have employed a different approach, which involves segmenting an interaction into many smaller units and then studying the relations of each unit to the immediately succeeding unit during the interaction (e.g., Hoyt, Strong, Corcoran, & Robbins, 1993; Strong et al., 1988; Tracey, 1994, 2004). However, with such coding, the continuous flow of behaviour that naturally unfolds during an interaction between partners is lost. Few investigations have focused on the level of analysis between these two extremes, namely the possibility of time-sensitive patterns in which moment-to-moment changes in behaviour take place (Pincus et al., 2014).

To deepen and broaden our understanding of partners' dominance and affiliation during specific interactions, the current research will investigate romantic partners' behaviours on both

a molar and granular level of analysis, by examining their real-time behavioural exchanges during a specific interaction.

Studying partners' own perceptions of affiliation and dominance. According to interpersonal theory, focusing our study on the partners' own perceptions of affiliation and dominance may be especially important. Indeed, as was described, expectable complementary patterns exist between partners' levels of affiliation and dominance (Carson, 1969; Kiesler, 1996). For people to behave in a complementary fashion to each other, they need to be able to detect or perceive interpersonal behaviour accurately. Without the ability to perceive behaviour appropriately, interactions between partners may be ineffective and unrewarding (e.g., Eaton, South, & Krueger, 2009; Sadler et al., 2011).

The importance of investigating partners' own perceptions of dominance and affiliation also stems from the literature on couples therapy. Partners' perceptions of these behaviours are assigned a crucial role when conducting psychotherapy with romantic pairs who are seeking help to improve their relationship functioning. For instance, in Emotion-Focused Therapy with Couples, levels of closeness and distance, and dominance and submission, are claimed to be the two most critical dimensions of intimate relationships (Greenberg & Goldman, 2008). These two axes are seen as major forces in romantic involvements and marriage, and are the key dimensions on which partners' perceptions are often understood. As such, people's perceptions of affiliation and dominance within relationships is seen as vital and has important implications for relationship functioning. Indeed, a major goal of treatment is to assist both partners in developing a deeper understanding of how one's (mis)perceptions of the other's affiliative and dominant acts influence one's own actions, and the subsequent reactions that are received from the other.

Therefore, partners' perceptions of these two dimensions of behaviour are a key component of people's social interactions.

Joystick-based continuous assessment technique. To examine the ways in which partners perceive affiliation and dominance across time, a method for capturing the continuous flow of each person's behaviour during an interaction is essential. One method of obtaining continuous assessments of behaviour has couples use a rating dial to capture their momentary perceptions of affect on a scale from very negative to very positive (e.g., Gottman & Levenson, 1985; Hawkins, Carrère, & Gottman, 2002; Reed, Randall, Post, & Butler, 2013). However, the rating dial procedure assesses a single dimension, and because interpersonal theory specifies two dimensions as being important, an alternate approach needs to be used in order to obtain continuous ratings of both dominance and affiliation across time.

To meet this challenge, the current study employs a method for rating behaviour using a joystick-based program that allows users to code each target person's moment-to-moment interpersonal behaviour simultaneously on two dimensions during an interaction (Lizdek, Sadler, Woody, Ethier, & Malet, 2012). The user simply watches a video recording of the interaction and uses a joystick to rate one target person's interpersonal behaviour as it is unfolding through time. The same interaction is viewed a second time in order to provide comparable continuous ratings of behaviour for the partner.

Summary and Overarching Aims of Current Research

In the existing literature on romantic relationships, an interesting tension exists between two seemingly contrary findings; namely, partners seem to be both biased and accurate when providing evaluations of self, partner, and their relationship. The current work goes toward solving this paradox, establishing that bias and accuracy are not mutually exclusive and opposed

to each other. In order to understand how people evaluate their own behaviour as well as the behaviour of their partner, this research will investigate the degree of accuracy and bias in partners' perceptions, and the ways in which partners' behaviours and behavioural patterns influence relationship outcomes.

To achieve this goal, the framework provided by interpersonal theory will be employed. Apart from examining partners' perceptions using more traditional paper-and-pencil approaches, which investigate phenomena on a macro-level of analysis, the main focus of the current investigation will be on the level of analysis that has been largely neglected in earlier work, namely the possibility of time-sensitive patterns in which moment-to-moment changes in behaviour take place. In order to study partners' perceptions of behaviour in real-time, a method for capturing the continuous flow of partners' interpersonal behaviour during an interaction is needed. The joystick-based assessment technique enables investigation of both possible mean-level bias and moment-to-moment accuracy in partners' assessments of interpersonal behaviour. Although this technique has been used in several investigations (e.g., Markey, Lowmaster, & Eichler; 2010; Nilsen, Lizdek, & Ethier, 2015; Pennings et al., 2014; Sadler, Ethier, Gunn, Duong, & Woody, 2009; Thomas, 2015; Thomas, Hopwood, Ethier, & Sadler, 2012; Tracey, Bludworth, & Glidden-Tracey, 2012), the present research is the first to employ the method to examine participants' own perceptions of their own and their romantic partners' continuous behaviour.

In sum, the present work will explore four major themes:

1. What degree of bias and accuracy exist in partners' perceptions of overall levels of interpersonal behaviour? This research question is addressed in Chapter 3.

2. How well can romantic partners use the continuous joystick method to rate their own and their partner's interpersonal behaviour? This research question is addressed in Chapter 4.
3. Are there important individual differences in how accurate participants are in perceiving their own and their partner's interpersonal behaviour? This research question is addressed in Chapter 4.
4. How do individual differences in the interpersonal characteristics of partners, such as the degree of moment-to-moment accuracy in perceptions, relate to how satisfying the relationship is? This research question is addressed in Chapter 5.

CHAPTER II

METHOD

Participants

Fifty-nine dyads participated in the study, each of which consisted of an undergraduate student and their heterosexual romantic partner of at least three months' duration. The sample was comprised of couples who were engaged or married ($n = 4$), pairs living together but who were not married or common law ($n = 5$), couples who were exclusively dating their current partner ($n = 49$), and one couple in which one of the partners was dating their current partner and others. The average relationship length was 21.8 months ($SD = 17.0$).

Participants in the current study ranged in age from 17-27 years, with an average age of 19.8 years for women ($SD = 1.2$), and 20.6 years for men ($SD = 1.9$). The ethnic makeup of the group included individuals who self-identified as White/Caucasian (37.3%), Chinese (20.3%), Other Asian groups (16.1%), Other (10.2%), Middle Eastern (6.8%), West Indian (5.9%), and Korean (2.5%).

Procedure

Participants were recruited through an online university research pool and invited to take part in a study examining how romantic partners work together when making decisions, and how they view this process. Only one partner needed to be a university student in order to take part in the study. When the couple arrived to the lab, they were reminded of the key components of the study, asked to read and sign the consent form and the agreement to be recontacted form, which gave researchers permission to contact the participant six months, one year, and two years through email and/or telephone after the initial lab session. Upon contact, the participant would need to indicate whether their romantic relationship was still intact or had dissolved. Partners

were then separated and asked to fill out a number of questionnaires. Subsequently, partners were brought together into the same room, where they were asked to engage in a twenty minute interaction, which was videotaped. Specifically, the couple was asked to try and reach an agreement about the personality of a third unknown person by reading through her answers to five cards from the Thematic Apperception Test (TAT; Murray, 1943), a projective test of personality. They were given the five TAT cards, the third person's responses to these cards, some general information about the TAT, as well as how to go about the task. Partners sat at a large desk in chairs, side by side, directly facing the camera. The camera, set-up in an adjacent room, audio- and video-recorded both participants. Once the task was complete, partners were separated and asked to complete additional questionnaires.

Next, to capture the participants' continuous perceptions of their own moment-to-moment behaviour as well as their partner's moment-to-moment behaviour in their videotaped interaction, each participant was trained separately for approximately 40 minutes on how to use the joystick-based assessment program. Upon completion of the training, the participant used the joystick technique to rate their own affiliation and dominance while viewing 10 minutes of the videotaped interaction they had engaged in with their partner, and then rated their partner for the same 10-minute segment. The order of these ratings (self vs. partner) was counterbalanced across participants. The researcher started the joystick program recording for the participant, left the room during the coding, and returned after the 10 minutes had elapsed in order to stop the program from recording further data. The entire study took approximately 2 hours to complete. At the end, the couple was fully debriefed, given the opportunity to ask questions, thanked for their participation, and either granted 2 credits that could be used towards one of their Psychology courses, or paid \$20 (if non-psychology partner).

Measures

The Social Behavior Inventory, Self and Partner (SBI; Moskowitz, 1994). The SBI is a 46-item instrument designed to assess people's general tendencies in interactions with others. The SBI contains 12 behaviour items which measure each of the four poles of the interpersonal circumplex model of behaviour (Wiggins, 1991). Examples of dominance items are, "I spoke in a clear firm voice," and "I expressed an opinion to him/her." Submissive behaviour was measured by items such as, "I went along with his/her views and wishes," and "I let him/her make plans or decisions." Examples of quarrelsome items are, "I criticized him/her," and "I made a sarcastic comment to him/her." Agreeable behaviour was measured by items such as, "I complimented or praised him/her," and "I smiled and laughed with him/her."

In this study, the SBI was slightly modified to specifically assess participants' interpersonal behaviour in interactions with their romantic partner. Using a 6-point scale (1 = *never*, 6 = *almost always*), participants were asked to indicate the behaviours they had engaged in and to indicate the behaviours their partner had engaged in during the last month. Thus, each participant filled out two versions of the SBI. One item was deleted from both versions of the questionnaire because it did not apply to the assessments of romantic partners' behaviour in this study (dominance item, "I asked for a volunteer"). In the current sample, the internal consistency reliabilities (i.e., Cronbach's alpha) of dominance scores were .81 for self and .76 for partner; submissiveness scores were .71 for self and .76 for partner; friendliness scores were .76 for self and .78 for partner; and hostility scores were .81 for self and .82 for partner.

The Interpersonal Qualities Scale (IQS; Murray et al., 1996a, 1996b). The IQS is a 21-item measure that assesses the degree to which partners hold positive biases regarding each other's overall interpersonal qualities. Examples of attributes include kind and affectionate, open

and disclosing, tolerant and accepting, understanding, responsive to my needs, critical and judgmental, complaining, thoughtless, distant, and irrational. All participants described themselves and their partner on these traits using a 9-point scale (1 = *not at all characteristic*, 9 = *completely characteristic*). Thus, each participant filled out two versions of the IQS. In the current sample, the internal consistency reliabilities of the IQS scores were .77 for the self, and .82 for the partner.

The Relationship Assessment Scale (RAS; Hendrick, 1981). This questionnaire consists of 7 items that provide a measure of relationship satisfaction. Participants rated their relationship satisfaction using a 5-point scale on items such as, “In general, how satisfied are you with your relationship?” (1 = *unsatisfied*, 5 = *extremely satisfied*). The RAS has shown good psychometric properties (Hendrick, Dicke, & Hendrick, 1998) and is effective in discerning couples who stay together from relationships that dissolve (Hendrick, 1988). The internal consistency for the RAS in the current sample was .84.

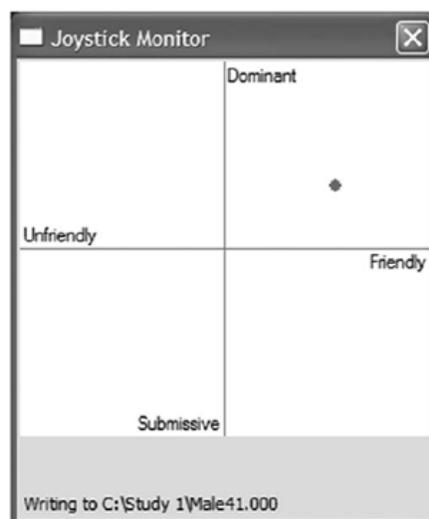
Coding of Interactions

The joystick apparatus. The joystick apparatus includes a Microsoft Sidewinder Force Feedback 2 joystick that is connected to a personal computer running the Windows XP operating system. A joystick monitor software program on the computer screen captures the moment-to-moment assessment of a target person’s behaviour. This software program opens in the lower right corner of the computer screen and displays a small Cartesian plane that is approximately 6.8 cm wide and 6.6 cm tall (*Figure 5*). The endpoints of the two orthogonal dimensions, dominance and affiliation, are labeled on this Cartesian plane. Specifically, the vertical dimension represents dominance, with “dominant” written at the top and “submissive” at the bottom. The horizontal dimension represents affiliation, with “unfriendly” written on the left and “friendly” on the right. On this Cartesian plane, the scale on both axes ranges from –1000 to

1000, where 1000 on the X-axis indicates extreme friendliness, and 1000 on the Y-axis indicates extreme dominance. A small circle within the plane indicates the (x, y) position of the joystick. When recording, the software program saves two numbers (i.e., data points) per second to create a time-series output. The resulting data set consists of two separate time-series of the ratings, one continuous stream of ratings for dominance, and one for affiliation.

To rate a target person's behaviour during an interaction using the joystick apparatus, each rater opened the video in a VLC Media Player window that was approximately 23 cm wide by 16 cm tall, and the joystick software program on the computer screen. As soon as the start button on the apparatus was pressed, the rater used the joystick continuously to capture the target person's moment-to-moment behavioural changes, as they were unfolding in real time. The joystick approach also offers a unique "force feedback" feature that pushes more against the rater's hand as he or she moves the dot away from the origin. Therefore, in addition to relying solely on the visual Cartesian plane display during coding, the force feedback feature provides the rater with some tactile feedback about the current joystick position.

Figure 5. Joystick monitoring program interface displaying the interpersonal Cartesian plane during data collection.



Note. The small circle shows the current position of the joystick.

Training of participants. The joystick training procedure, which followed the partners' in-lab interaction, involved learning about the two dimensions represented in the Cartesian plane on the computer screen, and moving the small circle around that plane using the joystick apparatus. Sixteen personality descriptors (e.g., warm, critical) were then read to the participant, who was asked to move the joystick to the most appropriate sector in the Cartesian plane for each word. They were given corrective feedback until they could place all 16 words correctly or had completed this task three times. The participant then watched the researcher continuously rate one person's behaviour in a short 3-minute practice video. Upon completion, any questions about the coding the participant brought forth were discussed and the coding and/or task was clarified. Subsequently, the same video was played again; however, during the second viewing, the researcher watched the participant use the joystick apparatus to code the same person in the practice video. Following the participant's own moment-to-moment ratings, any questions regarding the participant's joystick coding were discussed, and the coding and/or task was further clarified. During this time, the researcher also provided feedback to the participant regarding their joystick coding. For example, if the participant was neglecting to capture behavioural fluctuations on one of the dimensions (i.e., focusing on only one dimension while ignoring the second dimension), the issue was brought forth and discussed. During the training, the researcher emphasized the importance of basing the joystick ratings on behavioural changes in each target person from one moment to the next, instead of relying on their own general sense of how the interaction was unfolding. Near the conclusion of the training, the participant was also given instructions that emphasized the importance of coding how they perceived interpersonal behaviour during their actual interaction, and not their post-interaction perceptions or reactions related to watching themselves (or their partner) on videotape.

Training of observers. For the current study, five independent observers (four females and one male) were trained to use the joystick apparatus to make continuous assessments of the participants' behaviour. Each observer was trained in four sessions of approximately two hours each on how to properly operate the joystick apparatus, using well-established procedures (Lizdek et al., 2012).

The joystick training for the five observers was parallel to the training of the participants up to and including the observers watching the researcher employ the joystick apparatus to code the behaviour of the target individual in the same practice video. From here on, however, each observer used the joystick to code moment-to-moment behaviour of eight participants in four videos from an earlier study of opposite-sex unacquainted dyads. Each target was coded continuously for 10 minutes. Each interaction was viewed twice, once to code the behaviour of person A, and the second time to rate the behaviour of person B. While the observer engaged in this task, the researcher monitored the observer's continuous ratings, and once the coding was complete, issues were discussed and questions were answered. Apart from receiving feedback regarding how appropriately they were rating each participant, the researcher also created plots of the time-series to compare the observer's dominance and affiliation ratings with the ratings of the observers from the original study of opposite-sex unacquainted dyads. The plots provided a visual depiction of the data, which allowed the observer and researcher to detect and zoom in on potential critical points or errors the observer was producing during the coding. During the training sessions, the researcher emphasized the importance of basing the joystick ratings on behavioural changes in each target person from one moment to the next, instead of relying on the observer's general sense of how the interaction was unfolding.

Procedure for participant ratings. To streamline the rating process for the participant, the researcher started the playback of the video of the interaction, and pressed the start button on the joystick at exactly 13:00 minutes into the interaction. (The latter part of the videotaped interaction was chosen because in the first segment, partners are often reading over the material for the task and looking at the TAT images in silence). By moving the joystick for the next 10 minutes and 10 seconds, the participant created a continuous rating of moment-to-moment levels of dominance and affiliation for each target person.

Each participant assessed their own moment-to-moment interpersonal behaviour, as well as their partner's moment-to-moment interpersonal behaviour. Thus, in total, every participant made four assessments (i.e., 1 couple x 2 partners x 2 dimensions of behaviour).

In order to circumvent the possibility of “boxcar” effects (Warner, 1998) that may happen at the start of the time-series when the rater is quickly moving the joystick from its resting position to the position that indicates the first true assessment of behaviour, the first ten seconds (20 data points) were removed from every time-series before data analysis began. Thus, the final time-series each had a duration of 600 seconds (610 – 10 seconds), or 1200 data points (600 seconds multiplied by 2 samples per second).

To identify outliers in the participants' data, the researcher first inspected each univariate time-series visually, by generating time-series plots of the participants' continuous assessments. The visual inspection of each graph allowed us to see if any unique stream of ratings deviated substantially from the typical time-series data that may be obtained from the application of the joystick methodology. From the visual inspections, assessments for which the participant was adopting a highly deviant method of coding (e.g., moving the joystick repeatedly from –1000 to 1000), were identified. In addition, standard deviation (SD) values for each participant's

univariate time-series were computed. Values that fell three SDs from the overall mean for dominance and affiliation were flagged. Using these two approaches, five separate time-series assessments were detected as outliers, and subsequently removed from the data.

Procedure for observer ratings. The observer (rating all participants) started playback of the video of the interaction, and began coding the interpersonal behaviour of the target person by pressing the start button on the joystick apparatus at exactly 13:00 minutes into the interaction.

Each observer assessed the moment-to-moment interpersonal behaviour of each participant in their interaction. Thus, in total, every observer made 236 assessments (i.e., 59 couples x 2 partners x 2 dimensions of behaviour). To avoid assessing partners from the same couple consecutively, observers rated the behaviour of only one partner from each couple before moving on to another video clip from another pair. In addition, observers rated a partner of a different gender from one interaction to the next. The order in which participants were rated was also varied across the observers. Throughout the coding process, the researcher performed systematic checks of the available time-series in order to identify potential drift in the observers' data.

Following the completion of all coding and the removal of the first 20 data points from each time-series, it was important to assess whether the observers were triangulating reasonably in their moment-to-moment behavioural ratings. Therefore, reliability was calculated on two separate levels: at the overall mean level, and the moment-to-moment level for each time-series.

We first assessed the degree to which the five observers were agreeing about the overall mean levels of affiliation and dominance of the participants. Overall joystick means were computed for each participant's dominance and affiliation, from each observer's time-series data

(e.g., the average of the 1200 data points produced by observer 1, for the female's affiliation in romantic dyad 1). Subsequently, Cronbach's alpha was computed across the five observers' mean scores to yield the reliability for females and males on each interpersonal dimension. The resulting scores yielded the following alphas: .68 for females' affiliation, .89 for females' dominance, .69 for males' affiliation, and .92 for males' dominance. These values are similar to those obtained in earlier work employing the joystick technique (e.g., Nilsen et al., 2015; Sadler et al., 2009). Such results suggest that the observers generally agreed about the overall mean levels of affiliation and dominance across the interactions of romantic pairs.

Second, in terms of the fluctuations in behaviour across time, we assessed the degree to which the five observers were agreeing about the behavioural variations in interpersonal behaviour across the participants. The reliability at this more fine-grained, moment-to-moment level in each time-series, was obtained by calculating the proportion of the shared variance to the total variance (Sadler et al., 2009). Specifically, the shared variance was estimated as the mean of the cross-variances computed across every pair of observers, and the total variance was the variance of the values obtained by averaging across the five observers at each time point. The resulting values were reasonably good: .73 for females' affiliation, .82 for females' dominance, .69 for males' affiliation, and .84 for males' dominance. These values are similar to those obtained in earlier work employing the joystick technique (e.g., Sadler et al., 2009; Thomas et al., 2014). The results suggest that the observers generally agreed about when the participants were being more or less affiliative, and more or less dominant during the interactions.

Following the assessment of reliabilities across these two levels, the moment-to-moment ratings of the five observers were averaged by computing the mean at each time point. The new averaged time-series attenuated idiosyncratic perceptions in any one observer, and provided a

consensus about continuous changes in behaviour. Once the averaged time-series were computed, the observers' data for each participant consisted of two time-series: one for a participant's levels of dominance over time, and another for the participant's levels of affiliation over time.

CHAPTER III

PERCEPTIONS OF PARTNERS' OVERALL LEVELS OF INTERPERSONAL BEHAVIOUR

Introduction

The main focus of this dissertation concerns how romantic partners perceive moment-to-moment dynamics and change as they occur over the course of an interaction, with particular attention to fluctuation and change in the levels of affiliation and dominance. However, the study data can also be used to illuminate a somewhat different question: how partners perceive the average or overall levels of these interpersonal characteristics in their partners and themselves. Indeed, all moment-to-moment variation occurs around an average or typical level, and it is interesting to study the determinants of perception of these average or typical levels.

As discussed earlier, the existing literature on romantic partners' perceptions suggests that, rather than simply seeing themselves and their partners "as they are," people tend to engage in particular kinds of bias. For instance, one potentially important kind of bias in perceptions of one's partner is the *positivity bias*, which is often indexed by the degree to which an individual tends to view his or her partner more positively overall than the partner views himself or herself (Murray et al., 1996a, 1996b). Even though the partner's self-perception is not necessarily an objective benchmark, the usual implication of this work is that, in general, people tend to see their romantic partners in a more positive light than is objectively warranted, and, as reviewed earlier, some research suggests that this positivity bias may be relationship enhancing. Positivity bias has emerged in studies of both heterosexual dating and married samples (e.g., Murray et al., 1996a, 1996b), and in dating gay and lesbian relationships (e.g., Conley et al., 2009). However, the extent to which the positivity bias would apply specifically to the interpersonal

characteristics of affiliation and dominance is unclear. Hence, this is one of the questions addressed in the present analyses.

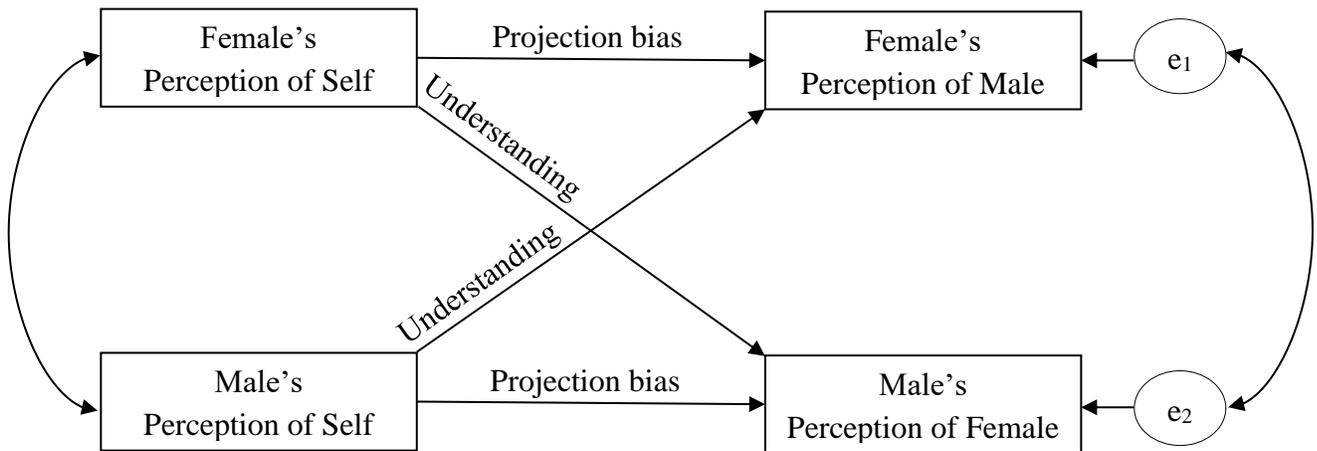
Projection bias. A second type of bias, briefly discussed in the first chapter of this thesis, that has received attention in investigations addressing perceptions of one's partner, is the *projection bias*. This type of bias refers to the tendency for an individual to attribute one's own characteristics to one's romantic partner (e.g., Aron, Aron, Tudor, & Nelson, 1991; Holmes & Rempel, 1989; Kenny & Acitelli, 2001; Lemay et al., 2007; Murray et al., 1996a, 1996b; Murray et al., 2002; Watson, Hubbard, & Wiese, 2000). Specifically, individuals tend to overestimate the extent to which their own qualities are shared by the partner. For instance, one's own characteristics have been shown to affect the corresponding perceptions of partners' thoughts and feelings (Thomas & Fletcher, 2003), values (Murray et al., 2002), depression level (Schul & Vinokur, 2000), degree of relationship commitment (Adams & Jones, 1997), attachment characteristics (Ruvolo & Fabian, 1999), feelings of closeness to a partner (Kenny & Acitelli, 2001), and perceptions of responsiveness (Lemay et al., 2007). Furthermore, Murray and colleagues (1996a, 1996b) have shown that one's own overall interpersonal qualities affect corresponding perceptions of the partner's thoughts and feelings. However, their approach involved averaging over a variety of both positive traits (e.g., kind and affectionate, witty), and negative traits (e.g., childish, complaining), rather than separately evaluating the traits of dominance and affiliation. Previous work with strangers (e.g., Sadler & Woody, 2003) suggests that a projection bias based on one's own affiliation may apply to people's perceptions of their partner, but that a projection bias based on one's own dominance may not. Thus, in the present work, we explore the degree to which projection bias applies to the more specific traits of affiliation and dominance.

Projecting one's own characteristics onto one's partner may have both cognitive and motivational underpinnings. Cognitively, people often use schemata that are most easily accessible, and the most accessible schemata tend to be the ones we apply to the self. Therefore, self-schemata may colour judgements of others, leading to the projection bias (Andersen & Chen, 2002; Higgins, King, & Mavin, 1982; Marks & Miller, 1987; Markus, Smith, & Moreland, 1985; Murray et al., 1996a, 1996b). Motivationally, people may also affirm their own self-views by assuming that their partners are similar to them (e.g., Berscheid & Walster, 1978). Recent research has also found evidence that a projection bias concerning values, personality attributes, and day-to-day feelings is related to greater marital satisfaction (Murray et al., 2002). Indeed, seeing oneself in one's partner is thought to be a sign of a close, interdependent relationship (Aron et al., 1991).

To investigate the degree of projection bias in partners' perceptions, the actor-partner interdependence model is often applied (APIM; see Kenny, 1996; Kenny, Kashy, & Cook, 2006). Figure 6 presents the relevant path diagram for the APIM. In this model, romantic pairs are treated as the unit of analysis. There are four variables in this equation model. The two criterion variables are labelled *Female's Perception of Male* and *Male's Perception of Female*, whereas the two predictor variables are labelled *Female's Perception of Self* and *Male's Perception of Self*. The central features of the APIM are the two types of paths that may be examined. The crossing paths (called "partner effects" in the APIM) represent *understanding*, or the extent to which people's perception of their partner accords with their partner's own self-perception. The horizontal paths (called "actor effects" in the APIM) represent *projection bias*, or the extent to which one's perceptions of the partner are coloured by one's own self-perception. To the left, the arc with arrowheads at each end represents the tendency for romantic partners'

self-perceptions to be correlated. Note that in assessing projection bias, presence of the partner effects (or understanding) controls for such a tendency of self-perceptions to be related. This is important because romantic pairs tend to be similar to each other on a range of variables (Kenny et al., 2006). In addition, the APIM has the virtue of depicting how understanding and projection bias combine to influence partners' perceptions of each other. Finally, to the right, the arc with bidirectional arrows between the criterion variables represents the correlation between the error terms (to manage non-independence).

Figure 6. APIM for partners' perceptions.



The application of the APIM to the study of romantic partners' impressions of each other on a range of characteristics has shown that both understanding and projection bias contribute to their perceptions. Of particular importance, Murray and colleagues (1996a, 1996b), in studies of dating and married heterosexual couples, applied this model to partners' perceptions of overall interpersonal quality. Each participant was asked to provide ratings of their own qualities, and their perceptions of their partner's qualities. Findings for the averages across these rather diverse qualities revealed that an individual's perception of his or her partner, in part, reflected the

partner's self-perceived qualities (i.e., understanding) and, in part, his or her self-perceptions (i.e., projection bias). Similarly, Kenny and Acitelli (2001) examined the degree of understanding and projection bias in dating and married couples who were asked to provide ratings of their own thoughts and feelings, and their perceptions of their partner's thoughts and feelings regarding the degree of closeness, equity, caring feelings, enjoyment of sex, and job satisfaction. Both understanding and projection bias effects were found for all of these characteristics.

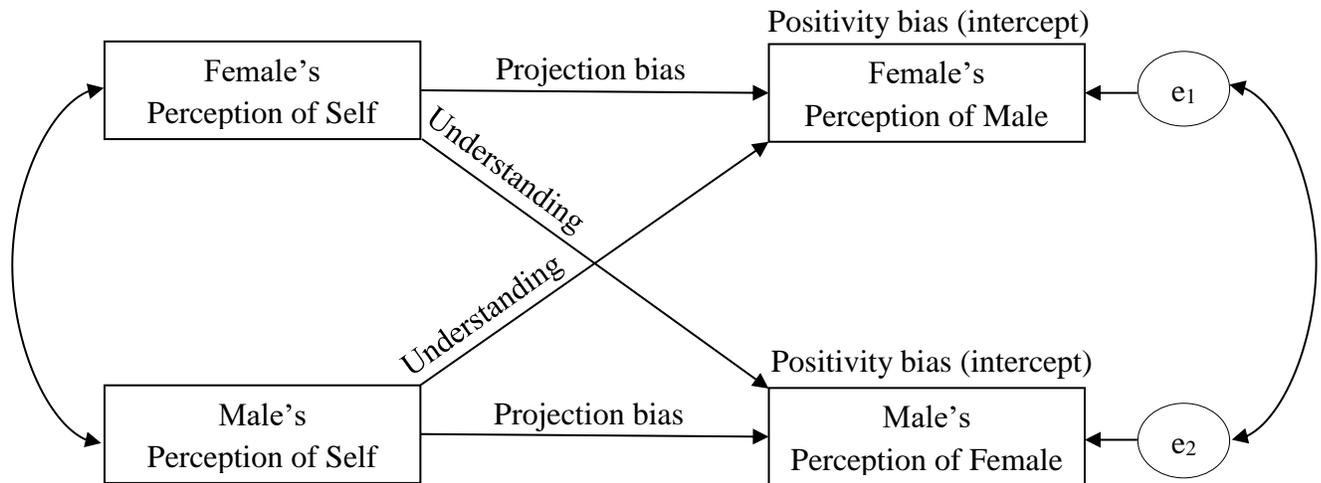
Apart from capturing people's impressions of each other's global characteristics, other work has applied the APIM to the study of more specific perceptions, such as how partners tend to view each other's styles of conflict engagement within the relationship. For instance, in their investigation of perceptions of conflict resolution types (e.g., positive problem-solving, conflict engagement, withdrawal, and compliance), Segrin, Hanzal, and Domschke (2009) showed that people's perceptions of their partner reflected both types of effects, namely, understanding and projection bias. Similarly, Zimmer-Gembeck and Ducat (2010) applied the model to study perceptions of positive and negative behaviours exhibited within the relationship. Although ratings of partners' warmth were obtained, this behaviour was aggregated across multiple dissimilar acts in order to arrive at a composite score for positive behaviour. The final analyses for the two overarching positive and negative behaviours revealed, once again, both understanding and projection bias in individuals' perceptions of their partners.

Perceptions of Partner's Typical Levels of Interpersonal Behaviour

Modeling strategy. In evaluating the determinants of partners' perceptions of typical levels of affiliation and dominance (i.e., trait ratings), what is the modeling strategy to be used? Unlike most previous work, our APIM evaluates positivity and projection biases simultaneously,

with positivity bias assessed through the intercept (see Figure 7). This approach helps to ensure that any findings of positivity bias are not really attributable to some quality of self-ratings, such as modesty. This possibility has been neglected in prior work which has examined positivity bias using mean-level discrepancies (see Fletcher & Kerr, 2010; Gagné & Lydon, 2004).

Figure 7. APIM for partners' perceptions (Intercept shown).



Another issue to consider is the handling of gender differences. A number of researchers have studied the role of gender as a moderating factor influencing interpersonal behaviour (e.g., Burleson, Kunkel, Samter, & Werking, 1996; Eagly & Wood, 1991; Estroff & Nowicki, 1992; Helgeson, 1994; Moskowitz, Suh, & Desaulniers, 1994; Suh, Moskowitz, Fournier, & Zuroff, 2004).

In earlier investigations, gender differences have emerged for certain types of behaviours, such as aggression, helping behaviour, and nonverbal behaviour (Eagly & Wood, 1991; Eagly & Crowley, 1986; Eagly & Steffen, 1986; Hall, 1984; Stier & Hall, 1984). For instance, males have been shown to behave more aggressively than females, especially in acts of aggression that result in physical injury or pain, than acts that create psychological harm (Eagly & Steffen, 1986).

Further, a series of meta-analyses conducted by Hall and her colleagues revealed that females

tend to be better nonverbal encoders and decoders than males (e.g., Hall, 1984, 1998; Hall & Matsumoto, 2004). Specifically, investigations have revealed that women are better at both sending and receiving nonverbal messages from others.

Aside from these findings, gender differences in interpersonal behaviour and attitudes are generally absent, or small. The available evidence suggests that dominant and affiliative behaviours of men and women do not differ in significant ways (Aries, 1996; Burgoon & Dillman, 1995; Duck & Wright, 1993; Kollack, Blumstein, & Schwartz, 1985; Markey & Markey, 2007; Robey, Canary, & Burggraf, 1998; Wilkins & Anderson, 1991). This conclusion is supported by findings of meta-analytic reviews of gender differences in interpersonal behaviour, which have revealed that gender accounted for only 0.5-1% of the variation in individuals' interpersonal behaviour (Canary & Hause, 1993; Wilkins & Andersen, 1991).

Whatever gender differences exist may even be less apparent in interactions between romantic partners. For example, Suh and colleagues (2004) found that although on trait measures, females tended to report being more communal and males more agentic, these findings did not emerge when interpersonal behaviours were examined within the context of their actual romantic relationship. Specifically, men did not report being any more agentic than women when interacting with their romantic partner. In addition, rather than being more communal, women tended to report less communal behaviour than men in their romantic relationship. One important limitation of these findings is that they do not distinguish between perceptions and interpersonal behaviour because all of the collected behavioural measures are based on self-report.

With regard to possible gender differences in perceptions of one's partner, earlier work has revealed that some women show greater positivity bias than men (Gagné & Lydon, 2003; dating sample in Murray et al., 1996a). However, other studies have not found this difference,

and this work does not focus on affiliation and dominance (Conley et al., 2009; Gordon et al., 2013; Luo & Snider, 2009; married sample in Murray et al., 1996a).

To address the presence of possible gender differences in the present study, Table 1 shows the means and standard deviations of the variables for females and males. Note that the first two sets of variables (in the top half of the table) are most immediately relevant, and the last two sets of variables (in the bottom half of the table) will be described later. Consistent with the paucity of gender differences in previous work, for most of the variables, there is no statistically significant gender difference. The two exceptions are that females rated their partners as being significantly higher in overall interpersonal quality and trait affiliation than males did. As mentioned earlier, these differences are consistent with work by Murray and colleagues suggesting more of a positive bias in females (1996a), although as mentioned earlier, other researchers have not consistently found this difference (e.g., Conley et al., 2009; Gordon et al., 2013).

To look at gender differences in the relations among variables, an omnibus test of the variance-covariance matrices was performed. Although there was statistically significant departure from homogeneity between the homogeneity of the two genders, $\chi^2(144, N = 57) = 221.73, p < .001$, the magnitude of the differences between the two genders is minute (see Table 2 for the bivariate correlations for males and females). Not only is the general pattern virtually the same across genders, there is only one pair of correlations that is statistically significant at a $p < .05$ level. This is well within the expected number of correlations due to chance. (Out of the 66 correlations, one would expect about three to be significant at the .05 level, just due to chance.)

More generally, given these overall results, as well as the findings from previous literature, we do not expect gender differences in path coefficients, variances, and intercepts in the models to be evaluated. Hence our strategy was to pool these parameters across the females and males to achieve greater statistical power (as suggested by Kenny & Cook, 1999; Kenny & Acitelli, 2001). However, the possible presence of gender differences is evaluated, in an omnibus way, by testing the fit of this model. In the case of statistically significant lack of model fit, gender differences in each type of effect are evaluated, and if statistically significant, will be reported.

Table 1

Means and Standard Deviations of the Overall Level Variables for Females and Males

Variable	Gender of Participant		<i>t</i>
	Female	Male	
<i>Overall Interpersonal Quality</i>			
Self	6.10 (0.78)	6.25 (0.84)	-1.07
Partner	6.77 (0.81)	6.21 (0.90)	4.54*
<i>Social Behavior Inventory (SBI) Trait Rating</i>			
Own Affiliation	1.69 (0.78)	1.69 (0.88)	0.01
Own Dominance	0.90 (0.89)	0.70 (0.62)	1.31
Partner's Affiliation	2.10 (0.98)	1.44 (0.79)	4.87*
Partner's Dominance	0.43 (0.71)	0.65 (0.75)	-1.52
<i>Participant's Mean Joystick Rating</i>			
Own Affiliation	186.80 (190.60)	154.59 (151.29)	1.04
Own Dominance	67.07 (239.58)	22.91 (215.44)	0.90
Partner's Affiliation	186.17 (184.06)	210.27 (171.83)	-0.75
Partner's Dominance	29.44 (202.62)	57.10 (169.58)	-0.68
<i>Observers' Mean Joystick Rating</i>			
Participant's Affiliation	220.93 (69.28)	204.39 (65.92)	1.75
Participant's Dominance	-84.72 (167.65)	-137.89 (189.49)	1.47

* $p < .05$

Table 2

Bivariate Correlations for the Overall Level Variables for Females (top) and Males (bottom)

Variable	IQS P	SBI SA	SBI SD	SBI PA	SBI PD	Joystick SA	Joystick SD	Joystick PA	Joystick PD	Joystick OA	Joystick OD
IQS S	.48 .32	.48 .64	-.12 -.07	.23 .34	.34 .17	.13 .20	-.08 .03	.21 .14	.00 .22	.05 .09	-.03 .06
IQS P	-	.56 .38	.10 -.08	.61 .65	.20 -.17	.17 .15	.01 .12	.29 .21	.07 .25	.27 .15	.06 .10
SBI SA		-	.08 -.11	.69 .66	.09 .16	.37 .27	-.12 .05	.26 .20	.13 .29	.30 .35	.11 .17
SBI SD			-	.32 .00	-.15 -.01	-.13 -.14	.25 .20	-.02 -.10	-.31 -.18	.04 .02	.32 .17
SBI PA				-	-.15 -.26	.20 .37	.04 .10	.31 .20	-.13 .28 *	.18 .33	.27 .10
SBI PD					-	.05 -.19	-.17 -.21	-.01 -.15	.21 .17	.07 -.04	.01 -.18
Joystick SA						-	-.11 .03	.65 .66	.21 .04	.44 .33	.04 .17
Joystick SD							-	.09 .26	-.44 -.30	.17 .04	.69 .61
Joystick PA								-	-.08 -.02	.14 .20	.09 .16
Joystick PD									-	.23 -.06	-.51 -.41
Joystick OA										-	.19 .25

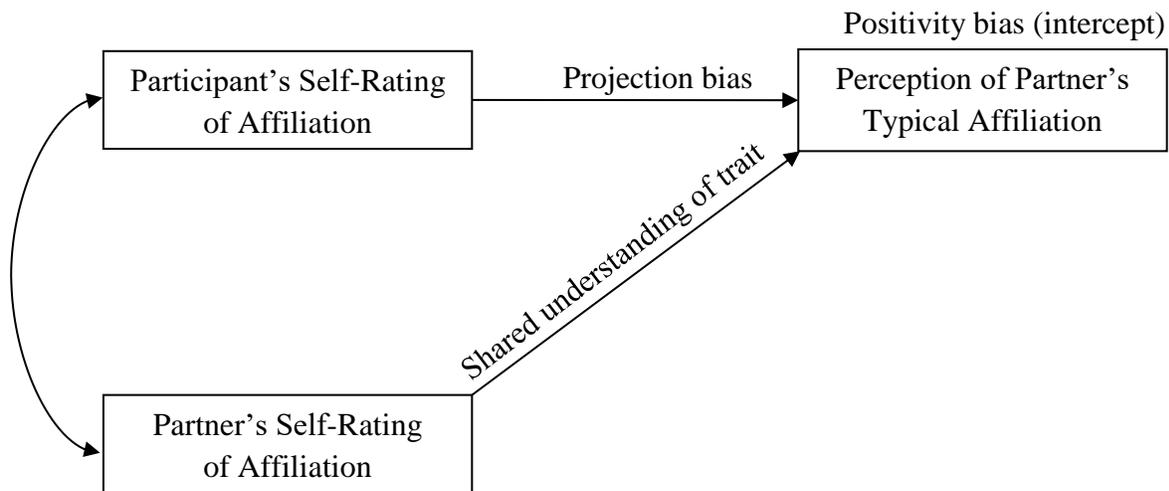
Notes.

* Females and males differ at $p < .05$.

S = Self; P = Partner; SA = Self Affiliation; SD = Self Dominance; PA = Partner Affiliation; PD = Partner Dominance; OA = Observers' ratings of Affiliation; OD = Observers' ratings of Dominance.

Our model can be depicted diagrammatically in a simpler form than the APIM, in which each path represents one pooled effect. For example, consider the APIM analysis of trait affiliation. The results of the data analytic model shown in Figure 7 could be summarized as shown in Figure 8. A few things are worth noting about this diagram. First, although gender is collapsed, the presence of statistically significant gender differences, if found, can be indicated by providing two values for the relevant type of effect. Second, although projection bias and positivity bias labels have remained identical, the understanding path is now labelled *Shared Understanding of Trait*, in order to highlight that this effect is capturing the degree of understanding that the two partners share. Third, other types of bias, in addition to projection and positivity biases, may also be evaluated using this model. These can be incorporated into the model simply as additional predictor variables, as described later.

Figure 8. Model for predicting perceptions of partner’s typical level of affiliation.



To begin, the present work will first attempt to replicate Murray et al.'s (1996a, 1996b) findings for overall interpersonal quality; however, our main interest is in perceptions of the typical levels of affiliation and dominance obtained from the Social Behavior Inventory (SBI;

Moskowitz, 1994), for which analyses and results will follow. The same model will then be applied to the joystick-derived average levels of affiliation and dominance. These investigations are important because the degree of understanding shown and the types of biases that have emerged in earlier work may largely be method-specific. By capturing partners' perceptions of both traits and interpersonal behaviour during a specific interaction, it is possible to disentangle whether understanding and bias effects only pertain to how partners fill out general personality inventories, or whether they also operate while they are evaluating specific ongoing behaviour.

Results. The omnibus test of gender differences for perceptions of overall interpersonal quality showed significant lack of fit, $\chi^2(5, N = 59) = 20.78, p < .01$, indicating the overall presence of gender differences. A comparison of this constrained model with a model in which the intercepts for females and males were allowed to vary revealed significant improvement in model fit, which indicates that the intercepts for females and males were statistically significantly different. The model with freed intercepts showed no significant lack of fit, $\chi^2(4, N = 59) = 4.09, ns$, indicating a lack of other gender differences. Table 3 contains the pooled coefficients (standardized path coefficients) for the analysis of participants' perceptions of overall interpersonal quality.

Table 3

Perceptions of Partner's Overall Interpersonal Quality

Predictor	Type of Effect	Perception of Partner's Overall Interpersonal Quality
(Intercept)	Positivity Bias	[Female 1.51*; Male 0.97
Perceiver's Self-Rating	Projection Bias	.35*
Partner's Self-Rating	Shared Understanding	.46*
R^2		.36

Notes.

Aside from the intercept, the coefficients are in standardized form.

Gender differences are reported if statistically significant, $p < .05$.

* $p < .05$

First, the intercepts for the unstandardized solution show that females held a positivity bias, such that they tended to view their partner more positively than was actually true. Second, the pooled paths for projection bias reached statistical significance, and indicate that the more positively individuals viewed themselves, the more positively they perceived their partner to be. Finally, the pooled paths for shared understanding also reached statistical significance, and showed that, over and above the impact of the perceivers' self-ratings, perceptions of the partner were, in part, a reflection of how the partner tended to rate the self.

Our findings replicate earlier work investigating partners' perceptions of overall interpersonal quality (e.g., Morry et al., 2014; Murray et al., 1996a, 1996b; Rusbult et al., 2000). The tested model showed evidence of positivity bias (albeit only reaching significance for female participants). Furthermore, we found that the perceptions individuals hold of each other within romantic relationships tend to be coloured by participants' self-impressions. Finally, our results

showed that perceptions of such qualities also reflect a shared understanding between partners, even after controlling for how individuals perceived the self.

We next estimated two separate models: one for perceptions of the partner's typical level of affiliation, and a second for perceptions of the partner's typical level of dominance, as assessed using the Social Behavior Inventory (SBI; Moskowitz, 1994). In these models, all relevant pairs of coefficients were set to be equal for females and males.

The omnibus test of gender differences for perceptions of the partner's typical level of affiliation showed significant lack of fit, $\chi^2(5, N = 59) = 26.16, p < .001$, indicating the overall presence of gender differences. A comparison of the constrained model with a model in which the intercepts for females and males were allowed to vary revealed significant improvement in model fit, which indicates that the intercepts for females and males were statistically significantly different. The model for affiliation with freed intercepts revealed no significant lack of fit, $\chi^2(4, N = 59) = 4.97, ns$, indicating a lack of other gender differences. In contrast, the omnibus test of gender differences for perceptions of the partner's typical level of dominance showed no significant lack of fit, $\chi^2(5, N = 59) = 10.29, ns$, indicating the overall lack of gender differences. Table 4 shows the pooled coefficients (standardized path coefficients) for these analyses.

For affiliation, our results entirely converged with the findings obtained for perceptions of overall interpersonal quality. First, females showed a positivity bias, such that they tended to see their partners as being more affiliative than was actually true. Second, a projection bias emerged as positive and statistically significant, which suggests that individuals' views of their partner's typical level of affiliation are influenced by their own self-perceived level of affiliation, controlling for how the partner actually rated him or herself. Third, shared understanding of trait

was statistically significant, indicating that, after controlling for individuals' self-ratings, views of the partner's typical level of affiliation were in part a reflection of how the partner rated his or her own affiliation.

For dominance, the results diverged considerably from the findings obtained for affiliation. First, positivity bias was no longer evident. In ratings of typical levels of dominance, participants did not view their significant other as being more dominant overall than was actually true. Second, no projection bias emerged. This suggests that, when making ratings of a partner's typical level of dominance, individuals are unlikely to use their impressions of how dominant they themselves tend to be, in order to make inferences about the level of dominance their partner displays. The only effect that reached statistical significance was for shared understanding of trait. Specifically, after controlling for participants' self-perceptions, views of the partner's typical level of dominance reflected how the partner rated his or her own dominance.

Table 4

Perceptions of Partner's Typical Levels of Affiliation and Dominance (SBI)

Predictor	Type of Effect	Perception of Partner's Typical Level	
		Affiliation	Dominance
(Intercept)	Positivity Bias	{ Female 0.61*; Male -0.05	0.17
Perceiver's Self-Rating	Projection Bias	.56*	.01
Partner's Self-Rating	Shared Understanding of Trait	.27*	.48*
R^2		.51	.23

Notes.

Aside from the intercept, the coefficients are in standardized form.

Gender differences are reported if statistically significant, $p < .05$.

* $p < .05$

To summarize, in examining perceptions of typical levels of behaviour, our results showed that perceptions of a partner's typical level of affiliation were entirely in line with the findings obtained for perceptions of overall interpersonal quality. However, a different portrait was revealed for perceptions of the partner's typical level of dominance. Here, neither positivity bias nor projection bias showed significance. The only significant effect that emerged was for shared understanding of trait. Taken together, such results suggest that an important consideration in the study of partner perceptions is the specific type of interpersonal characteristic individuals are asked to rate.

Perceptions of Partner's Interpersonal Behaviour during a Specific Interaction

Our analyses exploring participants' typical levels of interpersonal behaviour provide important information regarding the ways in which individuals arrive at their general impressions of each other. However, to assume that partners follow the same type of process while providing ratings of the partner's interpersonal behaviour during a specific interaction may be unfitting. A straightforward reason for this is that, in everyday situations, making evaluations of typical levels of behaviour is not an activity partners regularly and naturally partake in, whereas closely observing and evaluating the behaviour of the other during an interpersonal exchange is. For that matter, we cannot assume that the biases evident in individuals' perceptions of typical levels necessarily map on to the perceptions held while viewing a specific instance of behaviour. Currently, it is unclear whether understanding and the same types of biases are at play when partners are asked to evaluate an actual sample of behaviour.

To meet the challenge of obtaining such impressions, a number of methods, which were discussed earlier, may be employed. Instead of applying such techniques, we computed joystick-derived means for each participant's ratings of self and partner. Specifically, with the

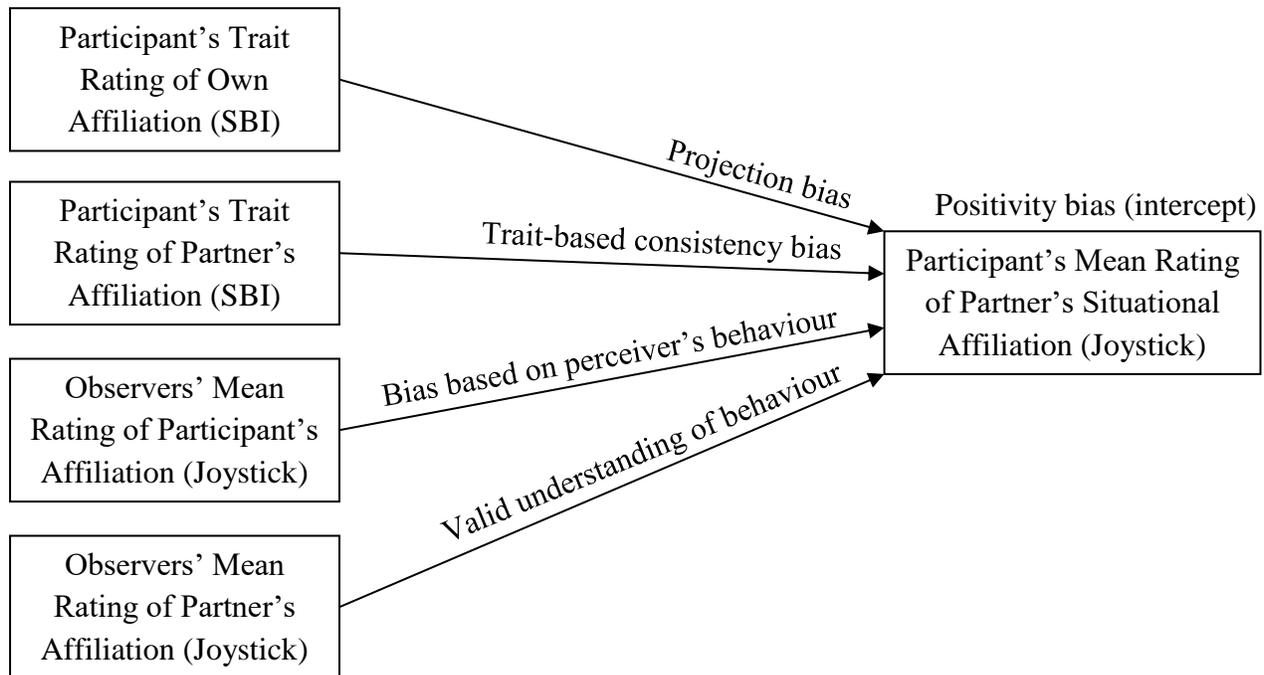
participants' joystick data at our disposal, over the course of the interaction, the moment-to-moment fluctuations were averaged over the entire interaction to obtain their mean levels of affiliation, and mean levels of dominance. The central reason for obtaining means in this fashion is that the average of the stream of participants' joystick ratings provides a highly reliable and valid measure of a person's interpersonal behaviour during the interaction. Thus, the data are more likely to capture how people are actually perceiving their partner in a specific moment in time, rather than their retrospective, potentially diluted, impressions of behaviour. Indeed, earlier work has shown that, when individuals are asked to provide an overall summary rating (e.g., "How warm was your partner during the interaction?"), perceivers tend to apply a basic algorithm, termed the "peak-end rule" (Kahneman, 2011). This basic heuristic implies that individuals' perception of experiences is largely based on what is most deviant (i.e., the most intense point), and what arrives at the end, rather than the total sum or average of every moment of that experience. Other information, aside from that of the peak and end of the experience, is not lost but is not used. Therefore, the quality of the data that is obtained when providing an overall summary rating is degraded (Pincus et al., 2014). Given the nature of the joystick methodology, we circumvented this major issue because the participants were not required to apply this heuristic when providing their impressions.

Modeling strategy. The study of participants' perceptions of situational behaviour based on the joystick mean levels requires a more elaborate structural equation model. Specifically, in addressing the question of what types of biases affect an individual's perceptions of the partner's affiliative and dominant behaviour, the model to be used needs to integrate additional variables to allow for a more comprehensive study of potential sources of bias. This new model, as applied to the analysis of affiliation, is shown in Figure 9. Although the model includes both females and

males to allow for the representation of the dependence between the two partners, for ease of illustration, a simplified version of this model is shown, where gender is collapsed.

As can be seen, the criterion variable, reflecting the participant's mean joystick rating of the partner's situational affiliation, is shown on the right hand side of the diagram. Four predictor variables are located on the left. The first two predictors, shown in the upper part of the figure, reflect the participant's trait ratings of their own and their perceptions of the partner's affiliation, as measured using the Social Behavior Inventory (SBI). By including ratings of typical levels of affiliation in our model, we assume that the interpersonal styles people generally adopt with their romantic partner may impact the ways in which they perceive their partner's behaviour during the interaction. Such an assumption is valid given that partners have a shared history, which may directly influence how they tend to view an instance of their partner's affiliative behaviour. The last two predictors, shown in the lower part of the figure, reflect the actual level of affiliation both individuals displayed during the task (as assessed by the observers using the joystick). Let us consider each type of effect in turn.

Figure 9. Model for predicting perceptions of partner's affiliation during the interaction.



In this model, the two previously studied types of bias are displayed in the upper portion of the figure. First, the intercept, once again, provides a test of the *positivity bias*, and tells us whether, controlling for other types of effects, the participants show an overall bias toward perceiving their partner as more affiliative during the interaction. Second, the *projection bias* path tests the degree to which individuals project their own trait affiliation onto their perceptions of their partner's affiliation during the task. Apart from positivity and projection biases, this model also captures two additional types of bias. First, a *trait-based consistency bias* is shown, and tests the degree to which the partner's affiliation is viewed consistently with how affiliative he or she tends to be, after controlling for actual affiliation and the participant's trait affiliation. Second, a *bias based on perceiver's behaviour* may also be extracted from this model. This bias may be conceptualized as an effect of the perceiver's presumption of correspondence. That is,

this effect, if significant, would tell us that participants tend to see the partner's affiliation during the interaction as being more similar to their own situational affiliation than is actually true (given that outside observers' ratings of the partner's affiliation are controlled for). This type of bias was found by Sadler and Woody (2003) in their study of unacquainted, mixed-gender dyads. The final path shown, termed *valid understanding of behaviour*, tests the degree to which, after controlling for the participant's trait ratings and actual behaviour, perceptions of the partner's situational behaviour reflect how affiliative the partner actually was during the task (as assessed by the observers). The distinct questions each separate effect addresses regarding the perceptions of a partner's affiliation during the interaction are outlined in Table 5.

Table 5

Questions Addressed in the Model for Predicting Perceptions of Partner's Affiliation during the Interaction

Type of Effect	Question Addressed
<i>Positivity Bias</i>	Do participants perceive the partner as exhibiting a higher level of affiliation than is actually true?
<i>Projection Bias</i>	Do participants tend to see the partner as being more similar to themselves in affiliation?
<i>Trait-Based Consistency Bias</i>	Do participants tend to see the partner's situational affiliation similarly to how they typically tend to view the partner's trait affiliation?
<i>Bias Based on Perceiver's Behaviour</i>	Do participants tend to see the partner's situational affiliation as more similar to how they themselves behaved during the task than was true?
<i>Valid Understanding of Behaviour</i>	Do participants tend to see the partner's situational affiliation in a way that is consistent with what outside observers see?

Results. The strategy employed in the following analyses paralleled our approach in the investigation of the types of biases present in the perceptions of typical levels of behaviour. First, we assessed the means and standard deviations for the joystick variables (see lower half of

Table 1), and found, as expected, that they were comparable for males and females. Second, in evaluating the two situational models of affiliation and dominance, we started with a model in which the path coefficients, variances, and intercepts were set equal across gender. If this model showed significant lack of fit, we proceeded to only then look for gender differences. The resulting models for affiliation and dominance showed no significant lack of fit, $\chi^2(19, N = 59) = 20.15, ns$, and $\chi^2(19, N = 57) = 23.98, ns$, respectively, indicating once again, the overall lack of gender differences.

Table 6 presents the pooled standardized path coefficients for the two situational models. Surprisingly, perceptions of a partner's affiliation during the interaction were unaffected by any type of bias. The only statistically significant effect that emerged was for valid understanding of behaviour. After controlling for what participants were typically like and how the perceivers themselves actually behaved within the interaction, perceptions of a partner's situational affiliation were related to how affiliative the partner actually was during the task, as rated by the observers.

As with affiliation, individuals' perceptions of a partner's situational dominance also showed valid understanding of behaviour. However, unlike the results for affiliation, for dominance, two types of bias were prominent. Specifically, perceptions of a partner's dominance were affected by the positivity bias, such that individuals tended to see their partner as being more dominant during the interaction than they actually were. In addition, perceptions were also affected by a presumed complementarity bias, in which one's partner was presumed to have behaved in a manner more opposite to one's own expressed level of dominance than was actually true. Thus, romantic partners are presuming more reciprocity than was actually occurring during the interaction.

In summary, our analyses revealed that biases had a negligible influence on people's overall perceptions of their partner's affiliation; instead, these perceptions tended to be reasonably accurate reflections of their partner's actual behaviour. People's overall perceptions of their partner's dominance also accurately reflected their partner's behaviour. However, these perceptions were influenced by two important biases: individuals tended to see their partner as being more dominant (*positivity bias*) than was actually true, and as more opposite to their own level of dominance (*bias based on perceiver's behaviour*) than was actually true. When these results are amalgamated with our earlier findings on the meta-trait of overall interpersonal quality and typical levels of interpersonal behaviour, what emerges is a more intricate account of the determinants of perceptions of the other. Specifically, not only is the specific type of interpersonal characteristic important to consider when asking participants to provide ratings, but the specific approach employed (e.g., paper-based inventories vs. joystick-derived data) requires thoughtful reflection.

Table 6

Perceptions of Affiliation and Dominance during a Specific Interaction

Predictor	Type of Effect	Perception of Partner's Situational Behaviour	
		Affiliation	Dominance
(Intercept)	Positivity Bias	-31.72	94.79*
Perceiver's Trait Rating of Self (SBI)	Projection Bias	.07	-.10
Perceiver's Trait Rating of Partner (SBI)	Trait-Based Consistency Bias	.12	-.04
Observers' Mean Rating of Perceiver's Behaviour (Joystick)	Bias Based on Perceiver's Behaviour (e.g., Presumed Complementarity)	-.03	-.31*
Observers' Mean Rating of Partner's Behaviour (Joystick)	Valid Understanding of Behaviour	.32*	.55*
R^2		.15	.50

* $p < .05$

Perceptions of One's Own Interpersonal Behaviour during a Specific Interaction

So far, our investigations have focused on the study of determinants of other person-perception; that is, how individuals arrive at their perceptions of the partner. However, an intriguing avenue worth pursuing is to turn the mirror towards the self, so to speak, and examine the ways in which people perceive their *own* interpersonal behaviour during a specific interaction. Such an exploration is important for two reasons. First, during an interpersonal exchange, being able to capture how individuals perceive the self, in addition to how they perceive the other, would provide us with a far richer understanding of the determinants of person perception. For instance, with individuals' self-perceptions of situational behaviour at our disposal, we would be able to examine whether similar types of biases exist in such perceptions. Second, the importance of accurate self-perceptions, and the difficulties that may arise when biased views are present, has been demonstrated in earlier work. For instance, Kruger and Dunning (1999) showed that across a number of intellectual and social domains, individuals who performed the worst tended to hold the least accurate perceptions of their skill and performances, greatly overestimating how well they actually performed on such tasks. These authors argued that the presence of such gross overestimation in people's self-perceptions occurs because individuals who lack skill are not in a position to appropriately recognize the degree of their deficits. Therefore, the ability to not only perceive the behaviour of the other appropriately, but also perceive one's own behaviour aptly, may have critical implications for how smoothly interpersonal exchanges unfold. Although the work by Kruger and Dunning provides important information regarding bias in people's self-perceptions of specific skills (e.g., grammar), the study of bias in perceptions of one's own affiliation and dominance during an interaction has been largely left unexplored.

Modeling Strategy. The modeling strategy applied in the study of perceptions of the partner was used in the current investigation of perceptions of one's own affiliation and dominance. The model, as applied to the analysis of affiliation, is shown in Figure 10. As can be seen, although the four predictor variables have remained unchanged, the new criterion variable reflects the participant's mean rating of their own situational affiliation. As a result, although *positivity bias* has remained unchanged, the paths depicting the different types of effects have been renamed accordingly. First, a *trait-based consistency bias*, shown in the upper portion of the diagram, tests the degree to which participants' affiliation is viewed consistently with how affiliative they tend to be generally. Second, a *bias based on partner's trait*, if significant, would tell us that participants tend to see their own affiliation during the interaction more consistently with how they perceive their partner's trait affiliation. Third, a *bias based on partner's behaviour* may be extracted from this model. This effect tests the degree to which participants see their own affiliation during the interaction as being more similar to their partner's situational affiliation than is actually true. The final path shown, termed *valid understanding of behaviour*, tests the degree to which, after controlling for participants' trait ratings and the partner's actual behaviour, perceptions of one's own behaviour reflect how affiliative one actually was during the task (as assessed by the observers).

Results. The resulting models for affiliation and dominance showed no significant lack of fit, $\chi^2(19, N = 59) = 18.95, ns$, and $\chi^2(19, N = 57) = 21.89, ns$, respectively, indicating once again, the overall lack of gender differences. Table 7 presents the pooled standardized path coefficients for the two models. In line with our results for perceptions of the partner, perceptions of one's own affiliation during the interaction were not influenced by bias. The only statistically significant effect that emerged was for valid understanding of behaviour. After

controlling for what participants were typically like and how the partner actually behaved within the interaction, perceptions of one's own situational affiliation were related to how affiliatively one actually behaved during the task, as rated by the observers. For dominance, apart from individuals' perceptions of their own situational dominance also showing valid understanding of behaviour, perceptions of one's own dominance were affected by positivity bias, such that individuals tended to see themselves as being more dominant during the interaction than they actually were.

Figure 10. Model for predicting perceptions of one's own affiliation during the interaction.

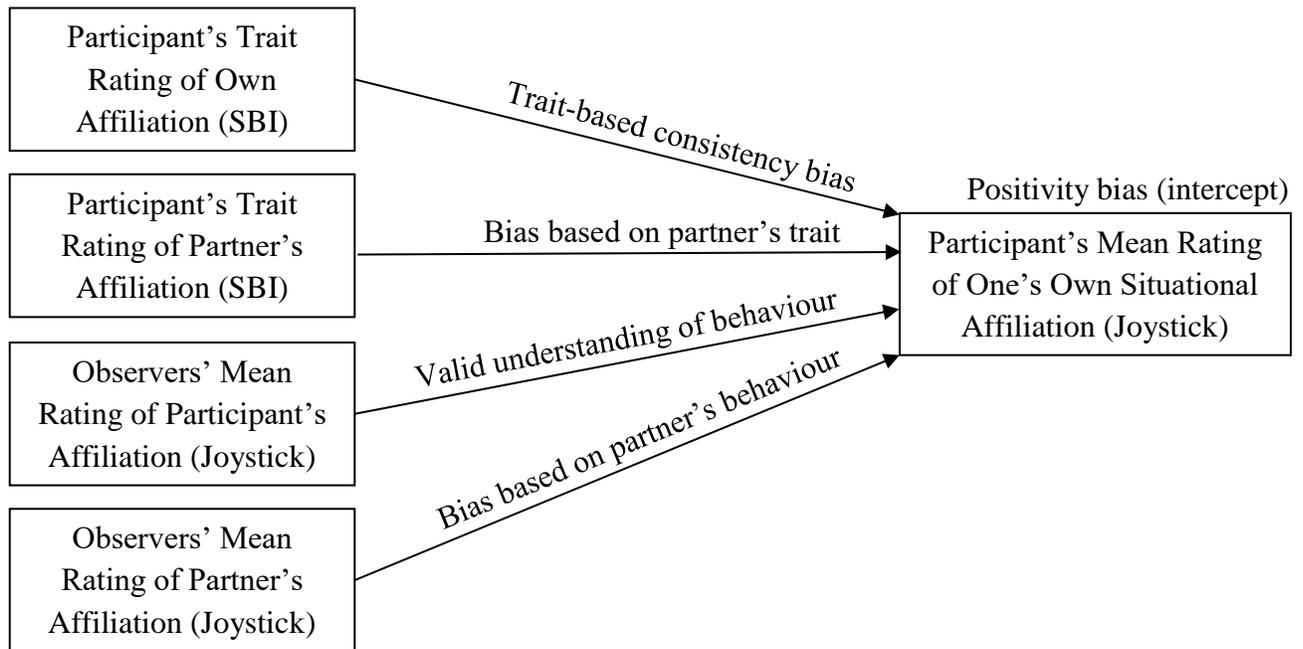


Table 7

Perceptions of One's Own Affiliation and Dominance during the Interaction

Predictor	Type of Effect	Perception of One's Own Situational Behaviour	
		Affiliation	Dominance
(Intercept)	Positivity Bias	-100.91	116.79*
Perceiver's Trait Rating of Self (SBI)	Trait-Based Consistency Bias	.14	.07
Perceiver's Trait Rating of Partner (SBI)	Bias Based on Partner's Trait	.09	-.10
Observers' Mean Rating of Partner (Joystick)	Bias Based on Partner's Behaviour (e.g., Presumed Complementarity)	.05	-.09
Observers' Mean Rating of Perceiver (Joystick)	Valid Understanding of Behaviour	.31*	.60*
R^2		.20	.44

* $p < .05$

Summary of Findings

In sum, the work in this chapter addressed four main questions with regard to how partners perceive the overall or average levels of dominance and affiliation in their romantic partners and themselves:

- (1) To what extent do partners' perceptions reflect positivity bias, projection bias, and possibly other biases, such as bias based on perceiver's behaviour and trait-based consistency bias?
- (2) To what extent are partners' perceptions anchored in a shared or valid understanding of the individual's behaviour?
- (3) To what extent do these perceptions of dominance and affiliation differ when considered over two methods of assessment, namely using a trait measure of typical levels, and using joystick-derived average levels?
- (4) Do gender differences in these perceptions exist, and if so, how can they be characterized?

Of the kinds of biases investigated, the analyses showed instances of all types except trait-based consistency bias in perceptions of one's partner. Some of these biases replicate earlier work. As a preliminary step, we applied a model that simultaneously analyzed biases and shared understanding to overall interpersonal quality, a variable of importance in previous studies. The results were consistent with past work showing projection bias and positivity bias (although in our work, the latter was only significant in women).

The investigation of biases in affiliation and dominance allowed us to supplement this picture in important ways. Of particular importance, one of the most consistent findings was of shared or valid understanding of overall or averaged levels of interpersonal behaviour. For all

ratings (i.e., dominance and affiliation, partner and self, trait-based and joystick-based), participants' perceptions were strongly anchored in what outside observers were reporting. This suggests that when individuals are asked to make overall evaluations of interpersonal behaviour, their perceptions are, to a large extent anchored, or in agreement with, the perceptions of outside observers. Thus, biases occur in the context of considerable accuracy in perceptions of oneself and one's partner.

Our findings also showed that the specific approach employed (e.g., paper-based questionnaires vs. joystick-derived data) is very important to consider when asking participants to provide ratings. For instance, for affiliation, when using indices derived from the joystick, there were no biases (Tables 5 and 6); whereas when using indices derived from the overall trait ratings, positivity bias (for females only) and projection bias were evident (Table 3). Therefore for affiliation, the joystick approach may more readily capture unbiased perceptions.

In addition, for the most part, there were virtually no gender differences. In perceptions of overall (joystick) levels of dominance and affiliation during an interaction, the findings for perceptions of both the partner and the self showed no gender differences in either valid understanding, or in the types of biases studied. In all the comparisons made, there were only two significant gender differences: Females rated their partners higher in overall interpersonal quality and in typical levels of affiliation than males did. These differences showed up in two types of analyses: in the comparisons of means (Table 1), and in the positivity bias (Tables 3 and 4).

Furthermore, an important consideration is whether we are predicting perceptions of the partner's, or one's own overall level of dominance and affiliation. Given that dyads seeking couples treatment often present with difficulties in negotiating interpersonal issues of affiliation

and dominance, capturing each partner's perceptions of behaviour of both individuals in the dyad may provide valuable insights about what types of interventions and strategies could be used to improve ineffective exchanges. For example, under-estimating one's own degree of hostility may be an important component of regularly occurring arguments that both individuals experience as being frustrating. Therefore, the results for perceptions of overall behaviour for the two separate targets may differ in important ways. Indeed, our findings for perceptions of the partner's dominance within the interaction revealed a unique bias based on the perceiver's behaviour (i.e., a presumed reciprocity bias) during the task, such that the partner was presumed to have behaved in a manner more opposite to one's own level of dominance than was actually true.

Our work thus far has focused on the examination of people's perceptions of overall, or, average levels of affiliation and dominance. This macroscopic study of human behaviour provides useful material regarding how individuals view the other, and the self. However, partners' perceptions may also be studied on a much finer timescale. Such an investigation would allow us to look at how perceptions actually change and fluctuate across time. The next chapter addresses partners' perceptions on this more fine-grained, moment-to-moment level of analysis.

CHAPTER IV
PARTNERS' PERCEPTIONS OF MOMENT-TO-MOMENT INTERPERSONAL
BEHAVIOUR

Introduction

The study of people's impressions of overall levels of interpersonal behaviour provides a good first read on how individuals tend to generally see their partner, and the self. However, solely obtaining these types of global impressions from each participant leaves out a vast area of rich material regarding how partners perceive the ongoing behaviour that is unfolding during an interpersonal exchange across time. Perceptions of overall levels of behaviour do not provide any information regarding how partners perceive nuances, or behavioural variability, within their transactions. To a large extent, these momentary perceptions have been left unmapped in the existing literature.

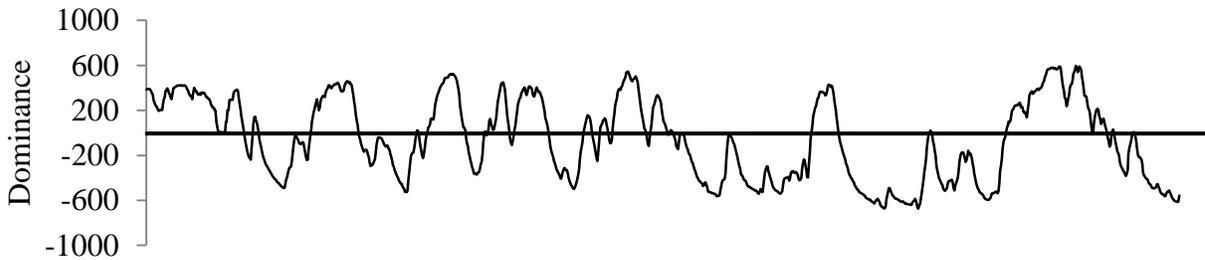
To appreciate the distinction between a person's perception of an overall level of behaviour and the perception of moment-to-moment behaviour, let us return to our earlier hypothetical example of Sarah and Illya, depicted in Figure 11. Unlike the depiction of this pair's ratings of each other, as was shown in Figure 3 (page 17), the present illustration focuses on Sarah's ratings of her partner, in comparison to the ratings made by outside observers (i.e., averaged time-series of five observers). First, consider the plot in panel A, which shows Sarah's continuous perceptions of Illya's dominance across the course of the interaction. The overall mean of Sarah's ratings on this plot is depicted by the horizontal line. In examining her ratings, we can see that, although she perceived Illya to be somewhat submissive during the interaction overall ($M = -61$), Sarah was nonetheless tracking important changes in his dominance across time. For instance, at the beginning of the interaction, she perceived him to be quite dominant,

and during the course of the exchange, he seemed to fairly regularly adopt a more assertive stance (reflected in the repeated peaks observed in Sarah's ratings of his dominance).

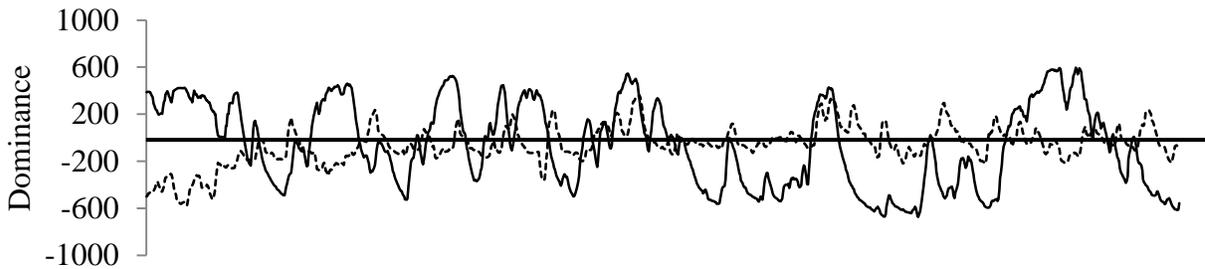
In order to separate perceptions of dominance at the overall and moment-to-moment level of analysis, let us now compare Sarah's ratings of Illya to a specified benchmark. Panel B shows the same time-series of Sarah's ratings, and a new time-series for Illya's dominance made by outside observers. In this panel, we see that the overall joystick-derived levels, which were the primary focus of Chapter 3, for the two streams of data are in complete agreement; that is, both Sarah and the outside observers rated Illya as somewhat submissive during the interaction. However, the examination of the full streams of data reveals striking inconsistencies between the two types of raters. Specifically, when the moment-to-moment ratings are examined, very little agreement is shown between Sarah's moment-to-moment ratings and those made by outside observers. For instance, in moments when Sarah perceived Illya to be expressing fairly high dominance, outside observers rated his behaviour in the opposite direction, towards greater submissiveness. Provided that the outside observers' time-series was applied as the benchmark, we could conclude that Sarah displays low moment-to-moment tracking ability of Illya's dominance. We will return to this theme later in this chapter. Finally, Sarah's impressions of her partner's dominance may show the opposite effect; namely, a lack of agreement with outside observers of Illya's overall level of dominance, and yet high moment-to-moment tracking ability. Panel C shows how Sarah's continuous ratings are in strong agreement with the momentary ratings made by outside observers. However, the panel illustrates a lack of agreement in perceptions of Illya's overall dominance, which is shown by the discrepancy between the two horizontal lines.

Figure 11. Example showing moment-to-moment ratings of dominance provided by one female participant and outside observers for the participant's male partner.

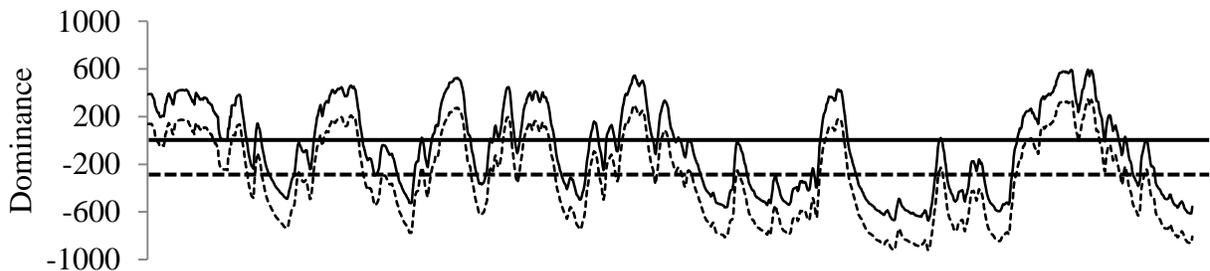
Panel A: Sarah's continuous ratings of Illya's dominance over the course of one interaction.



Panel B: Agreement in the overall level, and a lack of agreement in perceptions of Illya's moment-to-moment dominance between Sarah (solid line) and outside observers (dotted line).



Panel C: A lack of agreement in the overall level, and agreement in perceptions of Illya's moment-to-moment dominance between Sarah (solid line) and outside observers (dotted line).



The importance of examining perceptions of behaviour on a finer timescale. As the above example illustrates, perceptions of overall levels and of moment-to-moment behaviour are distinct phenomena. One of the central reasons behind turning our focus to the study of perceptions of moment-to-moment interpersonal behaviour is because such impressions guide the types of behavioural responses partners tend to provide to each other during interpersonal exchanges. In everyday interactions, a partner's momentary response is based on his or her *perception* of the other's ongoing behaviour, and not the other's *actual* behaviour. Thus, although it may be useful to have an overall sense of how each person behaved during an interpersonal exchange, the perception of the continuously shifting nuances in behaviour is essential because such perceptions guide the responses that partners provide to each other during their ongoing transactions.

Furthermore, capturing perceptions of continuous behaviour allows us to examine couples' impressions of the types of regularly occurring behavioural patterns that take place during interactions. To illustrate, let us consider a fairly neutral interaction taking place between a romantic pair in this study. As the couple interacts, the female repeatedly interrupts her partner each time he makes an effort to express a statement. As the interaction progresses, such interruptions gradually begin to influence the nature of the responses both partners provide, and the types of paralinguistic and nonverbal behaviours they show towards one another. Given that each person's moment-to-moment behaviour is partly determined by his or her ongoing perceptions of the partner's and his or her own behaviour, exploring the ways in which each partner perceives the naturally changing behaviour of both targets provides valuable information regarding the types of behavioural patterns that are evident to each person. For example, the female in the interaction above may not be responding to her partner in the expected

complementary fashion in the moment because her own repeated displays of dominance (i.e., interruptions), and the impact such actions have on the other, may remain undetected by her. These perceptions of behaviour as it is continuously unfolding across time may play a significant role in relationship functioning. In interpersonal theory, the development of difficulties are viewed as stemming primarily from problematic transactional patterns that result from an individual's inability to detect and correct such perceptions (Kiesler, 1996).

Indeed, within the literature on couples therapy, several theoretical orientations bring attention to the importance of examining not only partners' perceptions of affiliation and dominance more generally, as was discussed earlier, but the specific types of regularly occurring behavioural *patterns* that partners engage in during their transactions. For instance, the traditional Cognitive-Behavioural model postulates that the relationship partners form is made up of reciprocal and circular sequences in which each person's interpersonal behaviour simultaneously impacts and influences that of the other (Stuart, 1969). Based on social exchange theory (Thibaut & Kelley, 1959), Stuart hypothesized that successful relationships could be separated from unsuccessful ones by the frequency and range of positive behaviours that are exchanged reciprocally by the partners during their interactions. Further, in applications of Emotion-Focused Couple Therapy, clinicians are required to deescalate negative interaction patterns during marital exchanges, and the reactive emotions that are related to such patterns (Johnson & Greenberg, 1985). Subsequently, the therapist's goal is to work with the couple to adopt new cycles of positive interactions in which positive emotions arise and negative emotions are regulated in a more constructive manner. Finally, in Brief Strategic Couple Therapy, clinicians work to identify vicious cycles and then to deliberately shift these well-intentioned, yet ironic "solutions" to marital problems, in order to break the cycles that maintain the couple's

difficulties (Weakland, Fisch, Watzlawick, & Bodin, 1974). Although the literature on this approach to couples therapy does not specify the exact timeframe that is used to identify and make such shifts, the notion of behavioural cycles and the importance of paying attention to such phenomena is clearly emphasized.

Previous work examining partners' momentary perceptions during interactions.

Within the broad close relationships literature, several investigations have explored the nature of partners' momentary perceptions during their interactions. For instance, researchers have made use of the video-recall procedure by asking couples to engage in a discussion while being video-recorded, and afterward to watch numerous short segments of their exchange (e.g., 30-second windows) to provide behavioural ratings for both the self and the partner (e.g., "How supportive were you being to your partner?" and "How conflictual was your partner being to you?") after each brief exposure (e.g., Margolin, Hattem, John, & Yost, 1985; Smith, Welsh, & Fite, 2010; Welsh, Galliher, Kawaguchi, & Rostosky, 1999). Similar to the joystick technique, a major strength of this procedure is that participants are not simply asked to retrospect over the entire interaction. Instead, each participant is asked to focus on a narrow window of time, and to offer their impressions of behaviour presented within each separate exposure.

However, four major limitations are afforded with the method by which this technique is typically applied. First, most often, participants are asked to provide ratings for only a few select windows (e.g., 14 in total), instead of offering their impressions for the majority of the interaction. Therefore, most of the video-recorded exchange may be ignored. Second, although partners are asked to provide repeated measures of behaviour, such perceptions are not continuous because partners are asked to watch each segment, and then provide their overall account of each behaviour observed for the target being rated. Third, windows that are selected

for coding divide the interaction into arbitrary segments, a procedure that may easily split or mask naturally occurring processes unfolding within a given exchange. Finally, although the video-recall procedure allows researchers to obtain partners' repeated perceptions of behaviour, participants' scores are most often averaged across all rated windows, to create an overall score for positive/constructive and negative/destructive behaviour. Therefore, although this technique has the potential to provide investigators with an avenue through which to explore the nuanced patterns that occur across time, in actuality, this technique is used to study partners' perceptions of overall levels of behaviour, which were under investigation in our previous chapter.

However, more recently, the video-recall procedure has been applied to the study of partners' perceptions of momentary change in emotion. Such work has not ignored the variations in partners' perceptions. For instance, Overall and colleagues (Overall, Fletcher, & Kenny, 2012; Overall et al., 2015) have made use of this technique to investigate the degree of bias and tracking ability between partners in their perceptions of positive and negative emotions (e.g., hurt, sad, angry) experienced during 30-second windows of their video-recorded exchange, by using methods for analyzing repeated measures data within dyads (Kenny et al., 2006). In addition, as was discussed earlier, a different method of capturing a continuous assessment of affect has couples use a rating dial to capture how each individual had been feeling from moment-to-moment during the interaction, on a scale from very negative to very positive (e.g., Gottman & Levenson, 1985; Hawkins et al., 2002; Roberts & Levenson, 2001).

The advantages afforded by the joystick method for capturing moment-to-moment perceptions of interpersonal behaviour. Instead of employing earlier techniques, the participants in our study made moment-to-moment ratings of interpersonal behaviour using the

joystick-based assessment technique. A number of benefits are afforded with this method, which merit further elaboration.

First, unlike the rating dial, the joystick technique simultaneously captures people's moment-to-moment perceptions of two separate dimensions of interpersonal behaviour for each target, a rating feature that aligns with the basic premise underlying interpersonal theory. Second, instead of arbitrarily segmenting each interaction into short windows, partners are asked to code continuously for an extended period of time, as behaviour is unfolding in real time. The stream of data that is obtained opens up novel and interesting possibilities for the study of patterns across time within an interaction. Third, using the joystick technique, participants are asked to code continuously from a clear starting point to a selected end point, without rest. This procedure allows us to capture participants' continuous perceptions of a target's behaviour, and may therefore provide a more immediate impression of what each individual actually perceived while interacting with the other.

Aims of Upcoming Analyses

Although the joystick technique has been employed in earlier work, no study to date has used the technique to study participants' own perceptions of behaviour. Thus, as a precondition for using the joystick method to study romantic partners' continuous perceptions of their interactions, it is important to establish that they can use this technique reliably. The joystick method is arguably more demanding than other rating techniques, in that two major dimensions are rated simultaneously, and behaviour must be tracked continuously as it unfolds in real time. Therefore, our first aim in the analyses of moment-to-moment impressions was to establish how well participants could use the technique to provide these types of continuous ratings, when compared to specified benchmarks.

Specified benchmarks for the measurement of reliability. In order to measure partners' perceptions of moment-to-moment behaviour, one or more benchmarks are required. The current work employed two separate benchmarks against which to compare participants' moment-to-moment perceptions. These separate benchmarks have different substantive implications.

The first benchmark consisted of using the outside observers' averaged moment-to-moment ratings, as was demonstrated in Figure 11. Support for using the consensus across multiple observers' ratings comes from earlier work and the principal of aggregating across multiple raters. The averaged observers' time-series benchmark tends to cancel out the random variation of individual differences, and to retain the component that is consistent across the observers' ratings. Comparing each participant's unique time-series ratings (for both self and partner) to the observers' averaged time-series for each target would allow us to capture the extent to which participants' time-series ratings are reliable. Such scores would also provide information regarding the degree of moment-to-moment tracking ability for each participant's continuous ratings of interpersonal behaviour.

However, although employing outside observers' perceptions as a benchmark provides information regarding the extent to which participants' perceptions are matching those of outside observers, it is accompanied with a drawback. Specifically, low levels of agreement between participants and observers may not necessarily indicate that participants' ratings are unreliable. Given a couple's shared history, partners may understand each other's language and behaviour in relatively unique ways that only they have the knowledge to decode fully. Indeed, previous shared experiences may make it easier for partners to code subtle nuances and behavioural shifts that occur over the course of the interaction, shifts that are only visible to them.

As a result, the investigation of how well participants were able to code behaviour on a moment-to-moment level employed the target's self-perceptions as a second benchmark, as was illustrated in Sarah and Illya's example of co-existing levels (Figure 3, page 17). The use of self-judgments of the person being rated as the benchmark provides information regarding the extent to which partners' perceptions of each other are matching, or in agreement.

Therefore, our approach of using both outside (i.e., observers) and inside (i.e., partners) benchmarks answers two distinct kinds of questions, both of which may be important. Specifically, models for the assessment of couples' interactions recommend that data be obtained from both outside observers as well as from the partners themselves (Cromwell, Olson, & Fournier, 1976; Margolin, 1983; Weiss & Margolin, 1977). This rationale is in line with Levinger (1963) who stressed the need to use reports from both insiders and outsiders to better understand social relationships both theoretically and empirically. Olson (1963) also argued that both insiders and outsiders are important if we are to gain a comprehensive picture of interpersonal relationships. Therefore, the current work employed both types of benchmarks to evaluate the reliability of participants' perceptions of moment-to-moment behaviour.

Assuming that romantic partners can be shown to use the joystick technique reliably, the resulting data open up two very interesting research questions. First, consider the correlation between participants' moment-to-moment ratings and outside observers' ratings. What is the distribution of such correlations like? These differences are a potentially important predictor variable for various relationship variables and outcomes. Second, consider the correlations between the two partners. How much do partners tend to agree about the changes in behaviour they see?

Research questions. In summary, the upcoming analyses addressed four questions:

- (1) How well can participants track the moment-to-moment behavioural changes of their own and their partner's behaviour, compared to outside observers' assessments of their behaviour?
- (2) How closely do partners agree with each other about continuous perceptions of their own and their partner's behaviour?
- (3) Are there important individual differences in how well participants are able to track the moment-to-moment behavioural changes of their own, and their partner's behaviour?
- (4) Are there important individual differences in how much agreement exists between partners in their perceptions of moment-to-moment interpersonal behaviour?

Results

Moment-to-moment tracking ability. In order to address the first research question, the degree of agreement with the observers' averaged time-series benchmark for each individual participant and each separate observer, needed to be computed.

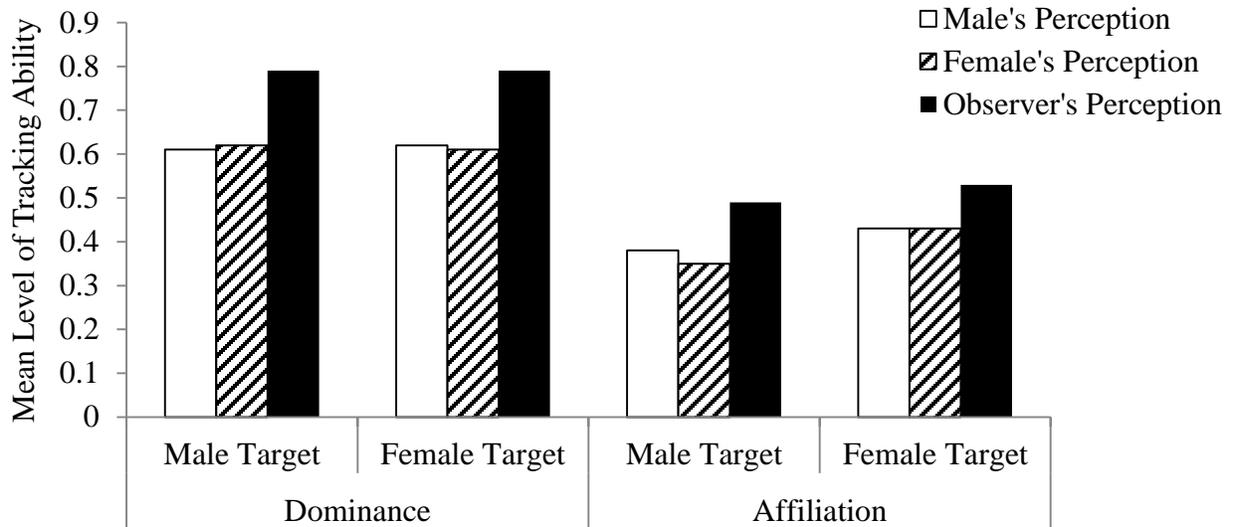
Specifically, for each participant, we indexed the degree of moment-to-moment tracking ability by computing Pearson r values for each participant's moment-to-moment ratings of each target's (i.e., self vs. partner) affiliation and dominance, and the specified benchmark. For example, the moment-to-moment joystick ratings of the female's own dominance in dyad 1, were correlated with the observers' averaged time-series ratings of this female's moment-to-moment dominance. A high r value would tell us that the female's ability to track her own naturally unfolding fluctuations in dominance across the course of the interaction is very high.

Subsequently, for each observer, we indexed the degree of moment-to-moment tracking ability by computing Pearson r values for each individual observer's moment-to-moment ratings

of each participant's affiliation and dominance, and the specified benchmark, excluding that particular observer. For example, observer A's moment-to-moment ratings of the female's dominance in dyad 1, were correlated with the averaged time-series ratings of the other four observers' ratings of this female's moment-to-moment dominance. A high r value in this example would tell us that observer A's ability to track this participant's dominance as it was changing over time is very high. Once tracking ability indices were generated for each of the five independent observers, the data were aggregated in order to provide an overall index of moment-to-moment tracking ability for perceptions of each participant's affiliation and dominance.

The data were analyzed using multivariate analysis of variance (MANOVA), with perceiver (male's perception vs. female's perception vs. observer's perception), gender of target (male vs. female), and interpersonal characteristic (dominance vs. affiliation) as the within-subject factors. Findings revealed a significant main effect of perceiver, $F(2, 54) = 73.32$, $p < .001$, partial eta squared = .73. As can be seen in Figure 12, an individual observer showed significantly greater moment-to-moment tracking ability for both behavioural dimensions. In addition, the main effect of interpersonal characteristic was statistically significant, $F(1, 55) = 158.74$, $p < .001$, partial eta squared = .74. As illustrated, all perceivers were better at tracking fluctuations in dominance across time, than changes in affiliation. Dependent samples t -tests revealed that male and female participants did not differ in how well they rated interpersonal behaviour (all p 's $> .07$). Finally, when an examination of whether the degree of moment-to-moment tracking ability differed whether participants were coding themselves or their partner, only one significant difference emerged. Specifically, females tended to show more agreement with outside observers when providing continuous ratings of their own ($M = .43$, $SD = .18$), than their partners' ($M = .35$, $SD = .22$) moment-to-moment affiliation, $t(58) = 2.52$, $p = .015$.

Figure 12. The degree of moment-to-moment tracking ability for male participants (white bars), female participants (striped bars), and a single observer (black bars).



Note. The Y-axis shows the mean level of moment-to-moment tracking ability. These are the means of correlations between the perceivers and the observers' averaged time-series.

In summary, results showed that the participants were able to rate both affiliation and dominance continuously across time reasonably well. However, when their time-series ratings were compared to the skill of an outside observer, participants' ratings were less reliable than those provided by outside observers. Furthermore, all perceivers (female participants, male participants, and outside observers) showed greater tracking ability when providing ratings of moment-to-moment dominance than affiliation. Finally, no significant differences emerged between females' and males' levels of moment-to-moment tracking ability, and only one result emerged as significant when ratings for self and partner were compared. Specifically, findings revealed that female participants' tracking ability was significantly higher when they were asked to provide moment-to-moment ratings of their own affiliation, than their partners' affiliation.

Degree of agreement between partners' moment-to-moment tracking. Next, we turned to addressing the second research question by applying a different benchmark to investigate the degree of agreement that may exist between partners' continuous perceptions of interpersonal behaviour.

First, to index the level of agreement between romantic partners, the male's and female's continuous ratings were compared to each other by computing Pearson r values. For example, the female's moment-to-moment ratings of her *own* dominance in dyad 1, were correlated with the male's moment-to-moment ratings of his *partner's* dominance. A high r value would indicate that moment-to-moment changes in the female's ratings of her own dominance were strongly related to moment-to-moment changes in the male's ratings of her dominance.

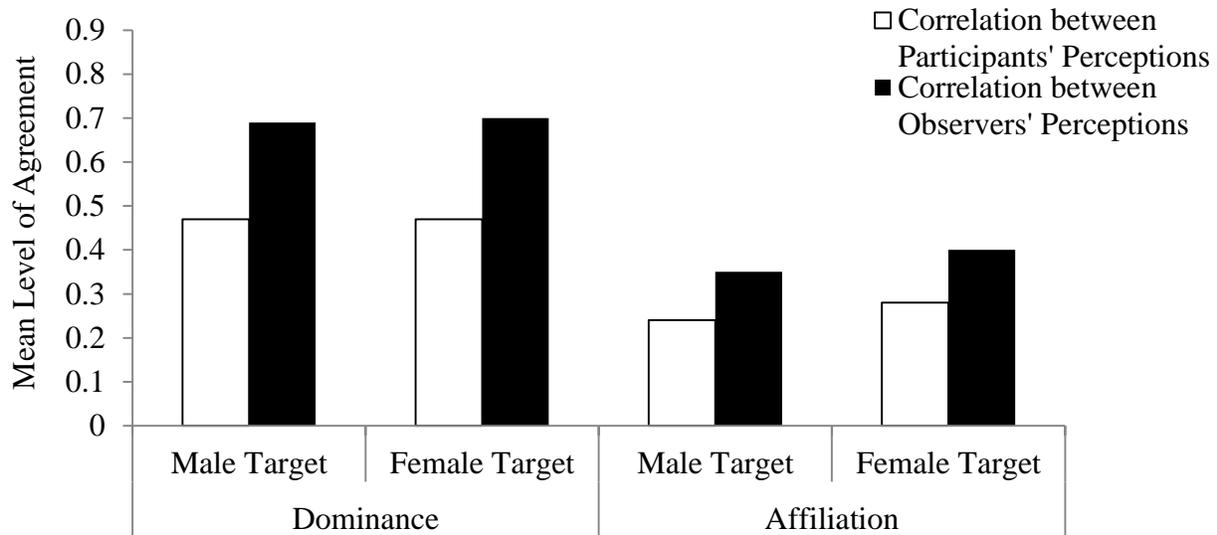
Second, to index the level of agreement between any two observers, their continuous ratings of the participants' behaviour were compared to each other by computing Pearson r values. For example, observer A's ratings of the female's moment-to-moment dominance in dyad 1, were compared to observer B's continuous ratings of the same participant's dominance. A high r value would tell us that moment-to-moment changes in observer A's ratings of the female's dominance were highly related to moment-to-moment changes in observer B's ratings of this female's behaviour. Once agreement indices between each pair of observers were generated, the data were aggregated in order to provide an overall index of agreement for moment-to-moment perceptions of each participant's affiliation and dominance.

To address the second research question, multivariate analysis of variance (MANOVA) was conducted, with perceiver (participants' perception vs. observers' perception), gender of target (male vs. female), and interpersonal characteristic (dominance vs. affiliation) as the within-subject factors. Once again, the results showed a significant main effect of perceiver,

$F(1, 55) = 128.68, p < .001$, partial eta squared = .70. As can be seen in Figure 13, two observers showed greater agreement than male and female partners. In addition, the main effect of interpersonal characteristic was statistically significant, $F(1, 55) = 223.91, p < .001$, partial eta squared = .80. As illustrated, all perceivers showed greater agreement for ratings of moment-to-moment dominance. Dependent samples *t*-tests were conducted to explore whether agreement differed whether perceivers were coding male participants versus female participants. Results revealed one significant difference. Specifically, two observers showed greater agreement for ratings of the females' ($M = .40, SD = .11$), than the males' ($M = .34, SD = .08$) moment-to-moment affiliation, $t(58) = 4.07, p < .001$.

In summary, results showed that two observers tended to agree more in ratings of the participants' moment-to-moment behaviour than male and female partners. The findings suggest that participants were not picking up on privately understood behaviour, at least continuously, that an observer was unable to perceive and code during the continuous coding task. In addition, all perceivers showed greater agreement when rating moment-to-moment dominance, than affiliation. Finally, observers agreed significantly more when rating moment-to-moment affiliation of female participants, than male participants.

Figure 13. The degree of agreement in moment-to-moment ratings between the female and male participants (white bars) and between two observers (black bars).



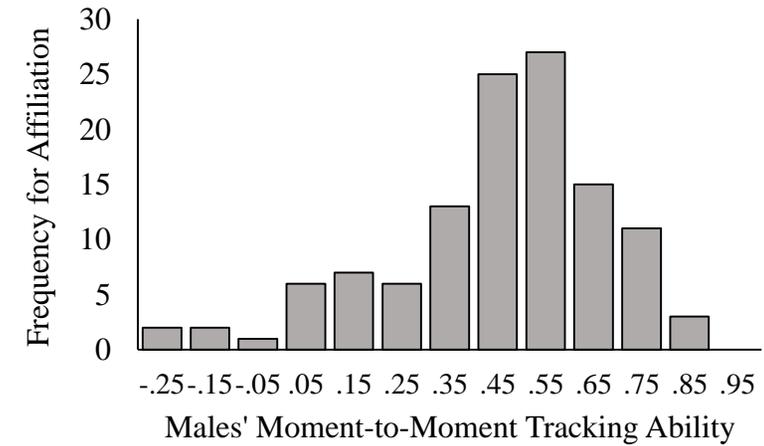
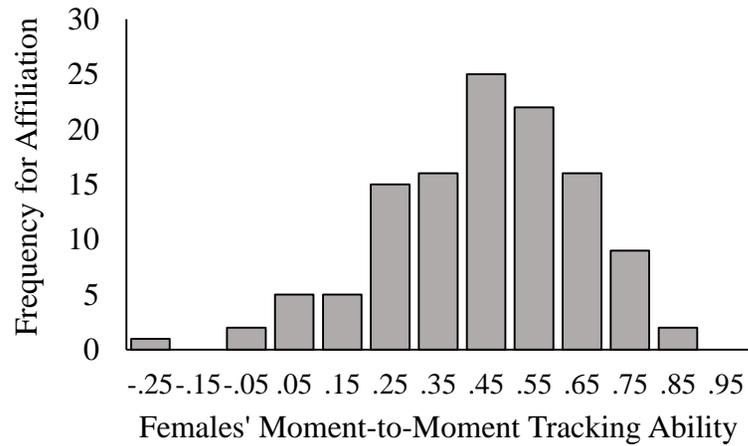
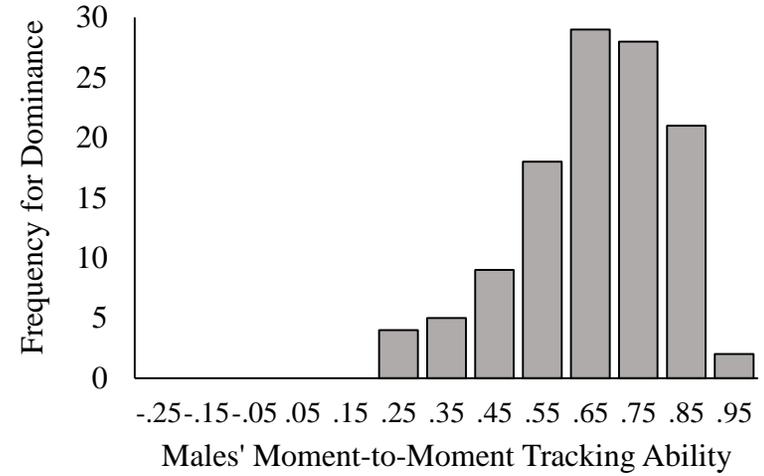
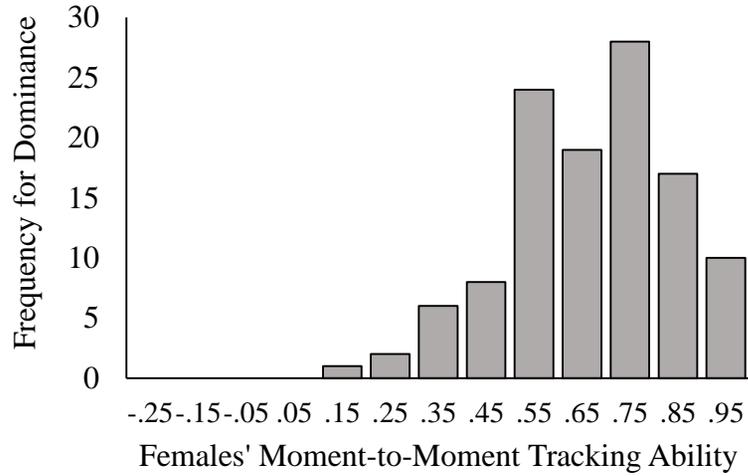
Note. The Y-axis shows the mean level of agreement. These are the means of correlations between the male and female participants, and means of correlations between any two observers.

Individual differences in participants' moment-to-moment tracking ability. Figure 14 presents four histograms that display the distribution of Pearson r values for the averaged time-series of five observers with the time-series ratings provided by female and male participants. The level of moment-to-moment tracking ability for both the self and partner have been included in each histogram.

The two histograms shown across the top of the figure demonstrate the distributions of correlations for ratings of moment-to-moment dominance. Both histograms show that within our sample of romantic pairs, a great deal of variability exists in partners' moment-to-moment tracking abilities. That is, for both female and male participants, the histograms reveal that some participants were able to track continuous changes in dominance extremely well, whereas others showed fairly low tracking ability.

The two histograms shown near the bottom of the figure reveal the distributions of correlations for ratings of moment-to-moment affiliation. Similar to the pattern observed for dominance, the distributions reveal wide variability in participants' moment-to-moment tracking ability, where some partners seemed to track fluctuations in affiliation across time very appropriately, and others showed quite low tracking ability.

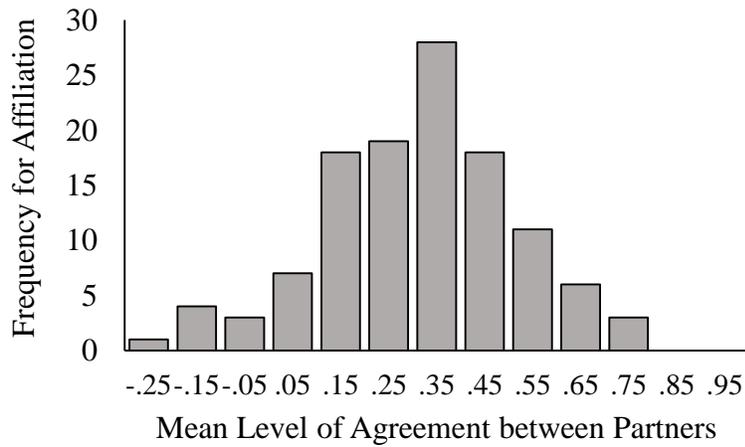
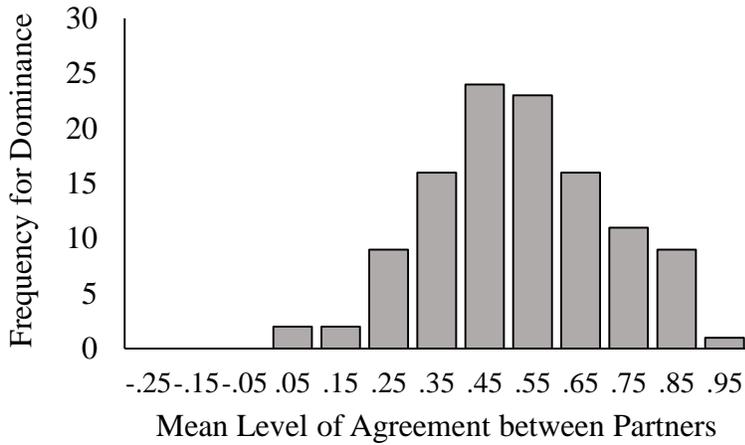
Figure 14. Results for moment-to-moment tracking ability for dominance (top) and affiliation (bottom): Four histograms showing the distribution of correlations between the averaged time-series of five observers with the ratings of females and males.



Individual differences in the degree of agreement between partners in moment-to-moment tracking. Figure 15 presents histograms that displays the distribution of Pearson r values for the level of agreement in continuous ratings of dominance and affiliation between romantic partners. The level of agreement for both the female's behaviour and the male's behaviour have been included in each histogram.

Both histograms show that a great deal of variation exists in the level of agreement between partners. The distributions show that some partners were rating moment-to-moment dominance and affiliation very consistently with one another, seeing subtle, microscopic changes in behaviour across time in similar ways. Other pairs, on the other hand, were agreeing much less with one another in their perceptions of continuous fluctuations in interpersonal behaviour.

Figure 15. Results for moment-to-moment agreement between partners for dominance (top) and affiliation (bottom): Two histograms showing the distribution of correlations between the female and male partners.



Summary of Findings

The present analyses revealed that romantic partners are able to track the behavioural fluctuations in interpersonal behaviour over time reliably. Nonetheless, when their ratings were compared to how well an outside observer was performing the same task, we found that participants were unable to track moment-to-moment fluctuations in interpersonal behaviour as well as an observer. In order to explore whether the participants' lower levels of moment-to-moment tracking ability were related to the partners possessing insider knowledge regarding each other's behaviours, we employed a second benchmark of comparison: the level of agreement between the female and male partners. These analyses revealed no evidence that participants were picking up on privately understood behaviour, beyond what an outside observer was able to rate continuously. In particular, for moment-to-moment ratings of both male and female participants, the degree of agreement between romantic partners was significantly lower than the agreement found between two observers.

Importantly, our findings also revealed large individual differences in how strongly participants agreed with outside observers, for both ratings of moment-to-moment dominance and affiliation. Large individual differences also emerged in the degree of agreement between partners for moment-to-moment perceptions of both interpersonal dimensions. Such wide differences may have distinct functional significance for adaptiveness. In particular, although biases may be adaptive in partners' perceptions of overall levels of interpersonal behaviour, at a more detailed, moment-by-moment level, it may be more adaptive for partners to have a relatively clear view of each other's changing behaviours. To illustrate, let us revisit the exchange between the romantic pair that was introduced earlier in this chapter. As the two partners interact, appropriate tracking of interpersonal behaviour as it is unfolding across time

may bring advantages to both partners. For instance, such detailed tracking of behavioural fluctuations would allow partners to respond adaptively in the course of the interaction. Furthermore, such appropriate continuous tracking of behavioural rhythms during the exchange would allow partners to anticipate each other's responses more effectively, which could have important implications for relationship satisfaction and longevity. We turn to examining these implications in the next chapter.

CHAPTER V

RELATING INDICES OF PARTNERS' INTERPERSONAL BEHAVIOUR TO RELATIONSHIP OUTCOMES

Introduction

In the existing close relationships literature, there has been a great deal of interest in trying to identify and understand the types of interpersonal behaviours that are instrumental in fostering relationship quality and stability. A primary reason for such interest stems from the recognition that attaining and maintaining a satisfying romantic relationship is a central feature of most adult lives, and that such relationships have the potential to promote emotional well-being and physical health (Berscheid, 1999). Interpersonal theory offers an elegant framework for understanding the potentially important behavioural patterns within these relationships, and how partners' ways of influencing each other during interactions may be related to relationship outcomes. Before examining the relation of the joystick-derived indices from the present study to the prediction of measures of relationship satisfaction and longevity, we briefly review previous work linking partners' interpersonal qualities and degree of complementarity to these relationship outcomes.

Relation of overall levels of behaviour to relationship outcomes. We first review findings based on outside observers' ratings of partners' overall levels of affiliation and dominance. Subsequently, we look at the corresponding findings based on partners' own perceptions of their overall levels.

Affiliation as rated by outside observers. One of the most robust findings to emerge from the available interpersonal theory literature has been that observers' ratings of romantic partners' overall affiliation, as shown during a variety of types of interactions including both collaboration

and disagreement, are positively related to relationship satisfaction (e.g., Cundiff, Smith, Butner, Critchfield, & Nealy-Moore, 2015; Florsheim & Moore, 2008; Knobloch-Fedders, Knobloch, Durbin, Rosen, & Critchfield, 2013; Smith et al., 2011). Of particular relevance to the present study is Thomas's (2015) work applying the joystick technique, which revealed a positive relation between partners' overall affiliation and relationship satisfaction across four separate interactions. Similarly, in a study of Emotion-Focused Couple Therapy (Makinen & Johnson, 2006), partners who expressed greater affiliative behaviours towards their partner tended to report significant improvements in relationship quality across the course of therapy, and were more successful in resolving recurring negative themes within their relationship. More broadly, the close relationships literature provides many indications that affiliative behaviours – including humour, laughter, smiles, and the like – are related to higher relationship satisfaction (e.g., Gonzaga, Keltner, Londahl, & Smith, 2001; Gottman, Coan, Carrère, & Swanson, 1998; Margolin & Wampold, 1981; Osgarby, 1998; Revenstorff, Hahlweg, Schindler, & Vogel, 1984; Schaap, 1984), whereas hostile behaviours – including criticism and non-responsiveness – are related to relationship dissatisfaction (e.g., Baucom & Epstein, 1990; N. B. Epstein & Baucom, 2002; Matthews, Wickrama, & Conger, 1996).

Within the wider close relationships literature, longitudinal studies have also examined the link between overall levels of affiliation and relationship longevity. For instance, Matthews and colleagues (1996) found that in their sample of pairs who had been married an average of 18 years, partner overall hostility and lack of warmth during interactions, as rated by outside observers, predicted with 80% accuracy which couples would divorce within a year. In a 4-year longitudinal study of romantic pairs, Gottman and Levenson (1992) found that couples whose interactions were rated by observers as showing more defensiveness, stubbornness, whining, and

disengagement were more likely to consider dissolution, experience separation, or divorce. In another longitudinal study that followed romantic pairs across three years, Buehlman and her associates (1992) found that couples who were more critical of their partner in an interaction were more likely to have divorced after the 3-year follow-up. However, in contrast to these results, research examining partners' expressions of various affective states during marital interactions has shown that unaffiliative gestures during interactions do not necessarily predict lower relationship success. For instance, Gottman and colleagues (1998) showed that displays of hostility that reflected anger in the partners *did not* predict marital dissolution across six years. This may suggest that it is not the momentary expression of negative affect that is important, but instead the overall level of interpersonal affiliation conveyed by partners.

Dominance as rated by outside observers. Although overall dominance has also emerged as a key construct in the study of romantic relationships (Huston, 1983; Markman & Notarius, 1987), its association with relationship outcomes has been somewhat unclear. Within the interpersonal theory literature, overall levels of partners' dominance during interactions have sometimes been found to be inversely related to relationship satisfaction (Cundiff et al., 2015; Knobloch-Fedders et al., 2013; Smith et al., 2011), but other times shown to have little or no such association (Florsheim & Moore, 2008; Thomas, 2015). The lack of convergence in available findings may partially stem from differences in how the construct has been operationalized and measured. For instance, in Thomas's (2015) work, the lack of significant results was related to behaviours that fell under the umbrella labelled as "dominant," whereas the negative association found in Knobloch-Fedders et al. (2013) was for behaviours that fell under the umbrella labelled as "controlling." Even within the wider close relationships literature, this construct has been defined and studied in a myriad of ways (Gray-Little & Burks, 1983), such as

summations or proportions of directive acts (e.g., Breznsnyak & Whishman, 2004; Gray-Little, 1982; Kolb & Straus, 1974), the amount of time each partner spends talking (e.g., Gray-Little, 1982), the degree to which the target being rated is attempting to persuade his or her partner (e.g., Welsh et al., 1999), the number of interruptions each person engages in during the interaction (e.g., Gray-Little, 1982), which partner's position on a given disagreement is accepted as the final solution to the problem (e.g., Gray-Little, Baucom, & Hamby, 1996; Olson & Ryder, 1970; Sprenkle & Olson, 1978), and the frequency of unwanted intrusive and negative touches each partner engages in during the studied task (e.g., Ostrov & Collins, 2007).

Expectedly, the available pool of research has produced mixed findings. For instance, in Gray-Little's (1982) study, relationships in which the husband displayed significantly higher overall dominance than the wife were associated with the highest levels of marital satisfaction.

However, in a later study, the author showed that partnerships in which both partners displayed relatively moderate levels of overall dominance during the task (i.e., the solution to the discussed problem reflected both the wife's and husband's positions equally) reported the highest marital satisfaction (Gray-Little et al., 1996).

There is almost no previous work that has examined the relation of partners' overall levels of dominance to relationship longevity. A study by Peplau (1979) found no differences in the likelihood of later break-ups between relationships in which the male showed significantly higher overall dominance, and those in which both partners showed moderate levels of dominance. This does not seem to have been followed up in subsequent research.

Affiliation as rated by the participants themselves. As was discussed earlier, romantic partners themselves do not necessarily have the same perspective on their interaction behaviours as outside observers do. For example, given their greater familiarity and shared history, partners'

ratings of overall levels of interpersonal behaviour may diverge from those obtained from outside observers, and as such be uniquely related to relationship outcomes.

Nonetheless, when participants' ratings of their own and their partners' interpersonal behaviour are collected, a positive association between overall levels of affiliation and relationship outcomes tends to emerge, similar to the findings obtained using observers' scores (e.g., Cundiff et al., 2015; Smith et al., 2009; Smith, Traupman, Uchino, & Berg, 2010). Research conducted within the broader close relationships arena has also revealed that greater overall hostility and criticalness during interactions is associated with lower relationship satisfaction (e.g., Matthews et al., 1996; Overall et al., 2015).

Also in line with findings obtained from outside observers' reports of behaviour, longitudinal work examining partners' own perceptions of behaviour has shown that higher levels of hostility (e.g., criticalness) are related to increased odds of relationship dissolution (e.g., Amato & Rogers, 1997).

Dominance as rated by the participants themselves. Within the interpersonal theory literature, studies examining partners' own ratings of overall dominance have provided more consistent evidence for its negative association with relationship satisfaction (Cundiff et al., 2015; Smith et al., 2009; Smith et al., 2010). However, work outside of this tradition has suggested, in contrast, that partners' perceptions of more submissive behaviours, such as yielding or "giving in" to the partner during lab discussions, are related to lower relationship satisfaction (e.g., Bentley, Galliher, & Ferguson, 2007).

Longitudinal work on the impact of overall levels of dominance on relationship stability is sparse. Amato and Rogers (1997) suggested that partners' perceptions of higher overall dominance may increase the likelihood of dissolution; however, they assessed dominance with

the following question: “Have you had a problem in your marriage because one of you is domineering?” Instead of measuring partners’ perceptions of overall dominance, such an item may solely tap extreme forms of dominance perceived specifically to have negatively impacted the relationship.

Summary of findings for overall levels of behaviour. To summarize, the existing work, both within the interpersonal theory tradition and the broader close relationships literature, has revealed that when partners’ interpersonal behaviours during interactions are rated by outside observers and the participants themselves, overall levels of affiliation tend to be generally associated with partners reporting higher relationship satisfaction and longevity. In contrast, the existing findings on how overall levels of dominance may influence relationship outcomes are mixed. Differences in how partners’ overall dominance during interactions is operationalized and measured contribute to the heterogeneity in the existing findings. Further work on the link between partners’ overall levels of dominance and relationship outcomes may offer potential insights into the relative lack of consensus.

Relation of complementarity to relationship outcomes.

Complementarity based on ratings provided by outside observers. In our efforts to understand interaction phenomena that may be related to relationship satisfaction, some investigators have begun to move beyond overall counts of specific behaviours to examine how the degree of complementarity between romantic partners during interactions may relate to relationship functioning. Two different levels of complementarity need to be distinguished: complementarity of overall levels, and complementarity of moment-to-moment fluctuations (entrainment). For instance, consider the degree of correspondence in affiliation for partners during an interaction. The partners’ mean levels of affiliation may be very similar, indicating

high correspondence of overall levels; nonetheless, the degree of moment-to-moment match, or coordination, in the partners' naturally occurring ebbs and flows in affiliation across the course of the interaction could be fairly low, indicating low correspondence of moment-to-moment variation. Both partners may behave very warmly throughout the task, and yet may be repeatedly missing, not responding to, or neglecting each other's momentary affiliative cues.

Two recent studies have examined the link between partners' complementarity and relationship quality. Thomas's (2015) research revealed that overall levels of correspondence (i.e., matching on mean affiliation) were significantly positively related to relationship satisfaction, but no such result was found for overall levels of reciprocity (i.e., oppositeness on mean dominance). When complementarity at the moment-to-moment level was studied, however, results showed that it was moment-to-moment reciprocity that correlated positively with relationship satisfaction, with no such result being evident for moment-to-moment correspondence. Cundiff and colleagues (2015; Study 2) examined the associations between complementarity in overall levels, but did not investigate complementarity at the moment-to-moment level. They found that observers' reports of partners' correspondence and reciprocity of overall levels were not significantly associated with reports of relationship quality.

It is worth noting that within the larger domain of close relationships research, the ways in which partners work together and influence each other has also been a focus of study. Generally, results from these investigations suggest that egalitarian couples (with similar levels of overall dominance) tend to be more satisfied than couples in which one partner is significantly more dominant than the other (e.g., Bean, Curtis, & Marcum, 1977; Blood & Wolfe, 1960; Centers, Raven, & Rodrigues, 1971; Michel, 1967; Szinovacz, 1978; Whisman & Jacobson, 1990). When subtypes of egalitarian couples are more closely examined, research shows that

“syncretic” couples, or pairs who work together and have equal say in relationship issues, tend to be more satisfied than “autonomous” couples, who evenly divide the work and decisions into “separate, but equal” domains (Blood & Wolfe, 1960; Shukla & Kapoor, 1990). Although this earlier work does not explicitly address the notion of complementarity, the findings hint at the role patterns of mutual influence and adaptation may have on relationship quality.

Complementarity based on ratings provided by the participants. Studies that index complementarity of overall levels through partners’ self ratings tend to provide somewhat more consistent support for the positive relation between complementarity and relationship quality; however, these studies are not based on specific (e.g., in-lab) interactions, but instead on participants’ more global perceptions. For instance, an investigation of interpersonal styles in romantic pairs by Markey and Markey (2007; Study 2) revealed that partners who reported higher sameness on the affiliation dimension and oppositeness on dominance (i.e., high complementarity), reported the highest levels of relationship satisfaction. McGlade (2008) also showed the same findings in her sample of dating couples. Consistent with these results, Kilmann’s (2012) research of clinically distressed couples seeking therapy for communication difficulties revealed that partners’ reports of their interpersonal styles lacked complementarity.

However, other results have been somewhat inconsistent with the foregoing patterns. A study examining interpersonal styles of married couples and divorcees found that the divorced group had greater complementarity than individuals who were still married (Tracey, Ryan, & Jaschik-Herman, 2001). Further, a study of female same-gender romantic pairs by Markey and Markey (2013) found that couples who reported greater sameness on the dominance dimension, as opposed to the theoretically expected oppositeness, tended to report higher relationship

quality. In these couples, sameness on the affiliation dimension was not significantly related to relationship quality.

The lack of convergence in findings may partially stem from the various methods through which ratings of partners' interpersonal styles were gathered. For instance, the collection of ratings for the married and divorced samples in Tracey et al. (2001) involved asking undergraduate students to rate the interpersonal styles of their own parents, and then having the students specify whether the parents were divorced or still married. In Markey and Markey (2007; Study 2), participants were asked to provide ratings of their *own* general interpersonal style, whereas in their more recent work with female same-gender pairs (Markey & Markey, 2013), participants were asked to provide ratings of the interpersonal style the romantic *partner* showed specifically towards them. The lack of uniformity in the existing findings may also be related to differences in the strategies that have been employed for calculating complementarity indices. For instance, Tracey and colleagues (2001) and McGlade (2008) applied computations that captured complementarity along both behavioural dimensions simultaneously, whereas others opted to examine the degree of correspondence and reciprocity separately (i.e., Kilmann, 2012; Markey & Markey, 2007, 2013; Smith et al., 2010).

To date, only Cundiff and colleagues (2015) have studied the association between complementarity during lab discussions using partners' own ratings and relationship quality. They found only somewhat complex and limited relations. For example, partners matching on relatively high levels of affiliation, unlike partners matching at low (hostile) levels, had higher relationship quality, but this was evident only based on a disagreement task and only for wives' reports of relationship quality (Study 2). In tandem with the lack of significant findings for predictions based on complementarity using observer reports, the authors concluded that beyond

the couples' overall levels of affiliation and dominance, complementarity may add little to the understanding of relationship quality.

Summary of findings for complementarity. In summary, work that has investigated complementarity within actual interactions of romantic pairs is limited and has primarily explored complementarity through observer reports. Although few in number, the completed studies suggest that correspondence and reciprocity may show different relations with measures of relationship satisfaction, depending on the level at which such phenomena are examined. At the overall level of complementarity, one existing study has shown a positive association of correspondence with relationship satisfaction. In contrast, at the moment-to-moment level of complementarity, the findings from the one available study have shown that reciprocity is positively associated with this relationship outcome.

The limited research investigating complementarity through the participants' own reports, as well as the general interest on the ways in which partners work together and influence each other, suggests that further work on the relation between complementarity and relationship outcomes is warranted.

Partners' quality of tracking of interpersonal behaviour. While studying partners' interpersonal behaviours and patterns of mutual influence within romantic relationships, the degree to which couples can appropriately track interpersonal behaviour as it is unfolding naturally through time may shed an interesting light on relationship outcomes. As was discussed earlier, in couples therapy, a common theme are the ways in which the partners tend to misinterpret variations in each other's behaviours during their interactions.

The earliest attempts to capture partners' momentary impressions in the lab were conducted live. Specifically, as couples discussed various topics, they were instructed to engage

in a “talk table” exercise, in which they made use of a toggle switch (5-point dimension from positive to negative) to code, as a listener, the impact of each statement that was received from the other, and as the speaker, the intent of one’s communication (Gottman et al., 1976). Although this work illuminated the importance of studying the potential meanings married couples made regarding their own and their spouse’s unfolding actions, the quality of impact-message tracking was not compared to any actual benchmark. In addition, concerns were raised regarding the turn-taking and the need for individuals to simultaneously manipulate the toggle switch and actively participate in the interaction. The talk table required partners to attend to their interaction in a manner that was believed to be fairly unnatural and intrusive and as such had the potential to alter the nature of the conversations (Gottman & Levenson, 1985; Weiss, 1989). These observations and critiques ultimately led to the development of the video-recall procedures.

Although partners’ momentary ratings obtained from video-recall procedures are typically averaged to create aggregate scores, some work has assessed whether partners’ ability to appropriately track momentary cognitions and emotions is associated with relationship satisfaction. Often, such work falls under the umbrella termed “empathic accuracy,” which refers to the extent to which individuals are able to accurately read their partner’s cognitive and affective states (e.g., Ickes, 1993; Ickes, Stinson, Bissonnette, & Garcia, 1990). Studies on empathic accuracy, in which individuals’ momentary perceptions of the partner are compared against the partner’s own momentary ratings, have shown that persons who are more accurate in tracking changes across the course of an interaction tend to report higher relationship satisfaction (e.g., Haugen, Welsh, & McNulty, 2008).

Nonetheless, it is important to appreciate the difference between individuals’ ability to attend to the partners’ fluctuations in affect or cognitions across a few segments of the video-

recorded interaction, and their ability to track key interpersonal behaviours continuously across time, for both the self and the partner. As was described earlier, the ability of partners to appropriately tune into the behavioural variations in both affiliation and dominance would allow each person to adjust and respond appropriately within the course of the interaction. In turn, such repeated appropriate adjustments should lead partners to experience greater satisfaction. Therefore, in our work, we explored the potential links between the quality of moment-to-moment tracking for each dyad with their reported relationship satisfaction and longevity.

Aims of Upcoming Analyses and Research Questions

To look at the possible relation of this study's interaction indices (i.e., overall levels, complementarity, and tracking ability) to relationship outcomes, we posed the following hypotheses, couched in terms of relationship satisfaction:

- (1) Are partners with higher overall levels of affiliation (according to joystick-derived indices obtained from outside observers) more satisfied with their relationship? Is there a similar relation for dominance?
- (2) Another set of hypotheses has to do with the association of correspondence and reciprocity with relationship satisfaction. Based on the data obtained from outside observers, there are two distinct questions:
 - a. Are partners with higher correspondence and reciprocity of overall (mean) levels more satisfied with their relationship?
 - b. Are partners with greater moment-to-moment correspondence and reciprocity more satisfied with their relationship?
- (3) Do the two foregoing hypotheses also apply to the ratings made by the participants, reflecting their own perceptions of their interaction?

(4) Finally, does couples' ability to correctly track moment-to-moment affiliation and dominance relate positively to relationship satisfaction?

The same set of research questions can be asked for relationship longevity.

Method for Obtaining Joystick Indices for Each Dyad

Indices of complementarity of overall levels. For the calculation of complementarity of overall levels of interpersonal behaviour, parallel procedures were employed for the data obtained from outside observers and the participants. Specifically, for the joystick-derived means obtained from outside observers, the following formulae were applied to quantify the overall degree of correspondence and reciprocity, respectively, for each romantic pair:

$$\text{Correspondence} = 1000 - 0.5 * | \text{Mean}_{\text{female's affiliation}} - \text{Mean}_{\text{male's affiliation}} |$$

$$\text{Reciprocity} = 1000 - 0.5 * | \text{Mean}_{\text{female's dominance}} + \text{Mean}_{\text{male's dominance}} |$$

In these equations, *Mean_{female's affiliation}* and *Mean_{male's affiliation}* represent the joystick-derived means for the female's and male's affiliation, whereas *Mean_{female's dominance}* and *Mean_{male's dominance}* represent the joystick-derived means for the female's and male's dominance, respectively. Higher scores indicate greater correspondence and greater reciprocity, varying from a maximum possible score of 1000 to a minimum possible score of zero. The higher the score on correspondence, the greater the matching for a particular romantic pair in their overall levels of affiliation during the interaction, as rated by outside observers. Similarly, the higher the score on reciprocity, the more opposite their overall levels of dominance during the task, as rated by the observers.

For the joystick-derived means obtained from the participants, the same approach to the calculation of complementarity of overall levels was employed. For each romantic pair, the

following four variables were generated to index the degree of correspondence and reciprocity in overall levels:

1. Correspondence based on the affiliation means of the female's perceptions
2. Reciprocity based on the dominance means of the female's perceptions
3. Correspondence based on the affiliation means of the male's perceptions
4. Reciprocity based on the dominance means of the male's perceptions

Indices of moment-to-moment complementarity. To capture the degree of complementarity at the more nuanced, moment-to-moment level, separate sets of joystick indices were calculated for the observers' and the participants' time-series data. As a first step, we removed overall linear trends from each univariate time-series of affiliation and dominance for all participants using regression analysis. This was done in order to remove the possibility of similarity of linear slopes (e.g., the degree to which partners are becoming increasingly more affiliative overall, across time), a phenomenon considered to be entirely separate from moment-to-moment complementarity (e.g., the degree of patterning, or coordination, in moment-to-moment variation between partners' levels of affiliation).

Following the removal of linear trends, the overall degree of relatedness in partners' bivariate time series was quantified by computing correlations over time across the detrended data (e.g., the moment-to-moment correlation between the female's affiliation and the male's affiliation). Measures of moment-to-moment correspondence and reciprocity were computed using both the observers' data, and using each participant's data for the self and partner (e.g., the female's ratings of her own affiliation with the female's ratings of the male's affiliation).

Indices of participants' moment-to-moment tracking ability. Two additional indices were calculated to capture the *general* degree of moment-to-moment tracking ability for each

dyad. Specifically, the female's and male's abilities to track moment-to-moment affiliation, for both the self and the partner, were aggregated to create a dyadic index of affiliation tracking ability. This index represented the mean of four correlations: the male's perception of self correlated with the corresponding time-series data from outside observers, the male's perception of his partner correlated with the data from outside observers, the female's perception of self correlated with the data from outside observers, and the female's perception of her partner correlated with the data from outside observers. In the same manner, the female's and male's ability to track moment-to-moment dominance, for both the self and partner, was also aggregated to create an overall general index of dominance tracking ability. These indices provided us with information regarding the degree to which each romantic pair was generally able to capture the nuanced sequences of variations in interpersonal behaviour that were seen by outside observers.

Index of relationship satisfaction. In the analyses that follow, the individual relationship satisfaction scores for the male and female were averaged across the partners to create an overall score of relationship satisfaction for each romantic pair. The mean of the males' ($M = 4.33$, $SD = 0.62$) and females' ($M = 4.38$, $SD = 0.53$) relationship satisfaction scores did not significantly differ, $t(58) = 0.86$, $p = .39$, and the partners' scores were strongly positively related, $r = .64$, $p < .001$.

Index of relationship longevity. Finally, in order to quantify relationship longevity, each dyad was categorized based on the information provided to the researcher regarding the current state of the relationship at follow-ups occurring at exactly 6 months, 1 year, and 2 years following the initial lab study. Via email correspondence, one partner was contacted and asked whether he or she was still currently involved romantically with the partner, or whether the relationship had dissolved. At the 6-month follow-up, all contacted participants provided a

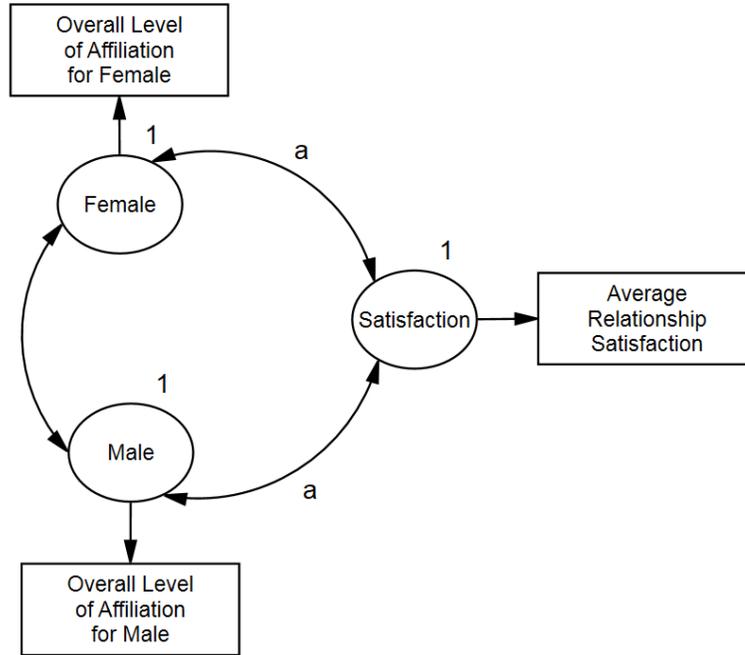
response regarding the status of their relationship. At the 1-year follow-up, one dyad provided no response, and at the 2-year follow-up, one additional dyad was lost. In total, at 2 years following the study, information regarding relationship longevity was obtained from 57 couples.

To explore the relation between the joystick-derived indices and the length of time partners remained together following their lab interaction, each romantic pair was categorized into one of three groups. Couples who reported that the relationship had dissolved by six months after completing the lab study fell into the “Low” longevity category ($n = 11$); pairs whose relationship had dissolved after six months, but prior to two years following the lab study, fell into the “Moderate” longevity category ($n = 8$); and couples who remained together two years following their participation in the study were included in the “High” longevity category ($n = 38$).

Results

To evaluate the strength of the association between the observers’ and participants’ joystick indices with partners’ reported relationship satisfaction, correlational analyses were conducted. In line with our analytic approach in earlier chapters, correlations were computed in the program Amos 23.0 (Arbuckle, 2014), in order to collapse across gender. Figure 16 illustrates the approach applied to the calculation of the correlation for the overall levels of affiliation for the female and male, based on the outside observers’ data, with the participants’ averaged relationship satisfaction. Importantly, although the two associations have been set equal in order to collapse across gender, the presence of statistically significant gender differences would be indicated by significant lack of fit. However, in all cases there were no statistically significant gender differences (all p -values $\geq .05$).

Figure 16. Model depicting correlation for overall levels of affiliation, based on the observers' data, with partners' average relationship satisfaction.



Relationship satisfaction. Table 8 presents the correlations of the observers' joystick indices with partners' relationship satisfaction. Overall levels of affiliation, as rated by outside observers, were strongly positively associated with relationship satisfaction; that is, the more affiliative the partners were overall during the interaction, as assessed by outside observers, the more satisfied they tended to be. Further, outside observers' ratings of overall levels of dominance and overall-level reciprocity did not correlate significantly with relationship satisfaction (both p 's > .05). Although the correlation for overall-level correspondence was positive and relatively larger, the result did not reach statistical significance. In regards to moment-to-moment complementarity, our results indicate that moment-to-moment reciprocity (i.e., the degree to which partners' variations in dominance showed oppositeness across the course of the interaction) was positively correlated with average relationship satisfaction.

Table 8

Correlations of Observers' Joystick Indices with Relationship Satisfaction

Interpersonal Index	Relationship Satisfaction
<i>Overall Levels</i>	
Affiliation	.23*
Dominance	.06
<i>Complementarity of Overall Levels</i>	
Correspondence	.20
Reciprocity	.05
<i>Moment-to-Moment Complementarity</i>	
Correspondence	.16
Reciprocity ¹	.26*

Notes.

All correlations collapse across gender.

¹ For ease of interpretation, the obtained value was multiplied by -1 to yield a positive score.

* $p < .05$

Table 9 presents the correlations of the participants' joystick indices. Although the ratings of overall levels of affiliation revealed the same pattern as the result for outside observers' ratings, the strength of the relationships was weaker and not significant. In addition, the correlations for dominance, for both self and partner, were not substantial (both p 's $> .05$). Further, we found that correspondence of overall levels was positively associated with relationship satisfaction. This finding suggests that when the joystick-derived means provided by the participants themselves are examined, partners whose overall levels of affiliation are closely matching, tend to report higher relationship satisfaction. The correlation for reciprocity of overall levels was not substantial ($p > .05$). In regards to moment-to-moment complementarity, our results showed that moment-to-moment reciprocity, as rated by the participants, was positively

correlated with average relationship satisfaction. Therefore, according to both outsiders and insiders, partners whose dominance levels showed recurrent coordination across time (e.g., when one partner became more dominant, the other became more submissive, and vice versa), tended to report higher relationship satisfaction. This result suggests that being able to pass control back and forth skillfully throughout the course of an interaction, is associated with higher relationship satisfaction. The correlations for moment-to-moment correspondence, for both outside observers and participants, were not significant (both p 's > .05).

Table 9

Correlations of Participants' Joystick Indices with Relationship Satisfaction

Interpersonal Index	Relationship Satisfaction
<i>Overall Levels</i>	
Affiliation	
Self	.16
Partner	.13
Dominance	
Self	-.01
Partner	.08
<i>Complementarity of Overall Levels</i>	
Correspondence	.20*
Reciprocity	.04
<i>Moment-to-Moment Complementarity</i>	
Correspondence	.14
Reciprocity ¹	.21*

Notes.

All correlations collapse across gender.

¹ For ease of interpretation, the obtained value was multiplied by -1 to yield a positive score.

* $p < .05$

Finally, participants' ability to track dominance continuously throughout the interaction was positively correlated with relationship satisfaction, $r = .31, p < .01$, which indicates that satisfied couples were consistently superior at detecting minor variations in dominance in targets across time. Surprisingly, the correlation for affiliation was not substantial, $r = .00, p > .05$.

Relationship longevity. Table 10 presents the mean observers' scores for each relationship longevity category, along with the F ratios from separate one-way analyses of variance (ANOVA) on scores for each joystick index. The results for the one-way ANOVA's based on the participants' scores are shown in Table 11. All F values were non-significant (all p 's $> .05$). Table 10 reveals one trend: partners who stayed together for a longer period of time may have had higher quality of tracking scores for moment-to-moment affiliation ($p = .08$).

Table 10

Means of Observers' Joystick Indices for Different Levels of Relationship Longevity

	Relationship Longevity			<i>F</i>
	Low	Moderate	High	
<i>Overall Levels</i>				
Affiliation				
Females	220.88	197.15	233.76	1.26
Males	232.88	189.44	201.21	1.25
Dominance				
Females	-101.81	-35.13	-83.05	0.38
Males	-112.61	-212.57	-127.80	0.74
<i>Complementarity of Overall Levels</i>				
Correspondence	974.48	973.95	972.53	0.35
Reciprocity	885.18	857.46	875.97	0.20
<i>Moment-to-Moment Complementarity</i>				
Correspondence	.51	.43	.49	0.54
Reciprocity	.42	.40	.44	0.13
<i>Quality of Moment-to-Moment Tracking</i>				
Affiliation	.32	.46	.41	2.70
Dominance	.60	.58	.63	0.97

Note. All *F* values are non-significant.

Table 11

Means of Participants' Joystick Indices for Different Levels of Relationship Longevity

	Relationship Longevity			<i>F</i>
	Low	Moderate	High	
<i>Overall Levels</i>				
Affiliation				
Female's Self-Rating	178.39	96.84	221.40	1.75
Male's Self-Rating	101.76	171.58	176.77	1.11
Female's Rating of Partner	187.93	185.80	186.40	0.00
Male's Rating of Partner	152.51	145.32	248.55	2.19
Dominance				
Female's Self-Rating	-3.10	188.14	65.42	1.59
Male's Self-Rating	62.80	-39.79	27.67	0.49
Female's Rating of Partner	-17.98	-68.92	72.03	2.35
Male's Rating of Partner	56.71	-40.76	81.08	1.75
<i>Complementarity of Overall Levels</i>				
Correspondence				
Female's Rating	951.74	947.31	946.57	0.06
Male's Rating	953.91	918.30	951.69	1.62
Reciprocity				
Female's Rating	878.12	912.48	886.52	0.54
Male's Rating	935.65	908.04	909.44	0.41
<i>Moment-to-Moment Complementarity</i>				
Correspondence				
Female's Rating	.22	.22	.23	0.01
Male's Rating	.23	.14	.22	0.49
Reciprocity				
Female's Rating	.42	.35	.43	0.56
Male's Rating	.45	.48	.48	0.09

Note. All *F* values are non-significant.

Summary of Findings

This chapter addressed four main questions regarding the relation of overall levels, complementarity, and moment-to-moment tracking ability, to two separate relationship outcomes.

The correlations of relationship satisfaction with overall levels, complementarity of overall levels, and with moment-to-moment complementarity were very similar across observers and participants. Couples who showed higher overall affiliation levels according to observers reported significantly greater relationship satisfaction; however, there was no such substantial relationship for overall levels of dominance. Although the same pattern was found for participant ratings of overall levels, the strength of the relationships was weaker and none was statistically significant. This difference in the strength of the relationship for observers and participant ratings may be due to the lower reliability of participant ratings, which are all based on a single rater, rather than averaged across five raters. Furthermore, the fact that overall affiliation levels during the interaction were more predictive of relationship satisfaction than overall dominance levels accords reasonably well with past findings about overall levels described earlier which have consistently underscored the importance of the expression of affiliative gestures in romantic relationships (e.g., Cundiff et al., 2015; Knobloch-Fedders et al., 2013; Thomas, 2015). In line with Thomas's (2015) findings employing the joystick technique with romantic pairs, the correlation between the partners' overall dominance levels and relationship satisfaction was not substantial. Assuming that partners interacting with each other continually negotiate how much in charge or control each person will be, as interpersonal researchers assume, our results highlight the importance of moving beyond investigations of people's overall levels of

dominance, towards studying how partners' behaviours may be fitting together and influencing each other within these exchanges.

Our findings for the degree of fit at the overall level revealed that partners who showed more correspondence tended to be more satisfied with their relationship. Although the point estimate was the same for both observers and participants, it was only statistically significant for participant ratings. The correlational model employed for the participants' ratings, akin to the model of overall levels presented in Figure 16, may have provided greater power for the detection of significant associations because both female and male participant scores were utilized. In contrast to the results for affiliation, according to both observers and participants, there was no substantial relationship between reciprocity in overall levels and relationship satisfaction. This result accords with earlier work showing a lack of a strong relation of partners' oppositeness in dominance at the overall level to relationship quality (Cundiff et al., 2015; Thomas, 2015). These results suggest that the level of fit, at least when individuals' overall behavioural scores are under study, contributes to relationship quality more when partners' are showing greater sameness on affiliation than greater oppositeness on dominance.

However, in the study of moment-to-moment complementarity, partners showing higher moment-to-moment reciprocity were more satisfied with their relationships according to both observers and participants. Although there was a positive relationship between moment-to-moment correspondence and relationship satisfaction according to both observers and participants, this relationship was not statistically significant. Both results are consistent with the findings obtained by Thomas (2015), who showed a positive association between reciprocity at the moment-to-moment level and satisfaction, and a non-significant relation for correspondence. Our findings suggest that on this micro level of analysis, the more satisfied pairs more aptly

negotiated how much in charge each partner was from one moment to the next while working on the specified task.

These similarities in correlations across observers and participants suggest that ratings of partners' key interpersonal behaviours, at least during minimally threatening interactions, may be related to relationship satisfaction in similar ways across reports from both relationship "insiders" and "outsiders." The results raise the question whether these similarities would surface in investigations in which partners are asked to provide ratings during more conflictual interactions, or tasks in which a serious relationship threat is the main topic of discussion.

The last index – partners' ability to correctly track moment-to-moment behaviour – addressed a central theme of interpersonal theory. Interpersonal theorists propose that effective and satisfying exchanges with others are related to a person's ability to accurately perceive the ongoing behaviour of the self and other (Kiesler, 1996). Difficulties in making evaluations may set partners up for experiencing unwanted relationship outcomes because inappropriate tracking may produce unwanted behaviour from the other, and subsequently produce a range of consequences that are undesired. Indeed, Kiesler (1996) argued that the maladjusted perceiver operates from selective inattention during interpersonal exchanges and tends to neglect "the ground of his or her experience" (p. 127). In line with this proposition, our results showed a significant relation with relationship satisfaction for tracking of moment-to-moment dominance. Thus, romantic pairs who were better able to accurately detect subtle variations in dominance in targets across the course of the interaction reported being more satisfied. Significant findings for affiliation may be more likely to emerge during more conflictual or competitive interactions when the stakes are perceived to be higher, or during more ambiguous circumstances where wider room for interpretation is available.

Finally, in our investigations with relationship longevity, one trend for tracking of moment-to-moment affiliation emerged, and hinted that pairs who tended to remain together for a longer period of time were more accurately able to track nuanced changes in the targets' affiliation during the lab interaction. This trend suggests the existence of relatively poor tracking of moment-to-moment affiliation for those whom relationship break-ups are more imminent. In our analyses, we found no evidence that overall levels of interpersonal behaviour and complementarity, as rated by both outside observers and the participants, were related to relationship longevity.

CHAPTER VI

GENERAL DISCUSSION

The main purpose of the present study was to investigate romantic partners' perceptions regarding the natural ebb and flow of interpersonal behaviour that occurs during an interpersonal exchange. Most previous work about perceptions in romantic relationships has used paper-and-pencil measures, which ignore the important dynamics unfolding in partners' behaviours over time. Therefore, in the present work, a continuous joystick-based assessment technique was used to capture perceptions of the natural ebb and flow of behaviours during an interaction. Using interpersonal theory, this joystick-based approach not only enabled investigation of partners' moment-to-moment tracking of interpersonal behaviour in comparison to outside observers, but mean-level biases, as well. The current study also addressed how individual differences in both molar and granular types of perceptions were associated with important relationship outcomes.

Summary of Main Findings

Overall levels of interpersonal behaviour. The first research question, which addressed the degree of bias and understanding in partners' perceptions of overall levels of interpersonal behaviour (focus of Chapter 3), investigated several predictors of participants' perceptions of overall levels of interpersonal behaviour. The most consistent finding in these analyses emerged for shared or valid understanding of overall or averaged levels of affiliation and dominance. Specifically, for all ratings of behaviour for both the self and partner, participants' perceptions were strongly in agreement with what other raters were reporting (i.e., one's partner, or outside observers). These findings align with earlier work investigating other general traits and behaviours, such as overall interpersonal quality, closeness, and conflict resolution types (Kenny & Acitelli, 2001; Murray et al., 1996a, 1996b; Segrin et al., 2009). Such valid perceptions likely

serve a vital function in romantic relationships – namely, allowing partners to meet each other’s needs and anticipate behaviours which, in turn, promotes a sense of predictability and security for each perceiver (Kenny & Acitelli, 2001; Swann et al., 1994).

However, analyses of overall levels also revealed the presence of several types of bias in the participants’ perceptions, particularly when they were asked to provide ratings of the partner’s behaviour. Extending previous work on the positivity and projection biases (e.g., Conley et al., 2009; Kenny & Acitelli, 2001; Murray et al., 1996a, 1996b), the current study revealed the presence of both phenomena, and identified several other possible types of bias, of which one (i.e., a bias based on the perceiver’s behaviour) emerged as an important predictor for perceptions of the partner’s overall level of dominance. This unique finding accords with the concept of reciprocity because the partner was presumed to have acted in a manner more opposite to one’s own degree of dominance than was actually true. Therefore, it is evident that the predictions outlined in interpersonal theory offer unique avenues for further exploration regarding the ways in which persons arrive at their general impressions of each other.

Furthermore, the study of partners’ perceptions of overall levels showed that the type of approach participants were asked to employ in order to provide ratings was important to consider. For instance, when individuals were asked to make ratings using paper-and-pencil measures, evidence for both the positivity and projection bias emerged in perceptions of the partner’s overall level of affiliation. However, these biases were absent when individuals were required to utilize the joystick technique to provide ratings of behaviour. The results suggest that the joystick approach may orient users to attend to interpersonal behaviour differently from what is more habitual, which in turn might lead partners to abandon certain types of biases they might generally hold. For instance, the projection bias may not be as prevalent when individuals are

asked to provide ratings using the joystick technique because the method requires that partners pay close attention to subtle changes in behaviour across time for each target. Therefore, the technique may help correct monolithic impressions and global biases by requiring the rater to attend to specific behaviours that the target is actually expressing.

Moment-to-moment interpersonal behaviour. Beyond the study of overall levels, our second and third overarching research questions addressed how well participants were able to track their own and their partner's moment-to-moment interpersonal behaviours in comparison to outside observers, and the range of individual differences present in the participants' abilities (focus of Chapter 4). These investigations provided far richer material regarding the ways in which partners track subtle nuances and variations in behaviour across time. In daily life, such moment-to-moment changing perceptions serve as guides for the types of behavioural responses each interactant may provide during interpersonal exchanges. The extent to which each person is able to detect such continuously changing subtleties in behaviour, instead of just how affiliative or dominant a target person tends to be overall, may play a key role in relationship functioning.

The results revealed that participants were able to reliably track continuous changes in both their own interactional behaviour, and the behaviour of their partner. Nonetheless, when their abilities were compared to those of an outside observer, it was evident that outside raters were outperforming the participant raters in the moment-to-moment coding task. Interestingly, all perceivers performed better in rating dominance across the course of the interaction than affiliation. Subsequently, we set out to explain the participants' lower reliabilities by examining the extent to which partners possessed insider knowledge regarding each other's ongoing interpersonal behaviours. To be specific, given the partners' shared history, we hypothesized that pairs might possess idiosyncratic information regarding the interpersonal behaviour of both the

self and other, information that an outside observer would not be privy to. If this hypothesis was correct, such idiosyncrasies in perceptions would lead partners to agree more strongly in their ratings of each other's continuous behaviour, than the level of agreement that would be expected to emerge between two independent observers.

We did not find evidence to support this hypothesis. Specifically, the findings showed that participants were not picking up on privately understood behaviour that outside observers were unable to detect. Our results highlight the importance of using outside observers in coding tasks where participants' behaviours are assessed from one moment to the next. The chief advantage of employing independent observers for coding tasks is that additional raters may be obtained in order to boost indices of reliability. Within exclusively dating romantic relationships, partners' ratings may be averaged solely across two raters (i.e., the female partner and the male partner) in order to improve reliability indices.

Most importantly, the investigation of moment-to-moment tracking ability allowed us to address the degree of individual differences present in participants' moment-to-moment tracking scores. Large individual differences emerged for ratings of both dominance and affiliation. Specifically, certain partners were quite skilled at tuning into the continuous nuanced behavioural shifts for the self and other, whereas other partners showed difficulty in appropriately tracking these ongoing variations during the interpersonal exchange. Our results align with existing research on interpersonal sensitivity (IS), which suggests that perceiving others' interpersonal behaviour is a skill that tends to vary across individuals (Hall, Andrzejewski, & Yopchick, 2009). Although this broad construct differs from our index of moment-to-moment tracking ability because it encompasses both the ability to perceive others accurately and interact with others using interpersonally appropriate behaviour (Bernieri, 2001),

the findings from our work and IS research overlap by highlighting the large variability that exists in individuals' abilities to perceive subtleties in others' behaviour. We also extend the IS work by noting that this type of social skill also varies from person to person when the target to be perceived is the self.

Perceptions of interpersonal behaviour and relationship outcomes. Following the establishment of adequate reliability for participants' moment-to-moment ratings, we turned to addressing the fourth research question, which investigated the various ways in which ratings obtained by both types of raters (i.e., outside observers and the participants) were associated with important relationship outcomes (focus of Chapter 5). For this investigation, we examined partners' overall levels of behaviour, complementarity on two separate levels of behaviour, and moment-to-moment tracking ability.

One of the most important findings to emerge from the analyses was that the participants' and observers' ratings were very similar. First, we found that partners who displayed greater affiliation overall during the interaction, as rated by outside observers, tended to report higher relationship satisfaction. Although the same pattern was evident for participants' ratings, the correlations did not reach statistical significance. The results are in line with earlier research which has demonstrated positive associations between the expression of affiliative acts and relationship outcomes (e.g., Cundiff et al., 2015; Smith et al., 2011; Thomas, 2015).

Second, in the examination of how partners' behaviours may fit together, results revealed that partners who were more similar in affiliation at the overall level, as rated by the participants themselves, tended to report greater satisfaction. Although the point estimate was identical for the ratings made by outside observers, the result did not reach statistical significance. These

results support the notion of correspondence and show that pairs whose overall levels of affiliation are more closely matching, tend to report more positive relationship outcomes.

Third, the investigation of how partners' behaviours influence each other on a moment-by-moment basis demonstrated that pairs who were able to more skillfully pass control back and forth throughout the course of the interaction, as rated by both types of coders, tended to be more satisfied. These results are consistent with the notion of reciprocity in interpersonal theory, and highlight the importance of moving beyond the study of overall levels of behaviour towards explorations in which the actual interpersonal process between the romantic pair is observed continually, quantified appropriately, and related to relationship outcomes.

Fourth, we found that couples who were able to more aptly track the moment-to-moment changes in dominance across time tended to be more satisfied. The results align with arguments outlined in interpersonal theory, which stress the importance that accurate perceptions have on relationship outcomes (e.g., Kiesler, 1996). Such results also align with existing work on empathic accuracy within romantic relationships, which has shown that the ability to tune into the other's momentary cognitions and affective states is related to positive relationship outcomes (Haugen et al., 2008). In addition, our results lend support for the benefits of interpersonal sensitivity, which have been discussed within the broader social relationships literature. For instance, research has shown that persons with higher overall interpersonal sensitivity are more empathic and socially competent, and less rigid, anxious, and depressed (Hall et al., 2009). Our work adds to these existing literatures by demonstrating that the skill of appropriately perceiving interpersonal behaviour on a more granular level of analysis, a level that is also sensitive to the temporal dimension, may be just as important for relationship outcomes as possessing the ability to perceive how others behave more generally. Furthermore, this temporally-oriented perceptual

skill and its positive association with relationship satisfaction also extends to individuals' perceptions of their own ongoing behaviour.

Although the associations with relationship longevity did not produce substantial findings, one trend for the tracking of moment-to-moment affiliation did emerge, and hinted that pairs who stayed together for a longer period of time tended to be better able to track subtleties in affiliation during the lab task.

Implications

The current project contributes to the existing literature on romantic partners' perceptions of interpersonal behaviour in several ways. Overall, our findings suggest that a great deal of valuable information may be extracted by asking partners to provide ratings of behaviour as it is unfolding in real time. Our work highlights the importance of including measures of both overall levels of behaviour and more sensitive time-dependent levels of measurement, as each partner plays a key role in the intricate interpersonal dance that is unfolding naturally across time.

Investigating time-dependent phenomena enabled us to examine the presence of idiosyncratic patterns in couples' communication, which may be as important to explore as the frequency of specific types of behaviours that each partner engages in during an exchange. The findings also suggest that it may be fruitful to discuss the unique role *each* person's respective interpersonal behaviour, and their own perceptions of both the self and other, play in managing interpersonal interactions. Although the findings from the current work showed that observer and participant ratings were related to relationship outcomes in similar ways, it is conceivable that other romantic samples, or other types of interactions, may produce vastly different results across the two types of raters. Indeed, the literature on couples therapy emphasizes the importance of examining each partner's perceptions of recurrently occurring patterns in behaviour during actual

interactions (e.g., Johnson & Greenberg, 1985; Stuart, 1969; Thibaut & Kelley, 1959). In the available research, such explorations are seldom actually conducted. The call from clinicians for more research on repetitive interactional patterns also indicates that individuals' overall levels of behaviour may present a far limited picture of the dynamics present within intimate relationships. For instance, it is plausible that some partners can quite skillfully manage to behave very warmly towards one another within their daily exchanges, and yet engage in specific interpersonal cyclical dynamics that both individuals find highly unrewarding.

In line with the literature on couples therapy that stresses the importance of examining interactional cycles and focusing on what each partner is doing in the here and now, analogous work exists on the subject of happiness, and writings on effective therapeutic communication and change processes within treatment. For instance, texts such as *Thinking Fast and Slow* (Kahneman, 2011), and *Therapeutic Communication* (Wachtel, 2011) stress the importance of honing the skill of attending to the present moment and perceiving each experience as it is unfolding. In these writings, the prescription advanced for the attainment of contentment or the ignition required for change is to notice small changes, or to find pleasure in seeing or doing small tasks. For instance, in work on therapeutic change processes, Wachtel (2011) remarks the following:

The therapist must collaborate actively to help the patient hold on to the elusive changes emerging in the therapeutic work and to help the patient notice and affirm them...Steps in the right direction must be underlined if they are not to be erased. (pp. 180-181)

The joystick technique allows partners to pay closer attention to what is happening in their own unique here and now experience. The ability to perceive subtleties and nuances in behaviour during interpersonal exchanges with one's partner, particularly for behaviours that are

more highly desired, may allow individuals to amplify expressions of desired behaviours and, in turn, make strides towards creating more positive outcomes within their relationship.

Finally, given that bias tends to emerge at the global level of a person's perceptual process, and in light of the call from clinicians who conduct therapy with couples to examine patterns of interpersonal behaviour within treatment, therapy with pairs may be augmented by the use of the continuous joystick approach to explore the nature of partners' perceptions, and how they may (or may not) change throughout the course of treatment. For instance, partners may be asked to code unusual points during an exchange with their significant other in order to capture each person's perceptions of the unique process that is unfolding across time, and to open a dialogue regarding the similarities and potential discrepancies between the partners' views (Pincus et al., 2014). Such exercises may permit partners to more clearly and precisely identify instances of specific examples of behaviours that they may be misperceiving or not attending to. In addition, these exercises would allow partners to identify distinct regularly occurring behavioural patterns, which may aid in fostering greater awareness and understanding about the ways in which such patterns impact the pair's daily ongoing exchanges. In conjunction with explorations of both cognitions and emotions during therapeutic sessions, partners may be guided by the therapist towards greater understanding regarding how their own unique interpersonal temporal dynamics may be influencing the thought processes and affective states of both individuals during their exchanges. Capturing critical points and patterns in a non-threatening therapeutic setting may serve as a potential vehicle for change. Certainly, care would need to go into when and how the technique would be presented to the pair, as well as the overarching goals of such an exercise within the context of therapy.

Limitations

Several limitations should be considered in interpreting the results from this research. First, due to the relatively small sample size, it is possible that some important results were not detected due to a lack of statistical power. Second, our young sample of primarily undergraduate romantic pairs were exclusively dating for fairly short durations, and endorsed relatively high relationship satisfaction. Third, although partners' perceptions of moment-to-moment behaviour were obtained immediately after their interaction, they could be considered to be somewhat retrospective. However, requiring participants to complete the rating task while simultaneously engaging in an interaction may be impractical and would raise its own issues of validity. Finally, in the current work, only information regarding how partners perceived each other was obtained. Therefore, we do not know whether their perceptions of other individuals, such as close friends, strangers, or other romantic partners, would be similar to those obtained in the current study.

Future Directions

The current research opens several exciting lines of exploration that may further advance our understanding of interpersonal processes within close relationships. First, given the cross-sectional design of the study, future longitudinal research would be beneficial in allowing us to measure the stability of overall levels and across-time patterns of interpersonal behaviour. Being able to track partners' behaviours in numerous interactions and over several occasions would be an important step in understanding how specific communication patterns emerge, how they fluctuate across time, how they continue to persist, and how they may eventually fade.

Second, apart from the study of partners' perceptions during non-threatening neutral interactions, the joystick technique may be used to study perceptual processes during different types of tasks, such as conflict discussions. Conflictual interactions have been found to decrease

people's bodily synchrony, or the extent to which they show similar patterns of speech and movement as they interact with one another (Paxton & Dale, 2013). Greater bodily synchrony has been associated with several benefits to interactants, such as greater dyadic task focus (Richardson, Dale, & Tomlinson, 2009), and mutual comprehension (Brennan, Galati, & Kuhlen, 2010; Shockley, Richardson, & Dale, 2009), which facilitate communication. The ability to appropriately track changes in interpersonal behaviour of both the self and partner during conflictual exchanges, for instance, should be especially important for relationship outcomes because appropriate "tuning in" during disagreements would allow individuals to respond adaptively in the course of the interaction. High moment-to-moment tracking ability during conflict may also enable more adaptive inhibitory responding which may help nudge disagreements onto more productive paths, rather than allowing the disagreement to escalate towards a more negative or destructive direction. In the romantic relationship literature, this process is referred to as *accommodation* (e.g., Rusbult et al., 1991, 1986). Indeed, researchers have found that if destructive behaviours are met with constructive responses, this accommodation is strongly related to relationship functioning and satisfaction (Rusbult, Yovetich, & Verette, 1997). In contrast, research has found that dissatisfied couples tend to spiral into a chain of reciprocated negativity (Finkel & Campbell, 2001). This chain of reciprocated negativity is conceptually similar to the maladaptive transaction cycle described earlier (Kiesler, 1996).

Third, research on more distressed pairs will be informative for better understanding how partners arrive at perceptions of overall levels of behaviour and how they may perceive the ongoing behaviour of both the self and the other. Within highly conflictual relationships, the presence of distress could indicate that partners are highly invested in holding on to a specific

type of biased view of the self and other. As a result, expressed behaviours from the partner, for instance, that are contrary to what the perceiver generally expects to receive (e.g., partner expressing warmth instead of the generally expected hostile response), would be viewed as being unusual and problematic. Although this hypothesis implies that distressed partners are motivated to hold on to such views, the paradoxical nature of this situation is revealed by the observation that the distressed pair is creating the very unsatisfying conditions they find themselves in. For instance, the female may desire to be more satisfied, but may also show an investment in perceiving her partner in the general way she tends to perceive him. As a result, irrespective of the behaviour her partner actually shows during an exchange, he is viewed through the filter the female is invested in applying when she is asked to provide her perceptions of him. Therefore, no change in behaviour may be expected to occur because she is, in a sense, “stuck” in viewing him a particular way instead of seeing how he is actually behaving in the moment. For distressed couples (as opposed to nondistressed pairs), we propose that understanding at the overall level and moment-to-moment tracking ability would be weaker, whereas biases, such as the trait-based consistency bias at the overall level, might be quite strong. For nondistressed couples (as opposed to nondistressed pairs), understanding at the overall level of behaviour and moment-to-moment tracking ability would be expected to be stronger, and a positivity bias at the overall level might be present.

Fourth, although the current work explored several important behavioural phenomena, other phenomena may be captured using the joystick technique, which offer exciting opportunities towards understanding what actually transpires during couples’ interactions. For instance, partners’ levels of overall variability in affiliation and dominance, obtained either through partners’ own continuous ratings or the ratings provided by outside observers, may be

examined. The extraction of the degree of overall intraindividual variability could answer the following research question: “What impact does the degree of overall variability for a person’s ongoing behaviour have on relationship outcomes, such as relationship satisfaction?” For instance, partners who are able to express a less variable, highly consistent moderate level of affiliation during the course of the exchange (e.g., repeatedly smiling and nodding), may differ in important ways from those who tend to mostly adopt a detached and aloof stance, but sporadically throughout the interaction express brief but extreme forms of affiliation towards their significant other. Thus, our findings regarding overall levels of interpersonal behaviour and relationship satisfaction could be augmented by including an investigation of partners’ degrees of variability in across-time ratings of behaviour. Indeed, the study of intraindividual variability offers a unique line of study and description of both personality and psychopathology (e.g., Pincus et al., 2014; Ram, Conroy, Pincus, Hyde, & Molloy, 2012). Other phenomena, such as the study of overall levels of change in behaviour over the course of an interaction provide additional material regarding people’s changing behaviours. Indeed, indices of overall change extracted using the joystick technique have been shown to be related to depressive symptomatology reported by partners in long-term romantic relationships (Lizdek, Woody, Sadler, & Rehman, 2016). Furthermore, examining the intrapersonal cross-correlations between the two dimensions of behaviour, may offer clues regarding the extent to which levels of affiliation are related to variations in levels of dominance.

Fifth, although the joystick technique was used to obtain continuous ratings of two dimensions of interpersonal behaviour, future work may employ the approach to investigate continuous perceptions of other dimensions that may offer unique perspectives on interactions between romantic pairs. For instance, in future studies, partners may be asked to code affect in

terms of the affect circumplex (Feldman, 1995; Russell, 1980) anchored by the dimensions of valence (positive vs. negative) and arousal (high vs. low), while viewing their discussions in the lab.

Finally, although not employed in the current work, the joystick method permits raters to flag or mark specific points in the discussion while providing continuous ratings. In future work, partners may be asked to mark specific moments while providing continuous ratings of behaviour of each target by pressing a button on the apparatus. Future research may take advantage of this feature by asking partners, for instance, to mark the most affectively-laden moments in the exchange. These moments may later be coded by the participants or outside observers in greater depth for specific types of emotions and cognitions, or for discrepancies between the partners' intent and actual impact of the expressed behaviours. The identified moments may be separated from the entire time-series ratings to more closely explore how the interactional behaviour of each partner shifts during such critical incidents, and subsequently how these unique periods impact overall satisfaction with the interpersonal exchange.

Conclusions

In conclusion, this thesis illuminates the ways in which romantic partners perceive the ongoing interpersonal behaviour of their partner and themselves during interactions. In partners' perceptions, we investigated the degree of understanding and the types of biases that may exist at the overall (mean) level of behaviour, and the degree to which individuals are able to track moment-to-moment fluctuations in behaviour across the course of an interaction. Finally, we showed that partners' interpersonal behaviours and perceptions were related to relationship satisfaction in important ways. The results demonstrate that studying partners' perceptions of both overall levels of behaviour, as well as their perceptions of behaviour at a more granular,

moment-to-moment level, will be important in future work. The study of time-dependent phenomena, such as how partners are influencing each other throughout the course of the interaction and their perceptions of these continuous changes across time, provides a fertile ground for exploration and further study. Interpersonal behaviour unfolds continuously in real time and capturing individuals' perceptions of across-time patterns of behaviour provides direction towards gaining a deeper level of understanding of the unique ways each partner authors his or her relationship.

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