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# Narrowed interpersonal worlds: Gender differences in affiliation-focus and dominance-focus

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Abstract

The purpose of this research is to investigate whether there are gender differences in the perceptions of affiliation and dominance behaviour over a large sample of social interactions. We were particularly interested in the variability of these perceptions and whether they differ in men's and women's perceptions of themselves and others. This research utilizes the framework of interpersonal theory, in which the two main features of people's behaviour, affiliation and dominance, are proposed to be unrelated to each other and form a circumplex structure. In study 1, a subset of personality adjectives was selected, which demonstrated good circumplex structure. These adjectives were used in study 2, in which participants were asked to report on their own and others' interpersonal behaviour for all significant interactions over a period of three weeks using Palm Pilot technology. We hypothesized that women's self-ratings would vary more along the affiliation dimension and men's self-ratings would vary more along the dominance dimension. That is, we postulated that men and women tend to have narrowed interpersonal worlds where women are more affiliation-focused and men are more dominance-focused. We also hypothesized that gender differences may be present in perceivers' ratings of others' interpersonal behaviours. We expected that individuals would attend more to differences in other women's affiliation and other men's dominance over time. The results revealed that both genders were more attentive to affiliation distinctions in ratings of self and others during mixed-sex interactions. The lack of support for the gender hypotheses suggests that there may be more gender similarities than differences in individuals' variability of affiliation-focus and dominance-focus when examining interpersonal interactions over time.

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# Introduction

The focus of this research is to investigate whether there are gender differences in the perception of affiliation and dominance behaviour over a large sample of social interactions. We were particularly interested in the variability of these perceptions, whether they differ for male and female perceivers, and whether they differ for male and female interaction partners. We proposed that females may attend more to changes in their own affiliation from interaction to interaction, whereas males may attend more to changes in their own dominance. Furthermore, individuals may more readily notice changes in other females' affiliation, whereas males may more readily notice changes in other males' dominance. In order to study variations in perceptions from interaction to interaction, a Palm Pilot study was conducted in which participants reported on their own behaviour and that of their interaction partners after every significant interaction for 21 days.

This research utilized the framework of interpersonal theory, which suggests that people's behaviour in dyadic social interactions is influenced by particular traits and situations. We begin by introducing the main features of interpersonal theory. Then, we discuss relevant research that addresses variability in people's social behaviour over time. Next, we review gender differences in interpersonal perception and behaviour. After that, we discuss variability in the perceptions of self and others' interpersonal behaviour followed by a description of the main hypotheses. In addition, we compare the main methodological approaches used in daily diary studies. We then describe the four main ways of computing variability over a 21-day period, which are used in this research. Finally, we outline the ways in which the present work builds on previous work.

*Interpersonal Theory*

Proponents of interpersonal theory suggest that stable personality factors and important situational factors influence the manner in which two people interact with one another. The personality component of the theory emphasizes reasonably stable interpersonal styles, which reflect preferred ways of interacting with other individuals. According to interpersonal theory, there are two main orthogonal dimensions that underlie all interpersonal styles: dominance and affiliation (Wiggins, 1982; Kiesler, 1983). Researchers have used different terminologies to describe these two main dimensions. Some researchers label the dominance dimension as agency, control, or status. Similarly, the affiliation dimension has been referred to as friendliness, love, or communion. In this paper, the two main dimensions will be referred to as dominance and affiliation.

These two main dimensions are usually shown on a Cartesian plane with dominance on the y-axis and affiliation on the x-axis. While some researchers refer to the main four quadrants of the space (e.g. Carson, 1969), some refer to octants (e.g. Wiggins, 1982), and others refer to sixteenths (e.g. Kiesler, 1983). Figure 1 illustrates the two main dimensions and the octant representation, in which each octant is assigned a two-letter designation. For example, a highly affiliative-dominant personality style is located at octant NO. The various subdivisions of the space form a circular structure, known as the *interpersonal circumplex*. According to interpersonal theory, the further away from the center of the circle the more extreme and inflexible the interpersonal style.

The situational aspect of the theory emphasizes the forces at play during social interactions, which tend to move people away from their own preferred interpersonal

styles. For example, a main component of interpersonal theory is the principle of complementarity, which states that interpersonal behaviours tend to invite predictable responses from interaction partners in order to maintain harmony and avoid conflict (Leary, 1957; Kiesler, 1983). According to this principle, dominant behaviours tend to evoke the opposing submissive behaviours and vice versa. On the other hand, friendly behaviours tend to evoke corresponding friendly behaviours in return, and hostile behaviours tend to evoke hostile behaviours. For example, in Figure 2, person A's friendly-dominant behaviours would tend to elicit *complementary* friendly-submissive behaviours from person B.

Although there is a tendency to evoke opposite behaviours on the dominance dimension, and similar behaviours on the affiliation dimension, people's behaviours during social interactions are not always complementary. Behaviours are said to be *acomplementary* when they are either opposite on the dominance dimension or similar on the affiliation dimension, but not both. That is, the initiating "interpersonal bid" is accepted on one dimension and rejected on the other. For example, person A's friendly-dominant behaviours could be met with acomplementary hostile-submission (person C), a rejection of the initiating friendly bid, but acceptance of the dominance bid. Behaviours are said to be *anticomplementary* when dominance behaviours are not opposite and affiliation behaviours are not similar. That is, the interpersonal bids with respect to both dimensions are rejected. For instance, Person A's friendly-dominant behaviours could be met with anticomplementary hostile-dominance (Person D). Complementary interactions are theorized to be the most familiar, comfortable, or rewarding, while acomplementary

interactions are less comfortable, and anticomplementary interactions are the most uncomfortable or aversive.

*Traits and Situations as Central Tendency and Variability*

If you combine the two foregoing ideas regarding the effects of traits and situations, then it suggests that people should show a preferred interpersonal style as a central tendency, but vary around this from situation to situation. Indeed, Fleeson (2001) argues that personality should be conceived of as density distributions of states, which are characterized by both a central tendency and a certain degree of variability. He illustrates that over a period of two to three weeks, most people show all levels of the traits investigated (a large range), yet their density distributions over this period of time are centered around highly consistent within-person means. Furthermore, he argues that the amount of variability in the traits that individuals show over the same period is an important and stable individual difference. Fleeson's findings suggest that for interpersonal theorists to better understand people's trait interpersonal styles, it is important to study both *mean levels* and *variability* over time.

Fleeson's (2001) work is based on the Big Five dimensions rather than interpersonal style. Moskowitz and her colleagues are the only researchers (to our knowledge) who have studied variability in interpersonal behaviour over time (Moskowitz, 1994; Moskowitz & Zuroff, 2004; 2005). For example, Moskowitz and Zuroff argue that there are three important components of within-subject variability in interpersonal behaviour across time: flux, pulse, and spin. All three indices are standard deviations of a person's interpersonal behaviour across all reported interactions over a period of time (typically 20 days in Moskowitz' work). *Flux* refers to the variability of people's self-reported

dominance, submissiveness, agreeableness, and quarrelsomeness over time. Therefore, they compute four main flux variables, one for each of the four poles of the interpersonal circumplex. The other two indices (which are somewhat less relevant to the present investigation), first involve characterizing each interaction in terms of a radius, r, and an angle, $\theta$.[1] *Pulse* refers to the variability of the length of the radius across all social interactions (that is, it captures the variability of the intensity of interpersonal style). *Spin* refers to the variability of the angle from the agreeableness axis to the radius across all social interactions (that is, it captures the variability of the type of interpersonal style). Moskowitz and Zuroff compute two scores, one for pulse and one for spin, combining information from all four poles of the interpersonal circumplex. In sum, their flux, pulse, and spin indices are unique measures of within-person variability in interpersonal behaviour over time.

Another interesting approach to studying variability was taken by mood circumplex researcher, Lisa Feldman (1995). She measured variation in arousal and valence in individuals' self-reports over time. Her research applied a dimensional approach to assess individuals' self-perceptions of their affective experience. She conducted two main types of analyses in order to measure how individuals' perceptions of mood vary: Multidimensional Scaling (MDS) and Factor Analysis using several steps. First, a semantic similarity measure (described later) of mood terms was obtained in order to examine individuals' mood structures. Second, individuals' self-reports of mood over a 60-90 day period were submitted to a factor analysis in order to determine the number of

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[1] Often interpersonal researchers describe interpersonal behaviour either in terms of the Cartesian coordinates for the affiliation and dominance dimensions (x, y), or in terms of the radius and angle of displacement for those coordinates (r, $\theta$). The radius is calculated by $\sqrt{(x^2 + y^2)}$, and the angle of displacement is calculated (e.g., from the positive end of the affiliation dimension to the radius) using basic trigonometry.

underlying dimensions and the importance of each dimension to each individual. Third, individuals' mood structures were compared to their self-ratings of mood. Feldman found that individual differences in the circumplex structure of affective experience were present. More specifically, she found that individuals vary in the way they attend to valence and arousal components. Some individuals vary more along the arousal dimension and are considered to be arousal-focused, whereas others vary more along the valence dimension and are considered to have a valence-focused outlook. Feldman's analyses were applied to the present investigation of men's and women's variation along the dominance and affiliation dimensions.

*Gender Differences in Interpersonal Perception and Behaviour*

One of the most widespread ideas that people have about social interactions is that they are quite different for men versus women. Bestselling books with titles such as *Men are from Mars, Women are from Venus* (Gray, 1992) and *You Just Don't Understand* (Tannen, 1990) suggest that women attend more to affiliation, whereas men attend more to dominance in their social relationships. For example, John Gray indicates that men's and women's approaches to interpersonal interactions are so different that they appear to come from different planets. He indicates that men are more dominance- oriented and that they:

> ...value power, competency, efficiency and achievement. They are always doing things to prove themselves and develop their power skills. Their sense of self is defined through their ability to achieve results. They experience fulfillment primarily through success and accomplishment (p. 9).

In contrast, he suggests that women are more affiliation-oriented:

> They value love, communication, beauty, and relationships. They spend a lot of time supporting, helping, and nurturing one another. Their sense of self is defined through their feelings and the quality of their relationships. They experience fulfillment through sharing and relating (p.11).

Correspondingly, Deborah Tannen (1990) supports the notion that men tend to value and *define themselves* in terms of power and dominance, whereas women tend to value and define themselves in terms of intimacy and closeness. She also stresses that men tend to *concentrate more* on issues of dominance (and opposition), whereas women tend to concentrate more on issues of affiliation (and connection) in their interpersonal interactions:

> Women are also concerned with achieving status and avoiding failure, but these are not the goals they are *focused* on all the time, and they tend to pursue them in the guise of connection. And men are also concerned with achieving involvement and avoiding isolation, but they are not *focused* on these goals, and they tend to pursue them in the guise of opposition (p. 25, emphasis is in original).

However, research on gender differences is contradictory and inconsistent. On one hand, some research supports these suppositions. Some work suggests that women are more affiliative or attentive to affiliation issues than men. For example, women tend to describe their relationships as more intimate than men (Sherrod, 1989). They are involved in more social networks and their communication styles promote more intimacy

than men's communication styles (Dindia & Allen, 1992). In addition, some research supports the notion that men are more dominant or attentive to dominance-related issues than women. For example, during periods of stress, women have a greater desire to affiliate or befriend others, whereas men tend to congregate and form groups for the purposes of defense, aggression, and war (Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000). Moreover, where maintaining interpersonal connections is central to women's self-concept, dominance is more central to men's self-concept (Josephs, Markus, & Tafarodi, 1992). Finally, Feingold (1994) described the results from four meta-analyses about gender differences in personality. Across fourteen studies, he found that males are more assertive than females, and females are more "tender-minded" or nurturing than males.

On the other hand, some research has cast doubt on these sorts of gender differences. Indeed, a few literature reviews suggest that men are not necessarily more oriented to dominance issues in comparison to women, nor are women necessarily more oriented to affiliation issues than men. Recent work suggests that men are more affiliative than we think. For example, men's willingness to report their self-disclosures with others is more evident now than in previous years (Inman, 1996). That is, they share personal information about feelings and dreams that may leave them vulnerable when interacting with others. Furthermore, some work suggests that men's and women's attention to dominance issues are similar. For example, Maccoby and Jacklin (1974), suggest that men and women are equally aggressive but tend to display their aggression in different ways. That is, girls express their aggression subtly through verbal cattiness, whereas overt physical aggression is more evident in boys. Finally, some researchers urge us not

to place heavy emphasis on gender differences, because it appears that there are more similarities than differences between the sexes (Canary and Emmers-Somer, 1997; Hyde, 2005; Wright, 1998).

Although there is much conflicting evidence regarding gender differences, there are both theoretical and empirical reasons to pursue gender differences research in the context of interpersonal theory. The two underlying dimensions of the interpersonal circumplex are often referred to as agency and communion, reflecting the connection of ideas from Sullivan (1953) and Leary (1957) with those of Bakan (1966). This latter work was based on the idea that typical male behaviour is more agency (or dominance) oriented, and typical female behaviour is more communion (or affiliation) oriented. Furthermore, research by Wiggins and Broughton (1985) investigating the relationship of gender and personality to the interpersonal circumplex is strongly supportive of the two axes being differentiated by gender. For example, these researchers found that among 22 gender and personality questionnaires, the measure that correlated most highly with the interpersonal dominance axis ($r = .80$) was the masculinity subscale of the Bem Sex Role Inventory (BSRI; Bem, 1974); likewise the measure that correlated most highly with the interpersonal affiliation axis ($r = .84$) was the femininity subscale of the BSRI.

*Perceptions of Self*

A promising new way of addressing the question of gender differences may be to look at *variability* in interpersonal behaviour over time. This is because, as previously argued, variability is at least as important and interesting as broad general traits, and may reveal more about underlying processes. Perhaps widespread interest in gender differences in terms of dominance and affiliation is more connected to ideas of

*attentiveness* and *more readily noticing* behaviours and behaviour changes on these two dimensions, rather than men being *more* dominant and women being *more* affiliative. That is, instead of mean differences, perhaps there are variability differences such that men are more attentive to dominance distinctions when perceiving behaviours and women are more attentive to affiliation distinctions when perceiving behaviours.

Thus, it is intriguing to consider what the day-to-day variations in people's perceptions of their interpersonal behaviour might look like in light of the previously described gender differences. If we collected daily self-reports about participants' perceptions of their own behaviour in a number of interactions over a period of time, they could be plotted as a bivariate distribution, as shown in Figure 3. All Cartesian planes shown in this figure depict affiliation on the x-axis and dominance on the y-axis. To illustrate, in Figure 3a, each point in the circular distribution could represent a particular person's self-reported dominance and affiliation during one particular interaction. If women attend more to issues of affiliation in their daily interactions, they may more readily notice changes in their own affiliation from interaction to interaction. Therefore, we might expect that a density distribution of a particular woman's interpersonal behaviour forms "an oval" that emphasizes variability in affiliation behaviour, while showing less variation in her dominance behaviour, as shown in Figure 3b. Likewise, if men attend more to dominance issues, then variations in their own dominance may be more evident in their self-reported social behaviour than variations in their affiliative behaviour over a great number of interpersonal interactions. Thus, we would expect that a density distribution of a particular man's interpersonal behaviour might form an oval

that emphasizes variation along the dominance dimension, and less variation along the affiliation dimension, as shown in Figure 3c.

It is interesting to consider how these ideas may be connected with work on self-schemata (Markus, 1977). S*elf-schemata* are defined as cognitive generalizations of the self that are derived from past experiences and used to guide information processing related to the self. Individuals with certain self-schemata are more likely to retrieve, accept, and integrate information that is consistent with their views of the self, but reject and dismiss information that is inconsistent with their self-views. For example, Markus found that individuals with an *independent* self-schemata selected independence-related adjectives (e.g. independent, leader, and individualistic) more readily when describing themselves, whereas individuals with a *dependent* self-schemata selected dependence-related adjectives (e.g. dependent, follower, and conformist) more readily when describing themselves. It is possible that men may tend to hold dominance-related schemata and women may tend to hold affiliation-related schemata. If this is the case, then according to Markus' work, we would expect predictions opposite to those already advanced. That is, we could expect that men would be more consistent (less variable) on the dominance dimension, whereas women would be more consistent (less variable) on the affiliation dimension.

Notably, schematics are selected in Markus' (1977) work based on their extreme scores for both self-ratings and importance ratings of adjectives on a particular dimension. For example, those with independent self-schemata were selected because of their high means on independence-related adjectives and high ratings of the importance of those adjectives to them. Given that men and women do not appear to show

consistently different means from each other, nor consistently extreme means with respect to dominance and affiliation, respectively, it is possible that such schema differences between the genders are less plausible. Nonetheless, this is an interesting contrasting hypothesis to investigate in the present work.

The question of whether these self-ratings differ based on the gender of the interaction partner is also intriguing. We had no particular reason to hypothesize any differences based on the gender of the interaction partner, and thus left this as a question to be investigated empirically.

*Perceptions of Others*

Consider how ratings of others' interpersonal behaviour may be influenced by the gender of the interaction partner. It is possible that perceptions of female interaction partners differ from perceptions of male interaction partners. For example, Sinclair and Kunda (2000) found that students' perceptions of an instructor were quite different depending on whether the instructor was a woman or a man. More specifically, female instructors were perceived to be less competent when they evaluated students negatively, but not when they evaluated students positively. That is, students' stereotypical views of women (e.g. women are warm and friendly rather than cold and critical) influenced their evaluations of female instructors. When the instructors' evaluations of the students were inconsistent with students' stereotypical perception of women, students perceived the competence of the female instructors to be poor. However, stereotypical beliefs were not used in students' evaluations of male instructors.

Relating this idea to the constructs of interpersonal theory, it is possible that the processes underlying ratings of male interaction partners may systematically differ from

ratings of female interaction partners on dominance and affiliation, respectively. Individuals' perceptions of men's and women's interpersonal behaviour may yield gender differences comparable to those evident in self-ratings. That is, not only is it possible that men and women describe *their own* behaviour in accordance with their respective gender group, but they may also describe *others'* behaviour in accordance with those particular individuals' gender group (Eagly, 1995). Research findings indicate that people who endorse gender norms report positive feelings when engaging in role congruent interactions such as interactions with women who behave in a warm, friendly, and nurturing manner and men who behave in an assertive, authoritative, and independent manner (Wood, Christensen, Hebl, & Rothgerber, 1997). Furthermore, communal and expressive characteristics tend to be rated more favourably in women than men, whereas agentic and instrumental characteristics tend to be rated more favourably in men than women (Eagly & Mladinic, 1989). Consequently, gender norms may be adopted as personal standards against which people judge individuals' social behaviours during interpersonal interactions.

An interesting possibility to consider is how these ideas may be related to work on how self-schemata affect people's perceptions of others. Work by Markus (1985) suggests that people who are schematic on a dimension may more readily notice schema-relevant behaviors in others. This may be due to the notion that schematic individuals act as experts in domains that are relevant to their particular schema. For example, a male who is schematic for dominance, may more readily extract dominance-related information about his interaction partner's social behaviour. Thus, a person who is schematic for dominance (i.e. males) may more *readily notice* if another person is

behaving dominantly or submissively. Likewise, a person who is schematic for affiliation (i.e. females) may more *readily notice* if another person is behaving in a friendly or unfriendly manner.

Other research suggests that perceptions of others are influenced by views of the self. For example, Markus, Crane, Bernstein, and Siladi (1982) suggest that individuals tend to seek information about others that is consistent with their own self-schemas. Moreover, perceptions of others may partially depend on the degree to which others are perceived to be similar to the self – a phenomenon called *social projection* (Ames, 2004; Clement & Krueger, 2000; Mullen & Smith, 1990). False consensus is a form of social projection, which suggests that individuals tend to overestimate the degree of similarity between their own and others' social behaviour (Ross, Greene, & House, 1977). That is, women may overestimate the number of other women who share their attributes in comparison to other men (e.g. relationship intimacy, connectedness, and nurturance) during social interactions. Likewise, men may overestimate the number of other men who share their attributes in comparison to other women (e.g. dominance, power, and control) during social interactions. At the same time, perceptions of others may incorporate existing notions of the self (Krueger, 2002). For example, women may attend to issues of affiliation in their perceptions of men's dominance behaviour, and men may attend to issues of dominance in their perceptions of women's affiliative behaviour. The present research proposes that perceptions of others are shaped by social norms and adhere to gender stereotypes, and that individuals' self-schemata lead them to attend to schema relevant information in their perceptions of others.

*Conceptual Hypotheses*

The present research examines two main sets of hypotheses: variability in individuals' self-perceived interpersonal behaviour and variability in the perceived interpersonal behaviour of others. Figure 4 includes eight cells containing density distribution graphs (with dominance as the vertical axis and affiliation as the horizontal axis) that illustrate the proposed hypotheses. The four cells at the top of the figure illustrate the predictions for self-ratings. As mentioned previously, we expected that the density distributions of women's self-ratings would be focused along the affiliation axis (cell A) and men's self-ratings would be focused along the dominance axis (cell B). In addition, we expected that the variability of self-ratings would be similar, regardless of the gender of the interaction partner (that is, cells A and C are the same, and cells B and D are the same).

The four cells at the bottom of Figure 4 illustrate the predictions for ratings of others' behaviour. We predicted that female interaction partners would be perceived to vary more along the affiliation dimension than male interaction partners (i.e., the distributions in cells E and F are more variable along the affiliation dimension than those in cells G and H); however, male perceivers (in comparison to female perceivers) would see more variability in female interaction partners' dominance (i.e., the distribution shown in cell F is more variable along the dominance dimension than that in cell E). In addition, we predicted that male interaction partners would be perceived to vary more along the dominance dimension than female interaction partners (i.e., the distributions in cells G and H are more variable along the dominance dimension than those in cells E and F); however, female perceivers (in comparison to male perceivers) would see more

variability in male interaction partners' affiliation (i.e., the distribution shown in cell G is more variable along the affiliation dimension than that in cell H). [2]

*Comparison of Relevant Methods*

Researchers have used different methodologies to collect daily perceptions of self and other behaviour during social interactions over a period of time. There are three main types of sampling techniques used to collect data in daily diary studies, which are referred to as interval-contingent, signal-contingent, and event-contingent sampling (Bolger, Davis, & Rafaeli, 2003; Gable & Reis, 2000; Wheeler & Reis, 1991). *Interval-contingent* recording requires participants to report on their experience at a set time interval that is meaningful or theoretically sound. For example, researchers interested in investigating variations in individuals' emotional experiences may choose to apply the interval-contingent technique and ask participants to report their mood either in the morning, afternoon, or evening (Feldman, 1995). *Signal-contingent* recording requires participants to report on their experiences when they receive a signal. Typically, researchers use some sort of beeping device, such as beepers or watches, in order to cue participants when they should complete a self-report measure. Other researchers have applied this approach to monitor participants' compliance with research procedures by asking them to record random signals (Suh, Moskowitz, Fournier, & Zuroff, 2004). *Event-contingent* recording requires participants to report after every predetermined, significant, or meaningful event. For instance, participants may be asked to report after every interaction that is five or ten minutes in length or that is emotionally charged (Moskowitz, Suh, & Desaulniers, 1994). The research questions determine whether

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[2] Note that these main hypotheses are about variability in gender differences, but as described later, in order to fully capture the density distributions shown in Figure 4, we also computed mean levels of dominance and affiliation, as well as the correlation between these two variables.

researchers apply an interval-contingent, signal-contingent, or event-contingent sampling technique.

There are also three main types of technologies, or data collection methods, used in daily diary studies: collecting data on paper, web-based forms, or Personal Digital Assistants (PDAs) such as Palm Pilots. Researchers who utilize the paper-and-pencil method provide participants with paper questionnaires or pocket-size paper diaries containing a variety of measures. Although paper-and-pencil questionnaires are easy to complete, they are hard to carry around and keep organized. This method also allows participants to review their reports from previous days, which may bias participants when completing future assessments.

Web-based or online studies have become more popular with the increased use of the World Wide Web. Researchers can create a website dedicated exclusively to their research where participants can obtain information about the study and procedures, complete scales, and communicate with researchers. Online testing becomes problematic when participants are not familiar with the World Wide Web or how to use computers, have limited access to the internet, or encounter various technological problems that they cannot fix such as internet bugs and server failures. In addition, web-based studies need to be programmed, which could be a disadvantage for researchers without programming resources.

Recently, PDAs have become a popular tool for researchers who are interested in conducting diary studies. The portability of Palm Pilots and handheld computers enable participants to conveniently report on specific events almost immediately after they occur. The scales are completed and stored directly into the device, and then downloaded

to the researcher's computer. In addition, both PDA and web-based studies have the advantage of time stamping the participants' entries. Although PDAs and PDA software are expensive, their portability and ease of use are advantageous to both researchers and participants.

The present study uses an event-contingent sampling approach with Palm Pilot PDAs to investigate interpersonal interactions across time. Event-contingent sampling is the most relevant sampling technique for studying social interactions because it allows researchers to examine each meaningful social interaction as it occurs throughout the day (Wheeler & Reis, 1991). In contrast, the interval-contingent approach is problematic because participants may not encounter any social interaction during the interval in which they are required to complete their ratings. Similarly, participants may not be engaged in any social interactions when they are signaled at a particular time of day using the signal-contingent approach. Palm Pilots were chosen in order to collect data for the present study because the portability and accessibility of Palm Pilots enables participants to report on their social interactions immediately after they occur. Furthermore, the data is stored and time of entry is stamped in the Palm, which alleviates participants from the responsibility of keeping and organizing stacks of paper questionnaires and the time-related questions that must be recorded in each entry they make. In addition, this method of collecting data allows researchers to gather data on a large number of events in order to examine the variation between or across events.

*Computation of Focus Indices*

The degree of affiliation-focus and dominance-focus derived from data collected over time can be indexed in several ways. One approach to assessing these indices

involves characterizing each person's density distribution plot using a *standard deviation* for the affiliation dimension and another standard deviation for the dominance dimension. Alternatively, Feldman (1995) introduced two focus indices depicting the orthogonal valence and arousal dimensions of the emotion circumplex, which she called *Index 1* and *Index 2*. We discuss how these two indices may be applied to the present study, explore their strengths and weaknesses, and propose an alternative method called *Index 3*. The following sub-sections describe each of these four approaches (standard deviation, Index 1, Index 2, and Index 3) in turn.

*Standard deviation to characterize density distribution plots.* As mentioned previously, each individual's ratings of their own interpersonal behaviour across time could be plotted on a Cartesian plane with orthogonal dominance and affiliation axes. Each data point on such a self-rating diagram would represent a participant's self-perceived behaviour in a particular interaction. Thus, across all reported interactions, a person's self-reported interpersonal behaviour should appear as a "cloud" of points.

Recall that a round-shaped scatter of data points at the center of the Cartesian plane indicates that a particular individual perceives his or her behaviour to be equally affiliative and dominant (as shown in Figure 3a).[3] A narrowed or "flattened" data cloud along the affiliation dimension indicates that a particular individual perceives his or her behaviour to be more variable along the affiliation dimension and less variable along the dominance dimension – that is, the person would be identified as affiliation-focused (as shown in Figure 3b). A flattened data cloud along the dominance dimension indicates that a particular individual perceives his or her behaviour to be more variable along the

[3] Note that this assumes that the affiliation and dominance metrics (scaling properties) are equivalent. Also note that the Figure 3 and Figure 4 diagrams show means for both dimensions that are zero.

dominance dimension and less variable along the affiliation dimension – that is, the person would be identified as dominance-focused (as shown in Figure 3c).

The cloud of points may be fully characterized by the mean of dominance and mean of affiliation (used to locate the centroid), the standard deviation of dominance and the standard deviation of affiliation used to represent the degree of dominance-focus and affiliation-focus respectively, and the correlation between dominance and affiliation.[4] A similar approach would apply to each person's ratings of others' behaviour. That is, a plot for the ratings of others could be constructed, which would have a cloud of data points located around the centroid. This cloud would be characterized by the two means, two standard deviations, and correlation mentioned previously.

*Index 1 from Factor Analyses.* Feldman's (1995) Index 1 can be applied in the present investigation as follows. Consider the daily self-reports collected over a period of three weeks on a Palm Pilot using 16 different adjectives (described later). If six interactions are reported per day over 20 days, then 120 self-assessments are made for each of the 16 adjectives. Each person's self-reported data can be represented in a raw data matrix with 16 adjectives shown across the top and each of interactions shown as rows. Then, a p-correlation matrix is obtained for each participant by computing the correlation between every possible pairing of interpersonal adjectives (that is, between every pair of columns in the raw data matrix). A factor analysis is conducted on each p-correlation matrix, and two main dimensions can be extracted and rotated so that they are closest to the dominance and affiliation dimensions of the interpersonal circumplex.

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[4] Note that skew and kurtosis are also important features of a density distribution. We assessed the skew index of the five dependent variables in ratings of self and other. The minimum (.00) and maximum (-.63) skew values for the ten dependent variables fell within the normal bounds. According to Kline (2005), a skew index of 3.0 or above is indicative of extremely skewed distributions.

Index 1 is the variance accounted for by each dimension. That is, Index 1 dominance-focus assesses how well dominance items correlate with each other and Index 1 affiliation-focus assesses how well affiliation items correlate with each other. Refer to Table 1 for an illustration of how Index 1 would be computed. Factor loadings for the two dimensions are shown in the two middle columns of the table. Index 1 affiliation-focus is computed by squaring and averaging the factor loadings from the first column, and a similar approach applies for computing dominance-focus.

*Index 2 from P-Correlation Matrices and Multidimensional Scaling.* The computation of Index 2 (Feldman, 1995) is more complex. A step-by-step explanation of how to compute Index 2 is detailed in Appendix A and briefly summarized here. This index is based on Multidimensional Scaling (MDS), which is an approach used to reveal the number of underlying dimensions in proximity or similarity matrices. If the stimuli are a set of adjectives, then participants complete a "paired similarity measure" that involves rating the similarity between every possible pairing of the adjectives. These similarity ratings are used to produce a proximity or similarity matrix for each participant. MDS techniques involve analyzing the proximity matrices and then representing these similarity ratings spatially like in a map (Schiffman, Reynolds, &Young, 1981).

The computation of Index 2 includes four main steps. First, participants rate the similarity between every possible pairing of the 16 adjectives, completing a total of 120 similarity ratings, which are then submitted to a Euclidean Multidimensional Scaling (MDS) analysis. Second, the absolute differences between all MDS coordinates (which are somewhat like factor loadings in a factor analysis) are computed for the dominance

dimension and then for the affiliation dimension. As a result, 120 dominance-based distances constitute a "dominance-based similarity matrix" and 120 affiliation-based distances constitute an "affiliation-based similarity matrix". For both of these matrices, the smaller the absolute value between two coordinates (the smaller the spatial distance between two adjectives on a dimension), the more similar the adjectives are on the attribute represented by the dimension. Third, the p-correlation matrices (described earlier) are normalized using Fisher r-to-z transformations. Fourth, for each participant, the dominance-based similarity matrix is correlated with the transformed p-correlation matrix in order to obtain an index of dominance-focus; likewise for each participant, the affiliation-based similarity matrix is correlated with the transformed p-correlation matrix in order to obtain an index of affiliation-focus.

The strength of Index 2 is that it incorporates individuals' abstract conceptualizations of the relationship between interpersonal adjectives and their daily self-reports. Feldman's (1995) findings showed that Index 1 and Index 2 were highly correlated, suggesting that both of these very different approaches are tapping a similar construct. However, it is somewhat perplexing that in Index 2 the correlation between arousal-focus and valence-focus was high and negative ($r$ = -.58), when the theory suggests that this correlation should be approximately zero.

We believe that this unanticipated, strong negative correlation stems from important flaws in Index 2, which is described in detail in Appendix B. To summarize briefly, there are two main problems with this index. First, Index 2 does not distinguish pairs of synonyms on a relevant dimension from pairs of synonyms (or antonyms) on an irrelevant dimension. For example, consider the dominance dimension. Index 2 does not

distinguish similarity ratings for synonyms "assertive" and "dominant" (which are relevant to the dominance dimension) from similarity ratings for synonyms "warm" and agreeable" (which are irrelevant to the dominance dimension). As a consequence, the correlation between the p-correlations and the distance-based matrices is lower than it should be, and thus the values for Index 2 do not adequately capture a particular person's focus. For example, a person who is very high in dominance focus simply cannot obtain the theoretically maximum correlation of -1, because such a correlation is impossible, given how Index 2 is computed.

Second, when Index 2 is computed separately for two dimensions that are orthogonal, the correlation between the two dimensions is strong and negative, simply as a function of how the index is computed, rather than as a function of the appropriate dataset. Therefore, although theory about the emotion circumplex (Feldman, 1995) suggests that the dimensions of arousal and valence should be orthogonal, Index 2 forces them to be negatively related; likewise, although Interpersonal Circumplex theory (Kiesler, 1996) suggests that the dominance and affiliation dimensions should be orthogonal, Index 2 forces them to be negatively related. These flaws of Index 2 are a result of the way it is constructed, and not the actual data. Therefore, a new approach to measuring affiliation-focus and dominance-focus using participants' semantic similarity ratings and daily self-reports (which we call Index 3) is introduced next in order to improve on the flaws in Feldman's Index 2.

*Index 3 from Factor Analyses and Multidimensional scaling.*

Index 3 is similar to Index 2 in that it utilizes data from both Factor Analyses and Multidimensional Scaling (MDS). However, Index 3 differs from Index 2 in two ways.

First, MDS stimulus coordinates rather than the absolute differences between the MDS stimulus coordinates are used to compute affiliation-focus and dominance-focus. Second, factor loadings from the factor analyses are used and not p-correlation matrices. As shown in Table 1, in order to compute Index 3 dominance-focus, the factor loadings for the dominance dimension (column 4) are multiplied by the MDS stimulus coordinates (column 6) for the dominance dimension, these values are summed, and divided by the total number of adjectives. The same procedure is applied when computing the affiliation-focus index. Unlike Index 2, Index 3 does not involve computing a correlation. It is simply the sum of products divided by the total number of items.

Index 3 improves on both flaws with Index 2 mentioned previously. First, Index 3 distinguishes pairs of synonyms on a relevant dimension from pairs of adjectives on an irrelevant dimension. This is because the MDS stimulus coordinates for adjectives on an irrelevant dimension are zero (or should be close to zero). Therefore, when the factor loadings for adjectives that are irrelevant to the dimension are multiplied by their respective zero (or near zero) stimulus coordinates this term becomes zero (or is minimized considerably). Thus, adjectives that are irrelevant to the dimension do not affect this focus index like they do in Index 2. Second, the computation of Index 3 for two orthogonal constructs (such as dominance and affiliation dimensions) is not intertwined in the way it is for Index 2. This is because Index 3 is a sum of products of factor loadings and stimulus coordinates for each separate dimension rather than a complicated correlation between absolute differences in stimulus coordinate pairings and p-correlations for those same pairings.

In addition, there are several ways in which Index 3 is different from, and possibly superior to, Index 1. Consider the factor loadings of various adjectives on the dominance dimension. First, if irrelevant adjectives load highly on the dominance dimension, the proportion of variance accounted for by dominance increases. That is, Index 1 dominance-focus increases inappropriately, whereas Index 3 dominance-focus does not. For example, if the irrelevant adjective "warm" loads highly on the dominance dimension, then the proportion of variance accounted for by the dominance dimension (Index 1) increases; whereas when computing Index 3, this increase does not occur because the high factor loading for "warm" is multiplied by the MDS coordinate for "warm" (which should be close to zero). Second, if an adjective that should load negatively on the dominance dimension turns out to load positively instead, the proportion of variance accounted for by dominance increases (by the same amount that it would if the adjective actually loaded negatively). That is, Index 1 dominance-focus increases inappropriately, whereas Index 3 dominance-focus does not. For example, if the adjectives "dominant" and "submissive" both load positively on the dominance dimension, the proportion of variance accounted for by the dominance dimension (Index 1) increases. However, in Index 3 the values of these two adjectives cancel each other out because the factor loading for "dominant" would be multiplied by a positive MDS loading while the factor loading for "submissive" would be multiplied by a negative MDS loading. For these reasons, we expect that Index 3 would be superior to Index 1, as well as Index 2.

*The Present Study and Major Hypotheses*

The present work will build on previous work in several unique ways. The majority of interpersonal behaviour studies are lab studies that examine central tendency at one or two time points. The present study moves the investigation outside of the lab setting and closer to real life settings. It aims to investigate both central tendency and variability. Primarily only one researcher, Moskowitz, and her colleagues (e.g., Moskowitz, 1994; Moskowitz & Zuroff, 2004; Moskowitz & Zuroff, 2005) have investigated variability in interpersonal perceptions of behaviour over time. The present research is different from Moskowitz's published work because it examines both self and other perceptions, whereas Moskowitz' work emphasizes self-perceptions. In this study, participants are asked to rate interpersonal adjectives and Moskowitz asked participants to rate behavioural phrases. Adjective ratings may be methodologically efficient and easy for participants to complete after every significant interaction for a period of 21-days using Palm Pilot technology, compared to somewhat more lengthy behavioural phrases. Furthermore, the present research investigates the variability along each dimension; whereas Moskowitz's published work investigates the variability in each of the four poles of the interpersonal circumplex (quarrelsomeness, agreeableness, dominance, and submissiveness) separately.

The present proposal examines variations in men's and women's perceptions of social behaviour. In study 1, we measured individuals' perceptions of the semantic similarity between pairs of interpersonal adjectives. Three scales consisting of 16 different interpersonal adjectives were administered in order to determine which subset of adjectives produced the most circular structure. The best subset of adjectives from the

first study was used as stimuli in the second study. In study 2, we conducted an event-contingent, Palm Pilot diary study measuring variations in men's and women's perceptions of their own and others' interpersonal behaviour over a period of 21 days.

In sum, across these two studies, we plan to examine men's and women's interpersonal behaviour from interaction to interaction over time. We predicted that (a) in comparison to men, women would perceive greater changes or variability in their own affiliative behaviour and less variability in their dominance behaviour, and (b) in comparison to women, men would perceive greater changes or variability in their own dominance behaviour and less variability in their affiliative behaviour. As well, we hypothesized that men and women would perceive (c) the interpersonal behaviours of female interaction partners to be more variable along the affiliation dimension and less variable along the dominance dimension. Although we expected this variability along the affiliation dimension to be the same in the ratings of male and female perceivers, we predicted that the ratings of male perceivers would be more variable along the dominance dimension. Similarly, (d) we expected that both male and female participants would perceive the interpersonal behaviours of their male interaction partners to be more variable along the dominance dimension and less variable along the affiliation dimension. Although we expected this variability along the dominance dimension to be the same in the ratings of male and female perceivers, we predicted that the ratings of female perceivers would be more variable along the affiliation dimension.

## Study 1: Perceptions of the Semantic Meaning of Interpersonal Adjectives

In order to investigate whether certain individuals have narrowed interpersonal worlds in study 2, it is important to first demonstrate that people's understandings of the

meaning of interpersonal adjectives form a circular (non-flattened) structure. Furthermore, in order to compare whether men and women have narrowed interpersonal worlds, their understandings of the meaning of interpersonal adjectives must form a circular circumplex structure.

Accordingly, this study examined individuals' perceptions of the semantic similarity between pairs of interpersonal adjectives. Participants completed one of three constructed scales that included 16 different interpersonal adjectives. The goals of this study are twofold. First, we aim to determine whether people's understandings of the semantic meaning of interpersonal adjectives are indeed two-dimensional and circular in nature. Second, since existing interpersonal measures are too long to have participants complete them repeatedly throughout the day for several weeks, in study 1 we aim to determine which of several subsets of interpersonal adjectives produces the best circumplex structure. The best subset of adjectives will be used in a questionnaire for a Palm Pilot study measuring variations in men and women's perceptions of their own and others' interpersonal behaviour.

## Method

### *Constructing the Paired Similarity Measures*

*Item Selection.* In order to assess whether individuals' semantic understandings of interpersonal adjectives are narrowed along the affiliation and dominance dimensions, we developed a paired similarity measure based on 16 adjectives. Two adjectives were first selected for each octant of the interpersonal circumplex from previously existing interpersonal scales (Kiesler, 1983; Lorr & Strack, 1990; Wiggins, Trapnell, & Phillips, 1988), primarily based on highest published communalities or factors loadings, as well as

regularity of use in personality and behavioral descriptions. Figure 5a includes the 16 adjectives that were initially selected, shown in each octant that they purportedly measure.

These 16 adjectives were randomly arranged in a paired similarity scale that asked participants to indicate the similarity between each pair of adjectives (e.g. how similar are timid and shy?). Participants responded using a Likert scale that ranged from 1 (extremely dissimilar) to 9 (extremely similar). The 120-item questionnaire contained every possible comparison between the 16 adjectives. Appendix C contains a copy of this paired similarity scale.

*Pilot Participants and Preliminary Findings.* In a small pilot study, eight M.A. students (6 females and 2 males) in the Social-Developmental program at Wilfrid Laurier University were asked to rate the similarity between each pair of words. Although the analyses from the pilot study were based on the responses of only eight participants, this preliminary information was potentially instructive.[5] The results indicated that dominant, crafty, inconsiderate, and naïve did not correlate as well with the rest of the scale as anticipated. In addition, there is some question as to whether the words "timid" and "shy" actually tap the construct of submissiveness because their position on the stimulus configuration graph greatly overlapped with the adjacent octant FG (unsociable and introverted). For these reasons, six words (dominant, crafty, inconsiderate, naïve, timid, and shy) were targeted for revision.

*Final Paired Similarity Measures.* In addition to the first version of the paired similarity scale (Version A), two other versions (based on other subsets of 16 adjectives)

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[5] Feldman (1995) indicated that only 10 participants are required for multidimensional scaling of 16 mood adjectives when a two-dimensional solution is expected.

were constructed in order to determine which set of adjectives would produce the most theoretically convincing, circular, two-dimensional structure. In Version B, crafty was replaced with mistrusting, inconsiderate with critical, timid with passive, and shy with submissive. These new adjectives (shown in Figure 5b) were selected so that Version B contained more adjectives with directly opposite meanings (e.g. trusting and mistrusting). In Version C, dominant was replaced with authoritative, crafty with suspicious, inconsiderate with unsympathetic, and naïve with gullible. These new adjectives (shown in Figure 5c) were selected because they tended to have the next highest communalities or factor loadings in previously published work.

*Participants*

One hundred and twenty-seven first-year psychology students completed a questionnaire in a longer package of questionnaires during a mass testing session, for which they received course credit. Participants completed one of the three questionnaires (37 completed Version A, 46 completed Version B, and 44 completed Version C). Version A was completed by 29 females and eight males, Version B was completed by 27 females and 19 males, and Version C was completed by 30 females and 14 males.

A close examination of the raw data revealed that some participants were clearly not completing the task correctly, and therefore 38 of the participants' data were deleted from the original data set. The problems were evident in all three versions of the questionnaire. Five participants were deleted (one from Version A, one from Version B, and three from Version C) because they used a small range of the scale (e.g. 90% of the similarity ratings ranged between one and three). Eighteen participants were deleted (one from Version A, eight from Version B, and nine from Version C) because long strings of

a particular number were evident in their answers (e.g. their questionnaire booklet contained an entire page of twos or 90% of their answers were ones). Fourteen participants were deleted (four from Version A, nine from Version B, and one from Version C) because the participants consistently rated adjectives of opposite meanings to be very similar (e.g. warm and cold were rated as extremely similar). Finally, one participant from questionnaire Version B was deleted because a clear response pattern was evident in his data (i.e. his answers formed a clear zigzag shape down the page).

Therefore, eighty-nine first year psychology students comprised the final sample of participants. Participants completed one of the three questionnaires (31 completed Version A, 27 completed Version B, and 31 completed Version C). Version A was completed by 25 females and six males, Version B was completed by 18 females and nine males, and Version C was completed by 20 females and 11 males.

## Results

Participants' similarity ratings were submitted to a multidimensional scaling (MDS) analysis in order to determine the number of underlying dimensions, the degree to which adjectives correlated with each dimension, and the circularity of the resulting structure. For each version of the questionnaire, participants' responses were averaged for each question in order to form a single matrix, which was submitted to a Euclidean distance analysis using the ALSCAL program. Three MDS analyses were conducted, one for each of the paired similarity questionnaires. In submitting one aggregated matrix for this analysis, it is assumed that the subjects are homogenous (Arabie, Carroll, & DeSarbo, 1987). That is, only the similarity ratings are examined across participants, and other individual differences (such as gender) are not considered.

The first step was to determine the optimal number of underlying dimensions in the data. This is determined by comparing goodness of fit indices (such as stress and variance accounted for) with changes in dimensionality (Kruskal & Wish, 1978; Schiffman, Reynolds, &Young, 1981). Therefore, for each version of the questionnaire, a Euclidean MDS analysis was completed constraining the solution to one, two, and three-dimensional solutions. Table 2 includes the stress values and RSQ values for the one, two, and three dimensional solutions. For all three versions of the questionnaire, the stress values indicated a large improvement in stress when moving from a one-dimensional to a two-dimensional solution, but only a relatively small improvement when moving from a two-dimensional to a three-dimensional solution. Likewise, the variance accounted for increases markedly for a two-dimensional over a one-dimensional solution but hardly at all for a three-dimensional over a two-dimensional solution. Thus, the two-dimensional results are reported for all sets of analyses.

The three obtained stimulus configurations across all participants, one for each version of the paired-similarity questionnaire, are presented in Figure 6. These configurations may be compared to each other to determine which set of adjectives produces the most theoretically convincing and sensible two-dimensional solution. In addition, they may be compared to their respective theoretically expected configurations presented in Figure 5.

The results illustrated that all three structures were reasonably circular and two-dimensional; however the configurations for the three versions of the questionnaire differed in important ways from each other. As shown in Figure 6a, although the set of adjectives from questionnaire A produced a sensible two-dimensional structure, there

were large discrepancies between adjectives within the same octants (e.g., introverted and unsociable). In addition, there were large overlaps between four of the octants (e.g., warm-agreeable overlaps with trusting-naive). The configuration for questionnaire B (See Figure 6b) shows that words from the same octants were mostly located close to each other, and the adjectives were reasonably well spaced in a circular pattern, with a few exceptions (e.g., "cold" should be located closer to "critical", and "trusting" should be located closer to "naïve"). Also, this configuration has the advantage of using the words "submissive" and "passive" rather than "timid" and "shy" as the polar opposites of "dominant" and "assertive". The configuration for questionnaire C (See Figure 6c) shows that although adjectives within each octant were close in proximity (e.g., timid and shy), there were some extreme overlaps between adjacent octants (such as the overlap of cold-unsympathetic with sly-suspicious).

In sum, relative to the results for questionnaires A and C, questionnaire Version B overall showed the most circular structure, with the least distance between words in the same octant, least overlap between two octants, and smallest gaps between octants. In addition, the stress and RSQ indices indicated that the subset of adjectives in questionnaire Version B produced a slightly better stress value of .13 (as opposed to .15 for Versions A and C) and a slightly better RSQ value of .88 (as opposed to .86 for Version A and .85 for Version C). Therefore, questionnaire Version B consisted of the best 16 adjectives of the three versions, and these adjectives were selected to measure individuals' behaviour in a daily study of interpersonal interactions.

*Gender Differences Analyses*

We hypothesized that the semantic similarity configurations would be similar for males and females. That is, their semantic understanding of the similarity between interpersonal adjectives should not differ or be focused along the dominance or affiliation dimension. Therefore, in order to confirm that the hidden structures of males and females were not flattened along either dimension, male and female participants' data from questionnaire Version B were separated and submitted to two Euclidean Multidimensional Scaling (MDS) analyses. These results illustrated that both structures were reasonably circular and two-dimensional (see Figure 7), although the stimulus configuration for males appears to be somewhat less circular compared to the configuration for females. Indeed the goodness of fit measures indicated that the solution for females (RSQ = .90, Stress = .13) is relatively better than the solution for males (RSQ = .73, Stress = .21). However, it is likely that these results differ because the sample consisted of nine males and twice as many females. Therefore, the males' data could be expected to be noisier and more affected by idiosyncratic differences. Nonetheless, it is clear from these results that neither males' nor females' semantic perceptions are narrowed along either the dominance or affiliation dimension.[6] Thus, the aim of the following study is to determine whether men's and women's daily perceptions of their own and others' interpersonal behaviours over time are focused along either dimension.

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[6] Another approach to examining men and women's semantic understanding of interpersonal adjectives is to use a weighted individual differences (INDSCAL) MDS analysis to assess the dimensionality and stimulus configurations. These analyses were conducted and the results yield similar conclusions to those presented.

## Study 2: Self and Other Perceptions of Interpersonal Behaviour over Time

The present study examines men's and women's perceptions of their own and others' interpersonal behaviour during dyadic interactions. Specifically, it investigates the degree to which women attend to and notice changes in affiliation during daily interactions, and the degree to which men attend to and notice changes in dominance during their daily interactions. In study 1 we found that the subset of adjectives in questionnaire Version B produced the best semantic structure. In this study, participants were asked to complete the semantic similarity task, as well. This semantic structure was compared to participants' reports of their own and others' interpersonal behaviours. Self-reports about the way individuals perceive their own and others' behaviour during interpersonal interactions were collected for a period of 21 days. Palm Pilot technology was used in an event-contingent approach that required participants to report on every significant interaction they experienced. We predicted that a particular woman's interpersonal behaviour would emphasize greater variability in affiliation behaviour, and a particular man's interpersonal behaviour would emphasize greater variability in dominance behaviour. In addition, we predicted that both male and female perceivers would notice greater variation in other females' affiliative behaviour; however, female perceivers would attend more to issues of affiliation in their female counterparts than male participants. Similarly, both male and female perceivers would notice greater variations in other males' dominance behaviour; however, male perceivers would attend more to issues of dominance in their male counterparts than female participants.

## Method

### *Participants*

Twenty male and 20 female students from Wilfrid Laurier University participated in this study. Recruitment advertisements about the study procedures, incentives, and contact information were posted throughout Wilfrid Laurier Campus targeting third and fourth year undergraduate students. Participants attended a training session that outlined important information about the study procedures and requirements, how to use the Palm Pilot, and complete the Palm Pilot questionnaire. They were encouraged to follow the research guidelines throughout the study. Participants who neglected to fulfill their responsibilities or chose to withdraw from the study were partially reimbursed according to the number of days they participated in the study. Forty-five participants began the study. Three participants dropped out of the study because they found it to be too time-consuming or in conflict with their academic obligations, and two of the participants were asked to leave the study early for repeatedly failing to comply with the instructions of the study. Only those participants who completed the entire study were included in the final sample.

### *Measures*

*Semantic Similarity Questionnaire.* Participants rated the similarity between all possible pairs of the 16 interpersonal adjectives selected in study 1 (see Appendix C). Therefore, this questionnaire was 120-items long. The Likert response scale ranged from 1 (extremely dissimilar) to 9 (extremely similar).

*Dimension Measures.* Participants were asked to judge the level of affiliation and the level of dominance denoted by each of the 16 interpersonal adjectives (see Appendix

D). Level of dominance and level of affiliation ratings were made on a 7-point scale ranging from 1 (not affiliative/dominant) to 7 (very affiliative/dominant).

*Personality Trait Measures.* Participants completed the Revised Interpersonal Adjective Scale (IAS-R; Wiggins, Trapnell & Philips, 1988), which is a 64-item self-report measure of interpersonal traits (See Appendix E). In order to directly assess the 16 adjectives that were selected in Study 1 (Version B), we added nine adjectives to the scale (warm, naïve, passive, cold, agreeable, trusting, submissive, critical, and mistrusting). Participants were asked to rate how accurately each adjective described them on a Likert scale ranging from 1 (extremely inaccurate) to 8 (extremely accurate).

Five other questionnaires were included: Social Behaviour Inventory (SBI; Moskowitz, 1994), Circumplex Scale of Interpersonal Values (CSIV; Locke, 2000), Inventory of Interpersonal Problems (IIP; Alden, Wiggins & Pincus, 1990), Dominance and Affiliation Implicit Association Test (Either, Woody, & Sadler, 2006). However, these additional scales were not used in the analyses of this thesis.

*Gender Stereotyping Questionnaires.* It is possible that men hold traditional gender stereotypes that are dominance-related and women hold traditional gender stereotypes that are affiliation-related, in line with popular conceptions such as those portrayed in self-help relationship books (e.g., Gray, 1992; Tannen, 1990). If this is the case, these stereotyping differences may be related to participants' mean self and other ratings of social behaviour over 21 days. Therefore, participants completed two types of gender stereotyping questionnaires for males and females (see Appendix F). First, they rated the degree to which each of the 16 adjectives from questionnaire Version B describe the typical woman and the typical man (called female gender stereotyping and male gender

stereotyping, respectively). Second, participants completed the Extended Version of the Personal Attribute Questionnaire (EPAQ; Spence, Helmreich, & Holahan, 1979) for males and females. This EPAQ contained a 5-point Likert response scale that required participants to rate the degree to which 40 bipolar characteristics describe the typical man and a similar questionnaire was completed for describing the typical woman.

Typically, the EPAQ asks participants to rate the degree to which a series of traits are accurate descriptors of their personality. However, this approach only provides information about gender stereotypes as they apply to one gender (the gender of the participant). Some researchers have changed the EPAQ question stems so that they ask participants to rate how they view the typical male and the typical female (e.g. Conway & Vartanian, 2000). The same procedure was applied in the present study in order to obtain separate ratings of the typical male and typical female from each participant.

*Item Desirability and Importance Questionnaires.* Individuals' ratings of interpersonal adjectives on the Palm Pilot questionnaire may be influenced by how desirable and important it is for them to possess each of the 16 adjectives (see Appendix G). For example, it is possible that women may rate affiliation-related adjectives as more desirable and important and men may rate dominance-related adjectives as more desirable and important. Therefore, they completed a measure that asked them ideally how desirable they think it is to have each of the 16 traits. The response scale ranged from 1 (not desirable) to 7 (very desirable). They also completed another measure that asked them, keeping practical considerations in mind, how important they think it is to have each of the 16 traits. The response scale ranged from 1 (not important) to 7 (very important).

*Self-Esteem Measures.* Individuals' self-esteem may be related to their ratings of dominance and affiliation over time. For example, Campbell (1990, Study 2) asked people to rate themselves using 20 trait adjectives (e.g. warm, assertive, and intelligent) on two occasions about two months apart. She found that low self-esteem individuals' ratings were more variable (i.e., less consistent) from time 1 to time 2. On the other hand, high self-esteem individuals tended to have well-defined self-concepts and exhibited less variability (i.e., greater consistency or temporal stability). Therefore, we hypothesized that individuals with low self-esteem may perceive their own affiliation and dominance behaviour to be more variable (i.e., less consistent) over time, whereas high self-esteem individuals may perceive less variability (i.e., more consistency) in their dominance and affiliation ratings over the 21 days. The issue of whether the degree of self-esteem was related to variability in ratings of others was treated as an empirical question.

In order to test these hypotheses, participants were asked to complete the Revised Self-Liking / Self-Competence Scale (SLSC-R; Tafarodi & Swann, 1995) and the Single-Item Self-Esteem Scale (SISE; Robins, Hendin, & Trzesniewski, 2001), which are included in Appendix H. The SLSC contained 16 items and the response scale ranged from 1 (never agree) to 7 (never disagree). The Self-Competence subscale of the SLSC assesses individuals' perceptions of their overall capabilities, effectiveness, and agency. The Self-Liking subscale of the SLSC examines individuals' judgments of overall self-approval, self-acceptance, and self-derogation. The SISE asks participants to rate a single direct statement ("I have high self-esteem") on a 7-point Likert scale that ranges from 1 (Never Agree) to 7 (Never Disagree).

*Daily Event-Contingent Recording Questionnaire.* Event-contingent recording software requesting information on each significant interaction was installed on all Palm Pilots. Please refer to Appendix I to review this questionnaire. First, participants were asked to provide information about the interaction such as when it started and its duration. Second, participants provided information about their interaction partners such as the person's gender, their relationship (e.g. parent, sibling, friend, etc.), how long they knew them (e.g. first encounter, six months, two to ten years, etc.), and the type of communication that took place (face-to-face, phone, or live internet). Third, participants indicated on a 9-point response scale (1 = extremely inaccurate, 5 = neutral, and 9 = extremely accurate) the extent to which 16 adjectives described their own behaviour during each interaction. Fourth, participants completed the same 9-point scale to indicate the extent to which the 16 adjectives described their interaction partner's interpersonal behaviours. Fifth, participants reported the extent to which the interaction was harmonious, pleasant, rewarding, and stressful on a 9-point scale (e.g. 1 = extremely unpleasant to 9 = extremely pleasant). Participants were encouraged to report on as many significant interactions that they experienced throughout the day with no limitations.

*End of Study Questionnaire.* At the end of the study (download session 6) participants were asked to rate their level of compliance throughout the study and provide feedback (see Appendix J). More specifically, participants were asked to estimate the number of interactions they reported each day, the percentage of significant interaction reported, and the length of time between the end of the interaction and the recording. In addition, participants were asked to rate their level of compliance on a 5-point Likert scale ranging from (1) poor compliance to (5) full compliance. Participants were also

asked open-ended questions about the Palm Pilot questionnaire, Palm Pilot hardware, download sessions, and level of remuneration. Lastly, participants were asked to list the names of any other individuals that they knew who participated in the study, how often they interacted with these individuals, and if they belonged to the same organizations.

*Procedure*

Participants first attended a training session during which they completed a package of questionnaires. A step-by-step script for the introductory sessions is included in Appendix K. The questionnaire package included the Semantic Similarity Questionnaire, Social Behaviour Inventory (SBI; Moskowitz, 1994), Circumplex Scale of Interpersonal Values (CSIV; Locke, 2000), Inventory of Interpersonal Problems (IIP; Alden, Wiggins & Pincus, 1990), Semantic Similarity Questionnaire, and Revised Interpersonal Adjective Scale (IAS-R; Wiggins, Trapnell & Philips, 1988). After completing these questionnaires participants were given a Palm Pilot, which was pre-programmed with the event-contingent questionnaire. The specific procedures for the Palm Pilot study were outlined and participants received training on how to use their assigned Palm Pilot and Palm software. Participants were asked to complete the three- to five-minute Palm Pilot questionnaire reporting on each significant interaction they experienced each day. A significant interaction was defined as an interaction that lasted five minutes or longer. They were encouraged to report on a variety of relationship types (e.g. parental, intimate, friendship, professional, etc.) that are positive, neutral, and / or negative in nature. In addition, instructions and contact information were inserted inside all Palm cases for participants to use as a reference.

Throughout the study, participants' completion of the daily Palm Pilot questionnaires was closely monitored and feedback about their compliance was provided. It was important that participants understood the procedures and that their data was downloaded frequently, in order to minimize the loss of data and maximize their chances of successfully completing the study. Thus, participants attended six download sessions, during which trained research assistants downloaded their completed questionnaire data from the Palm Pilot to the lab computer and rated participants' progress. A step-by-step script for the downloading sessions is included in Appendix L. At each download session, the research assistants determined whether questionnaires were completed every day, how many questionnaires were completed per day, whether questionnaires were completed shortly after the interaction took place, whether participants completed the questionnaires in a systematic or careless manner, and whether participants completed the entire questionnaire. In addition, participants were asked to discuss their experiences and voice their concerns. Participants who did not follow the appropriate procedures were asked to provide an explanation as to why they were not able to follow the procedures. Those who expressed difficulty with operating the hardware or software received additional one-on-one training.

The data was downloaded from the Palm Pilots to the lab computer every two to three days for a period of three weeks. Participants received an email reminding them of their download appointments throughout the week. Those who failed to bring their Palms into the lab for downloading were contacted within 24 hours and urged to submit their data as soon as possible. During each download session, participants received additional incentives such as drinks, snacks, and gift certificates. In addition, participants received a

ballot to enter a $50 draw in each of the six download sessions. The last downloading session was also participants' final day in the study. A step-by-step script for the conclusion session is included in Appendix M. In this session, participants completed another package of questionnaires that included the Dominance and Affiliation Dimension Measures, 16 Adjective Gender Stereotyping Scale, Extended Version of the Personality Attribute Questionnaire (EPAQ; Spence, Helmreich, & Holahan, 1979), Item Desirability and Importance Scales, Self-Liking / Self-Competence Scale (SLSC-R; Tafarodi & Swann, 1995), Single-Item Self Esteem Scale (SISE; Robins, Hendin, & Trzesniewski, 2001), and an End of Study Questionnaire (See Appendix J). Upon completion of the entire study, participants were debriefed and awarded $50 for their participation.

## Results

### *Descriptive Statistics*

Information regarding the nature of the interaction was collected for every reported interaction. On average, participants reported five ($SD$ = 1.18, range = 1 to 18) interactions per day and 112 interactions across the entire testing period (range = 18 to 24 days).[7] Participants were asked to state the type of relationships they had with their interaction partners, length of the relationship, mode of communication, and length of each interaction. They selected one of 10 relationship types (parents, siblings, other relatives, friends, romantic partner, classmate/co-worker, supervisor/boss, acquaintance, service personnel, and other). A summary of the proportions of each relationship type for

[7] Some participants failed to complete the Palm Pilot questionnaire during some days due to exams, work overload, or forgetfulness. These participants were not forced to stay in the study beyond the 21-day testing period. Thus, we lacked data for the days that they did not complete the questionnaire. On the other hand, other participants asked to continue their participation in the study in order to make-up the missing days and at times provided data for more than 21days.

male and female participants is shown in Table 3. The table illustrates that proportions of the different types of relationships and interactions were very similar for the male and female participants in the study. Averaged across gender, the most common types of interactions reported on by the participants were those with their friends (51%), romantic partners (12.5%), and classmates or co-workers (11%). Participants were also asked to estimate how long they have known their interaction partners (first encounter, less than a month, one to six months, six months to two years, two years to ten years, and all my life). Both male and female participants reported most commonly on interactions with individuals they have known for two to ten years (34.5%) and six months to two years (27.5%). The majority of interactions reported took place face-to-face (71%), compared to live internet (17%) or phone (12.5%) communications. The average duration of an interaction was similar for males and females (approximately 25.90 minutes).

The gender composition of the dyad was assessed for every reported interaction across the 21 days. The percentage of same-sex versus opposite-sex interactions for relationship type, relationship length, communication mode, and interaction length are included in Table 3. On average, participants interacted with same-sex (58%) more than opposite-interaction partners (42%). Furthermore, female participants interacted more with other females (62%) than other males (38%), whereas male participants tended to interact with males (54%) and females (46%) somewhat equally.

We also examined the gender composition of the dyads in the two most commonly reported types of interactions (friends and romantic partners). In friendships, female participants tended to interact with members of the same-sex (72%) more so than members of the opposite-sex (28%), and male participants also interacted more with

same-sex (59%) compared to opposite-sex (41%) friends. In romantic relationships, female participants mainly reported on interactions with opposite-sex (91%) compared to same-sex (9%) romantic partners, and male participants also reported more opposite-sex (78%) than same-sex (22%) interactions with romantic partners.[8]

*Multidimensional Scaling: Interpersonal Circumplex Structure*

Participants rated the similarity between every possible pairing of the 16 interpersonal adjectives in order to examine their understanding of the semantic similarity between interpersonal adjectives. Like in Study 1, participants' similarity ratings were averaged for each of the 16 adjectives to form a single matrix that was submitted to a Euclidean two-way distance analysis. The results illustrated that overall participants' semantic structures were *not* focused along the dominance or affiliation dimension (see Figure 8). The stimulus configuration revealed that adjectives within the same octants were mostly close in proximity, and reasonably well spaced in a circular pattern, with a few exceptions (e.g., "cold" should be located closer to "critical"). In addition, the two-dimensional solution produced a relatively good stress value of .12 and squared multiple correlation (RSQ) value of .91 (see Table 4). A one-factored and a three-factored solution were also examined. Stress and RSQ considerably improved from one-factored to a two-factored solution, but only slightly improved from a two-factored to a three-factored solution. Thus, the two-dimensional solution was adopted in examining participants' semantic understanding of interpersonal adjectives and in the computation of focus-indices.

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[8] It is possible that some of the same-sex interactions with romantic partners were recorded accidently (e.g. one participant reported on 45 interactions with a romantic partner of the opposite-sex and 1 interaction with a romantic partner of the same-sex). However, it is also possible that some participants had same-sex romantic partners (e.g. one participant reported on 54 interactions with a romantic partner of the same-sex and zero interactions with a romantic partner of the opposite-sex).

In Figure 8, the two main dimensions extracted from the Euclidean Multidimensional (MDS) analysis appeared to be extraversion and agreeableness. These are Big Five factors that are located in the interpersonal space (Wiggins & Pincus, 1992). Therefore, the MDS solution was rotated in order to represent the underlying dimensions of affiliation and dominance.[9] First, the stimulus coordinates for the dominance adjectives (dominant and assertive) were averaged in order to determine the length of the vector. Second, trigonometry equations were used to compute the degree and direction of the rotation. The two-dimensional Euclidean MDS solution was rotated counterclockwise by 35 degrees, so that the two underlying dimensions were dominance and affiliation.[10]

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[9] Feldman (1995) used the weighted individual difference multidimensional scaling (three-way INDSCAL) analysis solution, which should not be rotated because the stimulus weights adjust each person's solution to fit an averaged solution for the entire sample (Kruskal & Wish, 1998). That is, the individual differences procedure adjusts the group solution for each person, shrinking or expanding the group solution along the extraversion and agreeableness dimensions. However, the Euclidean two-way distance MDS solution can be rotated. We actually rotated and examined both the Euclidean Distance and Individual differences MDS solutions and found that the stimulus configurations from the two analyses were very similar. However, given that the individual differences solution is usually described as non-rotatable, we only report the rotated Euclidean solution.

[10] The interpretation of a MDS stimulus configuration can be highly subjective (e.g. Figure 7). That is, the degree to which a hidden structure is circular and the distance between two adjectives or octants may vary. In order to confirm that the two main dimensions of the hidden MDS structures were dominance and affiliation, two additional dimension measures were assessed (dominance dimension measure and affiliation dimension measure). Recall that participants were asked to judge the level of affiliation and the level of dominance denoted by each of the 16 interpersonal adjectives on a 7-poing Likert scale at the beginning of the study (see Appendix D). These ratings were averaged for each adjective across all participants, resulting in 16 mean ratings of the level of dominance denoted by each of the 16 adjectives, and 16 mean ratings of the level of affiliation denoted by each of the 16 adjectives. For dominance, the correlation between the 16 mean ratings and rotated Euclidean MDS coordinates was computed. A similar correlation was computed for affiliation.

Large statistically significant correlations between the MDS coordinates and dimension scores suggest that dominance and affiliation are the two main underlying dimensions in the MDS solution. More specifically, the mean dominance rating for each adjective strongly correlated with the dominance coordinates for each adjective, $r\,(14) = .98, p < .01$. In addition, the mean affiliation rating for each adjective strongly correlated with the affiliation coordinates for each adjective, $r\,(14) = .94, p < .01$. These values were comparable to those reported by Feldman (1995), who correlated the arousal and valence dimension measures with the valence and arousal MDS coordinates, respectively. In order to assess whether men and women differed in their ratings of level of dominance and affiliation denoted by each interpersonal adjectives, a dominance dimension score and affiliation dimension score was computed for each participant using the dimension measures. The results showed that men and women did not differ in their ratings of the level of affiliation and dominance denoted by each adjective (all $p$'s $> .13$).

We also hypothesized that men and women's semantic understanding of the similarity between interpersonal adjectives would not differ from each other or be focused along the dominance or affiliation dimension. Therefore, male and female participants' data were separated and submitted to two Euclidean Multidimensional Scaling (MDS) analyses in order to determine whether the hidden structures of males and females were not flattened along either dimension. The results illustrated that both structures were reasonably circular and two-dimensional (see Figure 9). In addition, the goodness of fit measures indicate that the two-dimensional solution for females (RSQ = .89, Stress = .13) was similar to the solution for males (RSQ = .87, Stress = .14). In Study 1, the results for males and females greatly differed (females' two-dimensional solutions were better than the males' solution), possibly because the male sample was much smaller than the female sample. In this study, the results for males and females were very similar, which could be due to the fact that equal numbers of males and females were included in each sample. In sum, men and women's semantic perceptions were not narrowed along either the dominance or affiliation dimension.

Although a single Euclidean semantic similarity structure was derived from the MDS analysis, this approach assumes that the solution obtained is the same for all participants. However, large variability was evident in participants' squared correlations in the INDSCAL analysis (RSQ ranged from .13 to .75). These results indicated that there was some variation in participants' perceptions of the semantic similarity between interpersonal adjectives. Participants' subject weights, derived from the INDSCAL analyses, measure the importance of each dimension to each subject. However, this

variation was not significantly related to affiliation-focus or dominance-focus. The implications of these variations are discussed later.

*Assessment of Dominance-Focus and Affiliation-Focus*

*Standard Deviation to Characterize Density Distribution Plots.* In order to examine the degree to which participants' reports of their own behaviour varied over the 21 days, we first computed dominance and affiliation dimension scores for *self-reported behaviour* for each interaction. We followed the approach typically used by interpersonal researchers (e.g., Dryer & Horowitz, 1997; Sadler & Woody, 2003) for computing theoretically driven dimension scores. For example, to compute dominance dimension scores, first the responses for the adjectives located in the same octant (shown in Figure 5b) were averaged. Second, the scores for the octants located on the diagonals (which contain both dominance and affiliation components) were projected onto the vertical dominance dimension using trigonometry. [11] Third, to compute final dominance dimension scores, all octants above the x-axis were added, and all octants located below the x-axis were subtracted. (Octants DE and LM are irrelevant to the dominance dimension score because they are located 90° away from this dimension). Thus the formula for computing dominance dimension scores is:

Dominance Dimension = PA + (.707*BC) + (.707*NO) – (.707*JK) – (.707*FG) – HI

[11] The adjectives that lie on the diagonals (45 degrees between the x-axis and y-axis) contain both dominance and affiliation components; but only the dominance component of these adjectives is relevant when computing the Dominance dimension score. Therefore, the Pythagorean Theorem is used to determine the y-axis (dominance) component. For example, consider the averaged score for the adjectives in the BC octant. The triangle that is formed by linking the (x, y) coordinate to the Dominance dimension, consists of two 45 degree angles and a 90 degree angle. For 1 unit up the y-axis, there is 1 unit along the x-axis, and the hypotenuse is $\sqrt{2}$ units long. Since the cosine of 45 degrees (adjacent divided by hypotenuse) is 1 divided by $\sqrt{2}$ (which equals .707), the y-coordinate of the BC adjectives must be multiplied by .707. This procedure is also relevant when computing Affiliation dimension scores.

The affiliation dimension scores were computed in a similar fashion, by first averaging adjectives in the same octant; second using trigonometry to measure only the horizontal component of the adjectives located on the diagonals; and third adding all octants to the right of the y-axis and subtracting all octants located to the left of the y-axis. (Octants PA and HI are irrelevant to the affiliation dimension scores because they are located 90° away from this dimension). Thus the formula for computing affiliation dimension scores is:

Affiliation Dimension = LM + (.707*NO) + (.707*JK) – (.707*BC) – (.707*FG) – DE

A similar approach was used to compute dimension scores for the *reports of others' behaviour* for each interaction. In sum, two dimension scores were computed for participants' self-reported behaviour and two dimension scores were computed for participants reports of their interaction partners' behaviour across 21 days.

We characterized the self-reported density distributions for all interactions reported by each person across the 21 days in terms of five main variables: mean dominance, mean affiliation, standard deviation for dominance, standard deviation for affiliation, and the correlation between affiliation and dominance. Five similar dependent variables characterized the plots of the reports of others' behaviour. The means, standard deviations, and reliabilities for ratings of self and others over the 21 days are listed in Table 5.

The internal consistency reliabilities of these ten dependent variables were computed based on a method that is similar to the split-half method. Initially, affiliation and dominance dimension scores were computed for each interaction that was reported by

each participant. Each participant's interactions were numbered and their affiliation and dominance dimension scores were split in half: All the even numbered interaction scores were separated from the odd numbered interaction scores. This split was done for each participant's self and other data. Next, the mean, standard deviation, and correlation were computed across each participant's odd- and even-numbered affiliation and dominance scores. The correlations between the odd and even scores for each of the ten dependent variables were computed for both the self and other data. Finally, we adjusted for length by boosting the correlations between odd and even scores using the traditional formula for the split-half estimate of a test's reliability, $r_{CC} = 2r_{AB} / (1 + r_{AB})$. As can be seen in Table 5, the internal consistency reliabilities were high ranging from .84 to .99, with the exception of the reliability for the correlation between affiliation and dominance for rating others (reliability = .53). These results indicated that participants' responses to affiliation and dominance items on the Palm Pilot questionnaire were mostly high in internal consistency across interactions.

These ten dependent variables were predicted with two within-subject variables: gender of interaction partner and self-or-other ratings. In addition, one between-subject variable was included: gender of perceiver. Thus, five 2(gender of perceiver) x 2(gender of interaction partner) x 2(rating type: self or other) ANOVAs were conducted. The F-statistics, p-values, and $\eta^2$ for all main effects and interactions are illustrated in Table 6.

Although not central to the main variability hypotheses of this thesis, analyses of mean dominance and affiliation in individuals' self and other reports were examined. As can be seen in Table 6, no statistically significant main effects or interactions were found when examining participants' *mean dominance* levels. The results for *mean affiliation*

ratings revealed that two of the main effects were significant. A highly significant main effect for gender of perceiver was found, $F(1, 38) = 16.56$, $p < .001$, which accounted for 30 percent of the variance in mean affiliation ratings. These results indicated that female perceivers tended to rate themselves and others as more affiliative ($M = 9.82$) than male perceivers ($M = 6.88$), regardless of the gender of their interaction partners or whether the ratings were made for self or others. Furthermore, there was a significant gender of interaction partner effect, $F(1, 38) = 5.40$, $p = .03$, which accounted for 12 percent of the variance in mean affiliation ratings. This effect revealed that female interaction partners were rated as more affiliative ($M = 8.55$) than male interaction partners ($M = 8.15$), regardless of the gender of the perceiver and rating type.

More central to this thesis were the analyses predicting the standard deviations that measured variability in affiliation and dominance over the 21 days. Looking back at Figure 4, the hypotheses for *variability in dominance* are measured by the *height* of the ovals in the eight cells. A three-way interaction was predicted for variability in dominance. This three-way interaction includes three important predicted effects: (1) for ratings of self, we expected a main effect of gender of perceiver, such that the variance of dominance would be greater for male perceivers than for female perceivers, regardless of the gender of the interaction partner (cells B and D show larger dominance variability than cells A and C); (2) for ratings of others, we expected a main effect of gender of interaction partner, such the variance of dominance would be greater for male interaction partners than for female interaction partners (cells G and H show larger dominance variability than cells E and F); and (3) for ratings of others we expected a two-way interaction, such that male perceivers' attentiveness to dominance would lead them to

perceive more variability in dominance when rating female interaction partners (there is slightly more dominance variability in cell F than in cell E), but not when rating male interaction partners' dominance (cells G and H show the same amount of dominance variability). These more specific hypotheses were tested as planned contrasts.

As shown in Table 6, the three-way interaction for variability in dominance was not statistically significant, $F$ (1, 38) = 0.41, $p$ = .53. The cell means for the more specific effects are shown in Table 7. First, for ratings of self, the main effect of gender of perceiver was not significant, $F$ (1, 38) = 1.72, $p$ = .20, and the marginal means were not in the predicted direction ($M$ = 3.24 for males and $M$ = 3.60 for females). Second, for ratings of others, the main effect of gender of interaction partner was not significant, $F$ (1, 38) = 0.53, $p$ = .47. Although the means were in the predicted direction ($M$ = 3.31 for males and $M$ = 3.23 for females), these differences were clearly very small and not significant. Third, for ratings of others, the expected two-way interaction was not significant, $F$ (1, 38) = 0.21, $p$ = .65. In particular, for the crucial two cells, the means were in the opposite direction to that predicted ($M$ = 3.06 for males perceivers of female interaction partners, and $M$ = 3.41 for female perceivers of female interaction partners). For ratings of others, although the main effect of gender of perceiver was not significant, $F$ (1, 38) = 1.12, $p$ = .30, there was a tendency for female perceivers ($M$ = 3.42) to see more variability in dominance than male perceivers ($M$ = 3.12). This finding suggests that if there is any gender difference in this set of findings, it is the females who are more attentive to dominance distinctions, not males.

Returning again to Figure 4, the hypotheses for *variability in affiliation* are measured by the *width* of the ovals in the eight cells. A three-way interaction was predicted for

variability in affiliation. Similar to variability in dominance, this interaction is comprised of three more specific effects: (1) for ratings of self, we expected a main effect of gender of perceiver, such that female perceivers would show more variability in affiliation than male perceivers (cells A and C show more affiliation variability than cells B and D); (2) for ratings of others, we expected a main effect of gender of interaction partner, such that female interaction partners would be perceived to be more variable in affiliation than male interaction partners (cells E and F show more variability in affiliation than cells G and H); and (3) for ratings of others, we expected a two-way interaction, such that female perceivers' attentiveness to affiliation would lead them to perceive more variability in affiliation when rating male interaction partners (there is slightly more affiliation variability in cell G than in cell H), but not when rating female interaction partners' affiliation (cells E and F show the same amount of affiliation variability). These more specific hypotheses were tested as planned contrasts.

As can be seen in Table 6, the three-way interaction for variability in affiliation was not statistically significant, $F(1, 38) = 0.08$, $p = .78$. The means for the three more specific effects are shown in Table 7. First, for ratings of self, the main effect for gender of perceiver was not significant, $F(1, 38) = 0.03$, $p = .86$. Although the marginal means were in the predicted direction ($M = 3.69$ for females and $M = 3.63$ for males), these differences were clearly very small and not significant. Second, for ratings of others, the main effect for gender of interaction partner was not significant, $F(1, 38) = 0.61$, $p = .44$, and the means were not in the predicted direction ($M = 3.60$ for females and $M = 3.72$ for males). Third, for ratings of others, the predicted 2-way interaction was marginally significant, $F(1, 38) = 2.83$, $p = .10$; however, the pattern of means was only somewhat

consistent with what was expected, and this result is better interpreted in a wider context. Specifically, the pattern of means for ratings of others was similar to the pattern of means for ratings of self which produced a significant 2-way interaction, $F(1, 38) = 4.13$, $p = .05$. When considered together, these two effects (for self and other ratings) produced a significant interaction effect shown in Table 6, $F(1, 38) = 4.14$, $p = .05$, accounting for 10% of the variability in affiliation ratings.

This significant interaction is illustrated in Figure 10, and shows that the variability in affiliation is lower in same-sex interactions ($M = 3.50$ for female perceivers with female interaction partners and $M = 3.53$ for male perceivers with male interaction partners) than in opposite-sex interactions ($M = 3.85$ for female perceivers with male interaction partners and $M = 3.75$ for male perceivers with female interaction partners). That is, it appears that for mixed-sex interactions, both genders are more attentive to affiliation distinctions in ratings of self and other, compared to same-sex interactions. The simple main effects within gender of perceiver show that female perceivers notice distinctions in affiliation when interacting with males significantly more than when interacting with other females, $F(1, 19) = 4.35$, $p = .05$. Although male perceivers on average notice distinctions in affiliation more when interacting with females than with other males, this difference did not reach significance, $F(1, 19) = 0.96$, $p = .34$.

Although not central to the main hypotheses of this thesis, analyses of the *correlation between dominance and affiliation* ratings were examined with gender of perceiver, gender of interaction partner, and type of rating (self or other) as the predictors. This analysis was computed simply for completeness. That is, the full density distributions drawn in Figure 4 can be captured well by the means for dominance and

affiliation, the standard deviations for both of these variables, and the correlation between them. As Shown in Table 6, none of the interactions and main effects were found to be statistically significant (all $p$'s >.28).

*Index 1 from Factor Analyses.* As outlined in the Introduction, we also adopted the Index 1 approach used by Feldman (1995) in order to assess dominance and affiliation focus. For this index, ideally we would have assessed the same type of three-way interactions consisting of three subcomponents as we did for the analyses using standard deviations. However, the computation of Index 1 (as well as Index 3) involved factor analyses across all interactions for each participant (as described in further detail shortly). Since the mean number of interactions for participants was 113 (range 63 to 212), there were generally a reasonable number of data points for these factor analyses to assess the hypothesized perceiver main effect for self-ratings; however, the data generally seemed too sparse to compute factor analyses based on only the interactions with male interaction partners ($M$ = 52, range = 18 to 121) or based on only the interactions with female interaction partners ($M$ = 61, range = 31 to 133). Therefore, for the ratings of others, we did not assess the hypothesized main effect of gender of interaction partner, nor the gender of perceiver by gender of interaction partner interaction. Instead, for ratings of others, we only assessed the gender of perceiver main effect.

For self-ratings, this approach involved first computing the correlations between every possible pairing of the 16 interpersonal adjectives across all reported interactions, thereby constructing a p-correlation matrix for each participant. Next, these p-correlation matrices were submitted to a principal-axis factor analysis, two factors were extracted, and a varimax rotation was completed. That is, for self-ratings, 40 factor analyses were

conducted (one for each participant). A similar approach was taken for the ratings of others (computing a p-correlation matrix consisting of correlations between all possible pairings of the 16 adjectives across all interactions over the 21-days for each participant and conducting 40 factor analyses for the ratings of others). As shown in the Table 1 example, the percentage of total variance accounted for by an individual's dominance factor was adopted as an index of dominance-focus. Similarly, the percentage of total variance accounted for by an individual's affiliation factor was adopted as an index of affiliation-focus.

The main dimensions extracted from some of the participants' factor solutions appeared to be extraversion, agreeableness, or trust rather than affiliation and dominance. Therefore, the factor analysis solutions were rotated in order to assess the degree of dominance and affiliation in participants' ratings. The rotation was completed manually and involved a couple of steps. First, for each participant, two centroids were computed, one for the affiliation dimension and one for the dominance dimension. The affiliation centroid was computed by first determining which factor was closest to affiliation,[12] and then averaging the factor loadings for octant LM adjectives (warm and agreeable), and subtracting the average of the factor loadings for the octant DE adjectives (cold and critical). This procedure was done for both dimensions, resulting in an x and y coordinate for the affiliation centroid, which produced a vector from (0, 0) to the centroid. Similarly, the dominance centroid was computed using the factor loadings for the other dimension – taking the average of the loadings for octant PA adjectives (dominant and assertive) and subtracting the average of the loadings of the loadings for

[12] Because the two extracted dimensions were not always dominance and affiliation, the factor that was closest to affiliation was determined by the factor that had the largest absolute loadings for the adjectives warm, agreeable, cold, and critical.

octant HI adjectives (submissive and passive). This was done for both dimensions, resulting in an x and y coordinate for the dominance centroid, which when connected to point (0, 0) produced another vector.

The degrees by which each of these vectors, independently, could be rotated to their appropriate dimensions were calculated, and the average of these two rotations was used, weighting each centroid by the length of its vector. For example, if the affiliation centroid had a much longer vector than the dominance centroid, it was weighted more heavily in the average. The rotation was conducted in such a way that the two dimensions were kept at a 90 degree angle from each other. In total, we completed small rotations (under 10 degrees) on 20 of the factor solutions, medium rotations (10-25 degrees) on 12 factor solutions, and somewhat large rotations (25-48 degrees) on eight factor solutions from participants' self-ratings. In addition, we conducted small rotations (under 10 degrees) on 24 of the factor solutions, medium rotations (10-25 degrees) on 13 factor solutions, and somewhat large rotations (25-60 degrees) on three factor solutions from participants' ratings of others.

There was a substantial amount of variability across participants in this index. To illustrate, the proportions of variance accounted for by the affiliation and dominance dimensions (Index 1) for self-ratings are shown in the second and third columns in Table 8. The first 20 participants listed are female and the last 20 participants listed are male. For Index 1 self-ratings across all participants, the mean affiliation-focus was .22 (range = .10 to .40), and the mean dominance-focus was .21 (range = .09 to .37). The means and ranges for ratings of others were comparable to those reported for the self.

There were no gender differences in affiliation-focus or in dominance-focus according to Index 1. Specifically, for self-ratings, male ($M$ = .22, $SD$ = .08) and female ($M$ = .22, $SD$ = .08) perceivers did not differ significantly in affiliation-focus, $t$ (38) = .23, $p$ = .82. Likewise, male ($M$ = .20, $SD$ = .07) and female ($M$ = .22, $SD$ = .08) perceivers did not differ significantly in dominance-focus, $t$ (38) = -.76, $p$ = .45. Thus, there was no evidence of a perceiver main effect for affiliation-focus or for dominance-focus in participants' self ratings using Index 1. For ratings of others, male ($M$ = .23, $SD$ = .06) and female ($M$ = .23, $SD$ = .07) perceivers did not differ significantly in affiliation-focus, $t$ (38) = .43, $p$ = .67. In addition, male ($M$ = .19, $SD$ = .05) and female ($M$ = .20, $SD$ = .07) perceivers did not differ significantly in dominance-focus, $t$ (38) = -.61, $p$ = .55. Therefore, there was no evidence of a perceiver main effect for affiliation-focus or for dominance-focus in ratings of others either.

*Index 2 from P-Correlation Matrices and Multidimensional Scaling.* As mentioned in the introduction and as detailed in Appendix A, the computation of Feldman's (1995) Index 2 is much more complex. The absolute differences between every possible pair of stimulus coordinates from the rotated MDS solution (which was the same for all participants) were used to compute the affiliation-based and dominance-based distances matrices. Next, each person's p-correlations were transformed to z-scores in order to normalize these matrices. Index 2 affiliation-focus was computed for each person by correlating their transformed p-correlation matrix with the affiliation-based distance matrix. Likewise, Index 2 dominance-focus was computed for each person by correlating their transformed p-correlation matrix with the dominance-based distance matrix.

The correlations between the p-correlation matrices and distance-based matrices (Index 2) for self ratings are shown in the fourth and fifth columns of Table 8. Like Index 1, these values also reveal a substantial degree of variability. For Index 2, across all participants, the mean affiliation-focus was .44 (range = .17 to .68), and the mean dominance-focus was .39 (range = .00 to .74). The means and ranges for ratings of others were similar to the ratings for self.

The analyses of Index 2 revealed that there was no significant main effect of gender of perceiver in affiliation-focus and dominance-focus. For ratings of self, male ($M$ = .44, $SD$ = .13) and female ($M$ = .43, $SD$ = .16) perceivers did not differ significantly in affiliation-focus, $t$ (38) = .10, $p$ = .92. Likewise, male ($M$ = .37, $SD$ = .18) and female ($M$ = .40, $SD$ = .17) perceivers did not differ significantly in dominance-focus, $t$ (38) = -.56, $p$ = .58. Thus, there was no evidence of a perceiver main effect for affiliation-focus or for dominance-focus in participants' self ratings using Index 2. For ratings of others, male ($M$ = .50, $SD$ = .12) and female ($M$ = .46, $SD$ = .13) perceivers did not differ significantly in affiliation-focus, $t$ (38) = .91, $p$ = .37. In addition, male ($M$ = .32, $SD$ = .16) and female ($M$ = .39, $SD$ = .17) perceivers did not differ significantly in dominance-focus, $t$ (38) = -1.22, $p$ = .23. Therefore, according to Index 2, there was no evidence of a perceiver main effect for affiliation-focus or for dominance-focus in participants' self and other ratings.

*Index 3 from Factor Analyses and Multidimensional Scaling.* As mentioned in the introduction, Index 3 was created to improve upon flaws in Index 2. Using this index, the degree of dominance-focus is captured by multiplying the dominance dimension MDS stimulus coordinates by the factor loadings for the dominance dimension, summing these

values, and dividing by the total number of adjectives (as shown in Table 1). The same procedure was applied to compute the degree of affiliation-focus.

The average sum of products of the MDS stimulus coordinates and factor loadings (Index 3) for self-ratings are shown in the sixth and seventh columns of Table 8. These values also were highly variable across participants. For Index 3 self-ratings across all participants, the mean affiliation-focus was .40 (range = .18 to .56), and the mean dominance-focus was .37 (range = -.06 to .54). The means and ranges for the ratings of others were comparable to those reported for self-ratings.

The analyses of Index 3 revealed that there was no significant main effect of gender of perceiver in affiliation-focus and dominance-focus. For ratings of self, male ($M$ = .39, $SD$ = .10) and female ($M$ = .41, $SD$ = .09) perceivers did not differ significantly in affiliation-focus, $t$ (38) = -.23, $p$ = .82. Likewise, male ($M$ = .35, $SD$ = .14) and female ($M$ = .39, $SD$ = .13) perceivers did not significantly differ in dominance-focus, $t$ (38) = .77, $p$ = .50. Thus, there was no evidence of a perceiver main effect for affiliation-focus or for dominance-focus in participants' self ratings using Index 3. For ratings of others, male ($M$ = .41, $SD$ = .07) and female ($M$ = .40, $SD$ = .13) perceivers did not differ significantly in affiliation-focus, $t$ (38) = -.15, $p$ = .88. In addition, male ($M$ = .33, $SD$ = .14) and female ($M$ = .38, $SD$ = .10) perceivers did not differ significantly in dominance-focus, $t$ (38) = 1.43, $p$ = .16. Therefore, according to Index 3, there was no evidence of a perceiver main effect for affiliation-focus or for dominance-focus in participants' self and other ratings.

*Relationship Between All Four Types of Focus Indices.* The correlations between all four types of focus indices (standard deviation, Index 1, Index 2, and Index 3) were

computed for all the self-ratings, as well as for all the ratings of others. These correlations are shown in Table 9. First, consider the correlations between indices for affiliation, and between indices for dominance. For ratings of self, the correlations between the four focus indices for affiliation (in the upper left triangle for columns 1-3) were strongly positive, ranging from .48 to .86 (all $p$'s < .01), as were the correlations between the four focus indices for dominance (in the lower right triangle for columns 5-7), ranging from .60 to .79 (all $p$'s < .001).

For the ratings of others, the correlations between the indices for affiliation (in the upper left triangle for columns 9-11) ranged from .31 to .80 ($p$ < .05 for five of the six correlations), and for dominance (in the lower right triangle for columns 13-15) they ranged from .55 to .81 (all $p$'s < .001). Overall, these correlations suggest that the four types of focus indices are measuring the same (or at least highly similar) constructs of affiliation-focus and dominance-focus. Interestingly, across these four types of comparisons, the standard deviation tended to correlate more moderately with the three other indices than these other indices correlated with themselves. This tendency seems reasonable, given that the computations for the standard deviation involve directly measured variables, whereas the computations for the remaining three indices all involve approaches that are designed to reveal underlying (latent) factors or dimensions.

Also of interest are the correlations between dominance and affiliation dimensions for each index. These correlations differed considerably depending on which index they were computed on; however, the correlations were very similar for self and other ratings. The correlations between dominance and affiliation for the standard deviation indices were moderately positive (.44 and .41); for Index 1 the correlations were slightly negative

(-.23 and -.22); for Index 2, they were strongly negative (-.68 and -.73); and for Index 3, they were close to zero (.14 and -.08).

*Perceived Interpersonal Complementarity*

We were interested in determining whether participants perceived their own behaviour to be complementary (opposite on dominance and similar on affiliation) with their interaction partners. Therefore, we computed correlations between ratings of self and others across all interactions for each person. For affiliation, the mean of these correlations across all participants was .57, which is consistent with interpersonal correspondence. That is, on average, participants tended to see their own affiliation as highly and positively related to the affiliation of their interaction partners. Interestingly, there was a large range in these correlations (.18 to .84), indicating that some participants perceived very little correspondence and other participants perceived very strong correspondence between their own and others' affiliation. Surprisingly, for dominance, the mean of these correlations across all participants was .01, which is inconsistent with interpersonal reciprocity. That is, on average, participants tended to see their own dominance as unrelated to the dominance of their interaction partners. However, the wide range in these correlations (-.49 to .52) reveals that some participants see their dominance levels as strongly and negatively related to the dominance of their partners, in line with interpersonal reciprocity, while others see their dominance levels as strongly positively related to the dominance of their interaction partners. This pattern of correlations described for all participants was highly similar for male perceivers and female perceivers in the study. Furthermore, this pattern was very similar for both male and female interaction partners.

We were also interested in examining whether participants' perceptions of the complementarity between their own and others' behaviour was related to their perceptions of how harmonious, pleasant, rewarding, and stressful they found their interactions to be. For each participant, average scores for harmonious, rewarding, pleasant, and stressful were computed across all interactions. Then correlations were computed between perceived correspondence and each of the four variables; similarly correlations were computed between perceived reciprocity and the four variables. The results revealed that participants' perceived correspondence between their own and others' affiliation was significantly correlated with the degree of stress they reported during their interactions, $r$ (40) = -.39, $p$ = .01. That is, the more stressful participants perceived their interaction to be, the less they perceived their affiliation with others to correspond. Interestingly, participants did not perceive the correspondence between their affiliation behaviour and others' affiliation behaviour to be related to how conflictual, pleasant, or rewarding they found they found their interactions to be (all $p$'s > .30). Likewise, participants did not perceive the lack of reciprocity between their own dominance behaviour and that of others to be related to how conflictual, pleasant, rewarding, or stressful they found their interactions to be (all $p$'s > .13).

Other personality variables were examined in relation to variability in dominance and affiliation such as interpersonal traits, self-esteem, item desirability and importance, and gender stereotyping. These variables were measured using the Revised Interpersonal Adjective Scale (IAS-R; Wiggins, Trapnell & Philips, 1988), Revised Self-Liking / Self-Competence Scale (SLSC-R; Tafarodi & Swann, 1995), Single-Item Self-Esteem Scale (SISE; Robins, Hendin, & Trzesniewski, 2001), Item Desirability and Importance

questionnaires, Gender Stereotyping Questionnaires using the 16 interpersonal adjectives from Study 1, and the Extended Personal Attribute Questionnaire (EPAQ; Spence, Helmreich, & Holahan, 1979). Because these analyses are secondary to the present investigation, these findings are located in Appendix N and Tables 10-12.

## Discussion

The present research advances our current knowledge of *variability* in interpersonal behaviour over a period of three weeks and possible gender differences in this variability. The main focus of this thesis was to examine *variability* in men and women's affiliation and dominance behaviour over time. However, mean level differences were also assessed. Variability in dominance and affiliation was measured in four ways: standard deviation and three focus indices.

We predicted a three-way interaction between the gender of perceiver, gender of interaction partner, and rating type (self versus other) that has three components. In ratings of *affiliation* we predicted: (1) for ratings of self, a main effect of gender of perceiver, such that female perceivers would show more variability in affiliation than male perceivers; (2) for ratings of others, a main effect of gender of interaction partner, such that female interaction partners would be perceived to be more variable in affiliation than male interaction partners; and (3) for ratings of others, a two-way interaction, such that, in comparison to male perceivers, female perceivers' attentiveness to affiliation would lead them to see more affiliation when rating male interaction partners. In ratings of *dominance* we predicted: (1) for ratings of self, a main effect of gender of perceiver, such that the variance of dominance would be greater for male perceivers than for female perceivers, regardless of the gender of the interaction partner; (2) for ratings of others, a

main effect of gender of interaction partner, such the variance of dominance would be greater for male interaction partners than for female interaction partners; and (3) for ratings of others, a two-way interaction, such that, in comparison to female perceivers, male perceivers' attentiveness to dominance would lead them to see more variability in female interaction partners' dominance.

The analyses of the standard deviations allow us to most fully assess these effects. The results revealed that individuals' perceptions of men's and women's variability in affiliation differed in an interesting way. More specifically, for ratings of others, we predicted that male and female perceivers would rate female interaction partners to be more variable along the affiliation dimension than male interaction partners. A closer examination of these results showed that male perceivers considered female interaction partners to vary more along the affiliation dimension, as predicted. However, female perceivers considered *male interaction partners* to vary more along the affiliation dimension rather than *female interaction partners*. This effect extended to ratings of self, as well as ratings of others. Indeed, it appears that for mixed-sex interactions, both genders are more attentive to affiliation distinctions in ratings of self and others, compared to same-sex interactions.

This suggests that in mixed-sex interactions, people are more attentive to how friendly their interaction partners are being, as well as how friendly they themselves are being. This finding may reflect possible romantic considerations. That is, mixed-sex interactions often hold a social importance that same-sex interactions do not. Specifically, women may attend more to cues related to relationship development, intimacy, and closeness when interacting with men because they consider men to be

possible romantic partners. Similarly, men may also attend to issues of affiliation in their interactions with women because they, too, are thinking of possible romantic opportunities.

Popular books such as *Men are from Mars, Women are from Venus* (Gray, 1992) and *You Just Don't Understand* (Tannen, 1990) suggest men and women are so different that they come from two different worlds. The present findings suggest that there may well be two worlds, but they are not worlds of men versus women. Instead, they may be mixed-sex versus same-sex interactions. It may seem like there are two worlds because, for example, a woman only interacts with another woman or man. She never experiences a man-with-man social interaction. Thus, her experience could be that men are very different from women. However, the affiliation results suggest that the issue may be better understood or characterized in terms of same-sex interactions versus opposite-sex interactions.

It is interesting to consider how this finding could extend to variability in affiliation in gay and lesbian populations. That is, perhaps gays and lesbians would attend more to variability in affiliation when interacting with potential romantic partners. In these populations, we would expect that variability in affiliation to be *greater* in same-sex rather than opposite-sex interactions.

Mean differences in affiliation supported the popular notion that women are more affiliative than men. The results showed that female perceivers tended to rate themselves as more affiliative than male perceivers, and female interaction partners were rated as more affiliative than male interaction partners, regardless of the gender of the perceiver. Although mean differences showed that women rated themselves as more affiliative than

men, and women were rated as more affiliative, analyses of variability in interpersonal behaviour over time suggest that females' attention to changes in affiliation is significant only when they interact with other men.

*Affiliation-Focus and Dominance-Focus Measured by Indices 1, 2, and 3*

In addition to the standard deviation, three other focus indices were computed in order to assess the degree to which men and women varied in affiliation-focus and dominance-focus. For each of these indices, two figures were computed: one for affiliation-focus and one for dominance-focus. Index 1 was derived from Factor Analyses and equaled the variance accounted for by the underlying affiliation dimension and by the dominance dimension. Index 2 was derived from participants' p-correlation matrices and multidimensional scaling analyses and equaled the correlation between participants' transformed p-correlation matrices and their distance-based matrices. Index 3 was derived from Factor Analyses and Multidimensional Scaling and equaled the sum of products divided by the total number of items for each dimension. These three indices were computed for individuals' self and other reports collected over a period of three weeks.

The main hypotheses evaluated for these three indices were as follows: (1) in comparison to women, we expected that men would rate their own behaviour to be more variable along the dominance dimension, and (2) in comparison to men, women would rate their own behaviour to be more variable along the affiliation dimension; (3) in comparison to women, we expected that men's social behaviour would be perceived to be more variable along the dominance dimension; likewise, (4) in comparison to men, we expected that women's social behaviour would be perceived to be more variable along

the affiliation dimension. That is, we expected four main effects, the first two for gender of perceiver (for dominance and affiliation, respectively), and the last two for gender of interaction partner (for dominance and affiliation, respectively). However, the results did not support these particular predictions. This was also the case for the main effects for the standard deviation analyses. The lack of support for these gender differences hypotheses suggests that there may be more gender similarities in individuals' variability of affiliation-focus and dominance-focus when examining interpersonal interactions over time.

Although the results from all four of the focus indices did not support all the main hypotheses of this research, important headway was made in the evaluation and computation of these indices. For example, the correlations between the indices of affiliation-focus and dominance-focus revealed that all four focus indices are measuring very similar constructs. That is, the correlations *within* the affiliation-focus indices and *within* the dominance-focus indices were strongly positive.

According to Interpersonal Theory, dominance and affiliation are two orthogonal dimensions that should not be related ($r = 0$). Presumably, this feature applies to people's mean levels of behaviours. Theorists such as Carson (1969) and Kiesler (1983, 1996) do not discuss how variability on these two dimensions should be related to each other. Nonetheless, we assessed the correlations between the affiliation-focus and dominance-focus scores for each index. Interestingly, these correlations varied quite considerably, depending on the index used, with a highly consistent pattern for self and other ratings. Index 1 produced slightly negative correlations between affiliation-focus and dominance-focus. One possible flaw in the computation of Index 1 is that high loadings increase the

proportion of variance accounted for by a particular dimension, regardless of whether the adjective actually belongs to the relevant dimension. Index 2 produced very strong negative correlations between affiliation-focus and dominance-focus. However, a limitation of Index 2 is that it does not distinguish synonyms on a relevant dimension from adjectives on an irrelevant dimension, and therefore, inadvertently produces a highly negative correlation between the two focus indices. Index 3 resulted in close to zero correlations between affiliation-focus and dominance-focus. This result is likely a function of the fact that the two-dimensional MDS and factor analyses that are components of this index request orthogonal dimensions. Nonetheless, Index 3 improves on the flaws of Index 2 and discriminates adjectives that are located at polar ends of a particular dimension. Furthermore, it does not inadvertently produce highly negative correlations. Thus, Index 3 may be considered to be an improvement over Index 1 and Index 2, and possibly an even better index of affiliation-focus and dominance-focus.

Surprisingly, the correlations between the standard deviation of dominance and standard deviation of affiliation were moderately positive. One explanation is that some people may be more inclined to encode variation in their own (and others') behaviour, regardless of whether it is dominance or affiliation; whereas others may be oblivious to these variations. That is, some individuals may *attend more* to whether they are consistently rating themselves or others highly on a particular adjective (e.g. dominant or warm) from interaction to interaction, whereas others may not.

Another explanation is that some people may *be more "functionally flexible"* than others (Paulhus & Martin, 1988). Functional Flexibility is described as one's ability to adjust his or her behaviour to the demands of the situation. The functionally flexible

person may possess the ability to modulate or change both their own affiliation and dominance, depending on the appropriate situations. For example, when considering possible romantic others, the functionally flexible individual could be warm and agreeable; furthermore, as a manager in a corporate setting, this individual could be dominant and assertive. Thus, they are able to change their behaviour in accordance with the demands of the situation.

More information is required (possibly in future studies) in order to increase our understandings of stability and change during interpersonal interactions over time. First, researchers may consider gathering information about actual observed behaviour in structured settings using video recordings, rather than relying only on perceptions of self and others. This type of methodology may be less natural, but provide greater control over different aspects of the situation. For example, individuals could complete a similar study to the current Palm Pilot study and then interact with a research assistant who is trained to act in a dominant or friendly manner during download sessions. The interaction with the research assistant could be videotaped and coded, or the participant could complete the Palm Pilot questionnaire after the interaction with the research assistant takes place. Second, individuals' perceived interpersonal abilities may be compared to their ratings of their own and others' behaviour during social interactions. For example, the Battery of Interpersonal Capabilities Scale (BIC; Paulhus and Martin, 1987) could be used to gather self-reports about individuals' perceptions of their *ability* to enact interpersonal traits. In this scale, participants are asked to rate the likelihood that they would be able to display a particular interpersonal trait (e.g. assertiveness) when the situation calls for it. It includes 16 groups of capabilities and may be used to assess

functional flexibility. Third, it would be interesting to investigate individual differences in variability and self-monitoring. That is, the degree to which individuals' behaviour changes from situation to situation. For example, individuals who are high in self-monitoring may display high variability in their interpersonal style compared to individuals who are low in self-monitoring. Fourth, variability in dominance and affiliation may be related to reoccurring interpersonal problems. Perhaps individuals who report more interpersonal problems related to dominance exhibit low variability in dominance over time because they are consistently dominant, controlling, and authoritative when interacting with other individuals. Another possibility may be that individuals who report more interpersonal problems are more variable in dominance-focus because they are inconsistently dominant or repeatedly failing to respond in a complementary manner when interacting with others (e.g. he or she rejects the dominant bid of an interaction partner by responding in a dominant manner).

*Why Are We Seeing More Gender Similarities?*

The lack of support for the gender differences hypotheses for perceiver and interaction partner main effects were consistent with previously mentioned studies investigating variability in interpersonal style. For example, Moskowitz and Zuroff's (2004) flux index measures the variability of people's self-reported dominance, submissiveness, agreeableness, and quarrelsomeness over time. According to the authors, four environmental influences contributed to intrapersonal variability, one of which was the gender balance of the interactions. They hypothesized that individuals who interacted with both males and females regularly (gender integrated) would show more intrapersonal variability than individuals who interacted with one particular gender

most of the time (gender segregated). Their findings indicated that less gender balance predicted less flux in dominance. That is, individuals who interacted more exclusively with females or more exclusively with males in most of their interactions varied less in their levels of dominance. On the other hand, individuals who interacted with both females and males equally, varied more in their levels of dominance.

In subsequent studies, no gender differences in flux scores were found (Moskowitz & Zuroff, 2005). Although the flux index is comparable to the analyses conducted in the present investigation (because it assesses variability in interpersonal style), the present work examined variability along the two main interpersonal dimensions, rather than the four main poles of the interpersonal circumplex. The flux index was not computed with the current Palm Pilot data because of our choice to focus on the two theoretical interpersonal dimensions and the dimensional indices computed by Feldman (1995). It would be interesting to attempt to compute the four flux variables with the present dataset, although with only two adjectives for each pole, it is possible that the reliability of these variables may be somewhat low. Nonetheless, if flux variables were computed using this data, we speculate that the findings would mirror those found by Moskowitz and Zuroff (2004, 2005), as well as those in the present study. That is, we expect that there would be no gender differences in the variability of flux dominance, flux submissiveness, flux friendliness, nor flux hostility using these researchers' approach.

Research investigating gender differences in mean interpersonal behaviour (as opposed to variability) and situational factors also found a lack of gender differences (Suh, Moskowitz, Fournier, & Zuroff, 2004). That is, men were not more dominant than women in situations that required individuals to take on dominance-related roles (e.g.

leader, manager, or boss). Similarly, women were not more affiliative than men in situations that required individuals to take on affiliation-related roles (e.g. friend, parent, or caregiver).

It is possible that men and women's roles in dominance-related and affiliation-related settings have changed over time and now reflect gender equality rather than gender inequality. Some research suggests that women have been rating themselves higher on dominance-related adjectives when completing questionnaires like the Bem Sex Role Inventory (BSRI) and the Extended Version of the Personal Attributes Questionnaire (EPAQ) in the last two decades (Twenge, 1997). As a result, women's mean self-ratings on dominance have increased and matched men's self-ratings on dominance traits. This work suggests that women's perceptions of their own dominance may have changed over the years and not others' perceptions of women's dominance.

In addition, some work suggests that the standards of comparison that individuals use to rate men's and women's behaviour may be shifting (Biernat & Kobrynowicz, 1999). More specifically, men's and women's social behaviour may be judged from a within (rather than between) group reference point. For example, perceivers may rate a man's dominance in comparison to other men and woman's dominance in comparison to other women. Therefore, evaluation of men's and women's dominance behaviour may be more similar than different.

*Interpersonal Circumplex Structure*

Study 1 had two related purposes: (1) to determine which set of interpersonal adjectives formed the best semantic structure, and (2) to determine whether the perceived meanings of interpersonal adjectives were narrowed along the affiliation or dominance

dimensions. In order to address the first purpose, we examined stimulus configuration graphs from Multidimensional scaling analyses for three different sets of interpersonal adjectives. We found that one set of adjectives (Version B) produced the most circular and well-ordered, two-dimensional structure according to interpersonal theory. Therefore, the adjectives in questionnaire Version B were used in the event-contingent Palm Pilot study. Second, we found that men's and women's understandings of the meaning of interpersonal adjectives formed a circular, two-dimensional structure, which did not appear to be narrowed along either dimension for males nor for females.

In order to ensure that Study 2 participants did not hold an understanding of the semantic meaning of interpersonal adjectives that was narrowed along either the dominance or affiliation dimensions, we asked participants to complete the same semantic similarity questionnaire (Version B) that was used in Study 1. The MDS results revealed that these participants' semantic understandings of the similarity between interpersonal adjectives were also not narrowed along the dominance or affiliation dimension. Therefore, the results for Study 2 were similar to those obtained in Study 1: Participants' similarity ratings produced a two-dimensional, circular representation of the semantic relationship between interpersonal words. In sum, any differences in the variability along the affiliation or dominance dimension would not be influenced by participants' understanding of the semantic ordering of the interpersonal adjectives used in the event-contingent Palm Pilot study.

A group solution was used to examine participants' semantic understanding of the meaning of interpersonal adjectives. However, participants' semantic representations of interpersonal adjectives were not identical. In fact, none of the participants' semantic

configurations replicated the ideal circumplex structure that is illustrated in Figures 1 and 5. When each participant's similarity ratings were submitted to an individual differences (INDSCAL) MDS analysis, we found that there were great individual differences in the semantic structural configuration of each participant. For example, the proportion of variance accounted for by participants' solutions ranged from .13 to .75. That is, there was great variability in participants' understanding of the semantic meaning of interpersonal adjectives when each solution was examined in isolation. This notion led us to think about the possible construction of an Index 4, which would compare each person's MDS coordinates to his or her p-correlation matrix that is derived from the Palm Pilot data. The strength of this index is that it produces a more individualized approach to assessing people's affiliation-focus and dominance-focus by including each participant's daily self-reports and similarity ratings rather than group similarity ratings.

*Why Should We Continue to Study Gender Differences?*

There has recently been a lot of controversy about studying gender differences in research (e.g. Archer, 2006; Davies & Shackelford, 2006; Hyde, 2006; Lippa, 2006; & Zuriff, 2006). Gender research critics often raise an interesting question: "why should researchers continue to examine gender differences rather than gender similarities?"(Baumeister, 1988). For example, Hyde (2005) conducted a meta-analysis investigating effect sizes in gender differences studies across a variety of disciplines. She found that there are more gender similarities than differences in most areas of research, including self-disclosure, abstract reasoning, reading comprehension, vocabulary, and self-esteem. However, Hyde also concluded that there are notable gender differences in

aggression, extraversion-assertiveness, agreeableness, and helping behaviour. Therefore, clearly there are some areas in which there are significant gender differences.

As mentioned previously, the masculinity and femininity subscales of widely used gender stereotyping scales (BSRI; Bem, 1974 & PAQ; Spence & Helmreich, 1974) highly correlated with the respective dominance and affiliation dimensions of the interpersonal circumplex (Wiggins & Broughton, 1985). Thus, investigating important gender differences in helping (affiliation) and assertiveness (dominance) behaviours may still be warranted. Furthermore, the octant representation of the interpersonal circumplex includes two other dimensions that are related to the Big Five personality factors (extraversion and agreeableness), which may involve important gender differences.

*Actual versus Perceived Behaviour*

Actual gender differences may be quite different from individuals' perceptions of variability in men's and women's social behaviour. In self ratings, individuals may be more motivated to form nonbiased perceptions of themselves. Furthermore, they may consistently aim to act and think in ways that confirm their own perceptions. As a result, individuals may alter self-reports to match their counter-stereotypic perceptions of their own social behaviour, which may be quite different from their actual behaviour. If we were to assess individuals' *actual* behaviour, we may find that their *perceptions* of themselves are quite different from others' perceptions them. For example, if we were to ask an external observer to rate people's behaviours during interpersonal interactions, we can compare the observer's ratings to participants' self-ratings in order to determine if any discrepancies exist between participants' perceived and actual behaviour. However, it is possible that the external observer may resort to gender stereotypic ideas about men's

and women's interpersonal behaviours. This may be due to the notion that individuals may more readily perceive gender differences in others' but not their own social behaviour. In ratings of others, individuals may more readily describe others' social behaviour in accordance with common gender stereotypes. That is, the need to form a non-biased perception of the self may be less salient in ratings of others. Thus, it is possible that individuals' self-ratings may mask actual gender differences in variability of social behaviour, whereas individuals' ratings of others may be more accurate descriptions of actual gender differences.

Nonetheless, the gender differences investigated in this study may be due to actual behavioural differences between men and women, or they may be due to perceptual biases that are different between men and women. The present work focuses on individuals' *perceptions* of the variability in their own and others' social behaviour only. The obtained differences in individuals' social behaviour may be due to perceptual biases, actual differences, or a combination of these two factors. The question of whether men's and women's perceived social behaviour are different from their actual behaviour should be investigated empirically. Researchers should aim to develop a more objective measure of individuals' actual behaviour rather than depend solely on individuals' perceptions of themselves and others.

*Limitations and Future Directions*

There are important limitations to consider in Study 1. In order to assess participants' understanding of the semantic meaning of interpersonal adjectives, they had to rate the similarity between every possible pair of 16 interpersonal adjectives. In total, participants in both studies made 120 comparisons between pairs of words. In Study 1, a

large number of participants' data was deleted because they did not complete the entire questionnaire or responded in an invalid manner. Recall that in this study, the questionnaire was placed in a packet of questionnaires and completed during mass testing. When the questionnaire was placed at the end of the package, many participants did not complete the task. In addition, some participants failed to answer some questions because they apparently did not understand the meaning of some words (such as crafty and wily). These problems did not occur in Study 2, when participants completed the questionnaires in much smaller groups and in a closely monitored setting.

In future, participants should complete this questionnaire separately from other instruments and in a supervised setting. The researcher may choose to check in with the participants, inquire about their progress, and provide feedback. In addition, researchers may want to consider including a list of the adjectives and their definitions for participants' reference. Furthermore, researchers may consider reducing the scale from 16 to eight interpersonal adjectives (Tracey, 2005, 2006). Using eight instead of 16 adjectives requires that participants only make 55 rather than 120 comparisons. Thus, the task becomes more manageable and less tedious. The drawback of this approach is that there is only one adjective used for each octant of the interpersonal circumplex. Using two adjectives from each octant allows the researcher to assess the position of each octant of the interpersonal circumplex depicted in the semantic structure with some confidence.

The limitations of Study 2 yield important considerations for future research. First, only two adjectives out of many were selected to represent each octant of the interpersonal circumplex. Second, it was difficult for some participants to stay in the study for a lengthy period of time such as three weeks. Towards the end of the study,

participants tended to demonstrate poorer compliance. That is, participants were recording fewer interactions per day, not recording any interactions on some days, leaving reports incomplete, waiting to record on interactions long after they took place, and missing download sessions. Compliance dropped even more when students began preparing for their exams at the end of the semester. In future, researchers should refrain from testing during critical academic periods (e.g. exam week and reading week). Third, this research involved third- and fourth- year university students and the results may not be generalizable to other populations.

More importantly, the present research advances research on interpersonal theory and variability measures. First, Study 2 examined individuals' ratings of their own and others' social behaviours, whereas in the past, researchers have focused mainly on individuals self-ratings. Second, a critical analysis of two focus indices was completed and a new focus index was introduced (Index 3), which proved to have several strengths over the indices proposed by Feldman (1995). Third, the present work highlights the possible importance of future research efforts devoted to better understanding the worlds of dyads, such as the dynamics in same-sex versus opposite-sex interactions, rather than focusing on the worlds of men versus women.

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Appendix A
Computation of Index 2

The following analyses are based on Feldman's (1995) Index 2 analyses.

**Palm Pilot Raw Data**
Below is a hypothetical example of one participant's rating of the 16 interpersonal adjectives for a single reported interaction per day for a period of 21 days. Recall that the response scale ranged from 1 (extremely inaccurate) to 9 (extremely accurate).

Participant 1's Raw Data

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 | A16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I1 | 3 | 3 | 9 | 3 | 2 | 6 | 2 | 5 | 6 | 2 | 3 | 2 | 4 | 5 | 3 | 4 |
| I2 | 4 | 4 | 7 | 4 | 2 | 7 | 3 | 5 | 7 | 3 | 5 | 2 | 8 | 4 | 3 | 3 |
| I3 | 1 | 3 | 6 | 5 | 3 | 5 | 5 | 6 | 8 | 3 | 4 | 5 | 7 | 4 | 9 | 7 |
| I4 | 3 | 2 | 7 | 7 | 3 | 8 | 7 | 7 | 6 | 4 | 5 | 6 | 5 | 1 | 4 | 9 |
| I5 | 6 | 3 | 8 | 8 | 2 | 6 | 8 | 3 | 7 | 5 | 6 | 3 | 7 | 7 | 5 | 2 |
| I6 | 7 | 4 | 5 | 9 | 4 | 7 | 6 | 8 | 7 | 7 | 5 | 7 | 9 | 9 | 6 | 9 |
| I7 | 8 | 5 | 6 | 7 | 3 | 4 | 6 | 7 | 8 | 5 | 7 | 4 | 5 | 3 | 3 | 6 |
| I8 | 6 | 4 | 3 | 6 | 4 | 5 | 6 | 7 | 6 | 4 | 3 | 3 | 4 | 9 | 6 | 7 |
| I9 | 7 | 7 | 7 | 7 | 3 | 9 | 8 | 8 | 5 | 3 | 2 | 7 | 4 | 5 | 4 | 2 |
| I10 | 8 | 8 | 6 | 8 | 3 | 3 | 5 | 5 | 6 | 4 | 2 | 4 | 2 | 9 | 3 | 7 |
| I11 | 5 | 4 | 8 | 8 | 2 | 5 | 7 | 6 | 7 | 8 | 5 | 3 | 7 | 8 | 9 | 4 |
| I12 | 6 | 5 | 6 | 5 | 5 | 5 | 7 | 7 | 8 | 9 | 7 | 9 | 6 | 6 | 1 | 2 |
| I13 | 2 | 7 | 9 | 6 | 6 | 4 | 6 | 7 | 7 | 9 | 5 | 7 | 5 | 4 | 9 | 7 |
| I14 | 3 | 8 | 8 | 5 | 5 | 7 | 9 | 6 | 6 | 6 | 7 | 7 | 4 | 4 | 2 | 3 |
| I15 | 4 | 3 | 9 | 4 | 4 | 8 | 8 | 5 | 8 | 7 | 8 | 6 | 5 | 7 | 5 | 7 |
| I16 | 2 | 2 | 9 | 5 | 5 | 8 | 3 | 8 | 6 | 6 | 8 | 6 | 7 | 4 | 9 | 2 |
| I17 | 1 | 4 | 2 | 4 | 6 | 4 | 2 | 8 | 5 | 6 | 7 | 8 | 6 | 2 | 5 | 1 |
| I18 | 5 | 5 | 3 | 5 | 7 | 6 | 2 | 5 | 6 | 5 | 8 | 7 | 3 | 3 | 9 | 3 |
| I19 | 6 | 6 | 6 | 6 | 6 | 7 | 4 | 4 | 7 | 7 | 5 | 4 | 5 | 5 | 3 | 5 |
| I20 | 7 | 5 | 5 | 6 | 3 | 8 | 5 | 3 | 7 | 4 | 4 | 4 | 7 | 2 | 5 | 4 |
| To... | | | | | | | | | | | | | | | | |
| I120 | 8 | 4 | 4 | 7 | 4 | 6 | 7 | 6 | 9 | 6 | 6 | 2 | 5 | 4 | 3 | 1 |

*Note.* The total number of interactions depends on the number of interactions reported by a particular participant.

A = Adjective
I = Interaction

The computation of Index 2 includes 4 main steps.

**Step 1**

A similarity matrix of all participants' ratings is constructed, which is then submitted to a Euclidean Multidimensional Scaling (MDS) analysis. Recall that participants were required to rate the similarity between every possible pairing of interpersonal adjectives (e.g. how similar are assertive and dominant?) on a 7-point Likert scale that ranged from extremely similar to extremely dissimilar. The 120 similarity ratings were organized in a matrix as illustrated below.

Participant 1 Similarity Matrix

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 | A16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 1 | | | | | | | | | | | | | | | |
| A2 | 7 | 1 | | | | | | | | | | | | | | |
| A3 | 5 | 7 | 1 | | | | | | | | | | | | | |
| A4 | 6 | 6 | 5 | 1 | | | | | | | | | | | | |
| A5 | 7 | 3 | 3 | 8 | 1 | | | | | | | | | | | |
| A6 | 7 | 7 | 5 | 7 | 6 | 1 | | | | | | | | | | |
| A7 | 9 | 9 | 5 | 7 | 8 | 7 | 1 | | | | | | | | | |
| A8 | 3 | 5 | 3 | 7 | 7 | 7 | 8 | 1 | | | | | | | | |
| A9 | 2 | 7 | 5 | 5 | 3 | 4 | 4 | 5 | 1 | | | | | | | |
| A10 | 4 | 7 | 7 | 7 | 5 | 3 | 5 | 6 | 7 | 1 | | | | | | |
| A11 | 7 | 5 | 7 | 7 | 5 | 5 | 5 | 7 | 4 | 5 | 1 | | | | | |
| A12 | 6 | 7 | 7 | 3 | 5 | 4 | 5 | 6 | 6 | 6 | 8 | 1 | | | | |
| A13 | 6 | 6 | 6 | 5 | 3 | 6 | 4 | 5 | 7 | 6 | 5 | 9 | 1 | | | |
| A14 | 7 | 6 | 7 | 5 | 5 | 3 | 6 | 8 | 7 | 8 | 5 | 8 | 6 | 1 | | |
| A15 | 7 | 8 | 5 | 7 | 5 | 4 | 2 | 2 | 6 | 8 | 4 | 7 | 7 | 7 | 1 | |
| A16 | 7 | 7 | 7 | 6 | 5 | 6 | 3 | 3 | 8 | 8 | 5 | 8 | 7 | 7 | 8 | 1 |

A1 = Assertive
A2 = Dominant
A3 = Sly
A4 = Mistrusting
A5 = Cold
A6 = Critical
A7 = Unsociable
A8 = Introverted
A9 = Passive
A10 = Submissive
A11 = Naïve
A12 = Trusting
A13 = Warm
A14 = Agreeable
A15 = Outgoing
A16 = Extraverted

**Step 2**

Create a dominance-based matrix and an affiliation-based similarity matrix. The **absolute difference** between the MDS coordinates for all pairs of adjectives will be calculated along the dominance and affiliation dimensions respectively.

**ALSCAL Euclidian MDS ANALYSIS**

MDS Stimulus Coordinates

| | Adjective | Dime1 | Dime2 |
|---|---|---|---|
| 1 | Assertive | 1.4 | 0.1 |
| 2 | Dominant | 1.3 | 0.2 |
| 3 | Sly | 0.2 | 1.3 |
| 4 | Mistrusting | 0.1 | 1.5 |
| 5 | Cold | 0.6 | 1.4 |
| 6 | Critical | 0.8 | 1.0 |
| 7 | Unsociable | 1.0 | 1.0 |
| 8 | Introverted | 1.4 | 0.4 |
| 9 | Passive | 1.4 | 0.3 |
| 10 | Submissive | 1.3 | 0.1 |
| 11 | Naïve | 0.9 | 0.9 |
| 12 | Trusting | 0.2 | 1.4 |
| 13 | Warm | 0.1 | 1.5 |
| 14 | Agreeable | 0.3 | 1.3 |
| 15 | Outgoing | 1.3 | 0.8 |
| 16 | Extraverted | 1.3 | 0.5 |

Let's assume Dimension 1 is Dominance and dimension 2 is Affiliation.

For example, the absolute difference between assertive of dominant in the dominance dimension is $|1.4 - 1.3| = 0.1$. Similarly, the absolute difference between assertive and dominant in the affiliation dimension is $|0.1 - 0.2| = 0.1$.

The 120 similarity-based distances for the dominance dimension are organized in a matrix as illustrated on the next page and constitute the dominance-based similarity matrix. A similar approach applied when constructing the affiliation-based similarity matrix.

Below is an example of a dominance-based similarity matrix constructed from the MDS stimulus coordinates above (column labeled Dime1).

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 | A16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 1 | | | | | | | | | | | | | | | |
| A2 | dA1A2 | 1 | | | | | | | | | | | | | | |
| A3 | dA1A3 | dA2A3 | 1 | | | | | | | | | | | | | |
| A4 | dA1A4 | dA2A4 | dA3A4 | 1 | | | | | | | | | | | | |
| A5 | dA1A5 | dA2A5 | dA3A5 | dA4A5 | 1 | | | | | | | | | | | |
| A6 | dA1A6 | dA2A6 | dA3A6 | dA4A6 | dA5A6 | 1 | | | | | | | | | | |
| A7 | dA1A7 | dA2A7 | dA3A7 | dA4A7 | dA5A7 | dA6A7 | 1 | | | | | | | | | |
| A8 | dA1A8 | dA2A8 | dA3A8 | dA4A8 | dA5A8 | dA6A8 | dA7A8 | 1 | | | | | | | | |
| A9 | dA1A9 | dA2A9 | dA3A9 | dA4A9 | dA5A9 | dA6A9 | dA7A9 | dA8A9 | 1 | | | | | | | |
| A10 | dA1A10 | dA2A10 | dA3A10 | dA4A10 | dA5A10 | dA6A10 | dA7A10 | dA8A10 | dA9A10 | 1 | | | | | | |
| A11 | dA1A11 | dA2A11 | dA3A11 | dA4A11 | dA5A11 | dA6A11 | dA7A11 | dA8A11 | dA9A11 | dA10A11 | 1 | | | | | |
| A12 | dA1A12 | dA2A12 | dA3A12 | dA4A12 | dA5A12 | dA6A12 | dA7A12 | dA8A12 | dA9A12 | dA10A12 | dA11A12 | 1 | | | | |
| A13 | dA1A13 | dA2A13 | dA3A13 | dA4A13 | dA5A13 | dA6A13 | dA7A13 | dA8A13 | dA9A13 | dA10A13 | dA11A13 | dA12A13 | 1 | | | |
| A14 | dA1A14 | dA2A14 | dA3A14 | dA4A14 | dA5A14 | dA6A14 | dA7A14 | dA8A14 | dA9A14 | dA10A14 | dA11A14 | dA12A14 | dA13A14 | 1 | | |
| A15 | dA1A15 | dA2A15 | dA3A15 | dA4A15 | dA5A15 | dA6A15 | dA7A15 | dA8A15 | dA9A15 | dA10A15 | dA11A15 | dA12A15 | dA13A15 | dA14A15 | 1 | |
| A16 | dA1A16 | dA2A16 | dA3A16 | dA4A16 | dA5A16 | dA6A16 | dA7A16 | dA8A16 | dA9A16 | dA10A16 | dA11A16 | dA12A16 | dA13A16 | dA14A16 | dA15A16 | 1 |

d = absolute value of the difference between MDS stimulus coordinates for one dimension
A = Adjective
Example: dA1A2 = |A1dom-A2dom| = |1.4 - 1.3| = 0.1

The same approach is taken to construct the affiliation-based similarity matrix, using the MDS stimulus coordinates from the column labeled Dim2.

**Step 3**

Compute a transformed p-correlation matrix on each participant's p-correlation matrix.
The purpose here is to use all the correlations as raw data which tend not to be normally distributed. Run Fisher r-to-z (Cohen, Cohen, West, & Aiken, 2003).

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 | A16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 1 | | | | | | | | | | | | | | | |
| A2 | r-z | 1 | | | | | | | | | | | | | | |
| A3 | r-z | r-z | 1 | | | | | | | | | | | | | |
| A4 | r-z | r-z | r-z | 1 | | | | | | | | | | | | |
| A5 | r-z | r-z | r-z | r-z | 1 | | | | | | | | | | | |
| A6 | r-z | r-z | r-z | r-z | r-z | 1 | | | | | | | | | | |
| A7 | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | | | | | | | | |
| A8 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | | | | | | | |
| A9 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | | | | | | |
| A10 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | | | | | |
| A11 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | | | | |
| A12 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | | | |
| A13 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | | |
| A14 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | | |
| A15 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 | |
| A16 | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | r-z | 1 |

**Step 4**

Correlate each participant's transformed p-correlation matrix with the affiliation-based similarity matrix and dominance-based similarity matrix to obtain an index of affiliation-focus and dominance-focus.

| Transformed P-Correlation | Dominance-Based Matrix | Affiliation-Based Matrix |
|---|---|---|
| A | a | aa |
| B | b | bb |
| C | c | cc |
| D | d | dd |
| E | e | ee |
| F | f | ff |
| G | g | gg |
| H | h | hh |
| I | i | ii |
| J | j | jj |
| K | k | kk |
| L | l | ll |
| M | m | mm |
| N | n | nn |
| O | o | oo |
| P | p | pp |
| Q | q | qq |
| R | r | rr |
| S | s | ss |
| T | t | tt |
| U | u | uu |
| V | v | vv |
| W | w | ww |
| X | x | xx |
| Y | y | yy |
| Z | z | zz |
| . | . | . |
| . | . | . |
| . | . | . |
| Corr120 | Dis120 | Dis120 |

Corr = correlation, Dis = distance

The correlation between the transformed p-correlation matrix and dominance-based similarity matrix is adopted as an index of dominance-focus. Similarly, the correlation between the transformed p-correlation matrix and affiliation-based similarity matrix is adopted as an index of affiliation-focus.

## Appendix B
## Description of Important Flaws in Index 2

Consider four prototypical types of cases, which consist of pairs of adjectives. These cases are listed in the first two columns of the table below. In Case A, we have two synonyms that are relevant to the dominance dimension (assertive and dominant). In Case B, we have two antonyms that are relevant to the dominance dimension (dominant and submissive). In case C, we have two synonyms on a dimension that is irrelevant to dominance (warm and agreeable). And in Case D, we have two antonyms on a dimension that is irrelevant to dominance (warm and cold).

| Case | Adjective Pairing | MDS Stimulus Coordinates for Dominance | Absolute Difference of MDS Coordinates for Dominance | P-Correlations for Pairs of Adjectives | |
|---|---|---|---|---|---|
| | | | | Person 1 | Person 2 |
| A | Assertive<br>Dominant | 1.31<br>1.36 | 0.05 | .80 | .80 |
| B | Dominant<br>Submissive | 1.36<br>-1.52 | 2.88 | -.80 | -.80 |
| C | Warm<br>Agreeable | 0.11<br>-0.36 | 0.47 | .00 | .80 |
| D | Warm<br>Cold | 0.04<br>0.11 | 0.07 | .00 | -.80 |

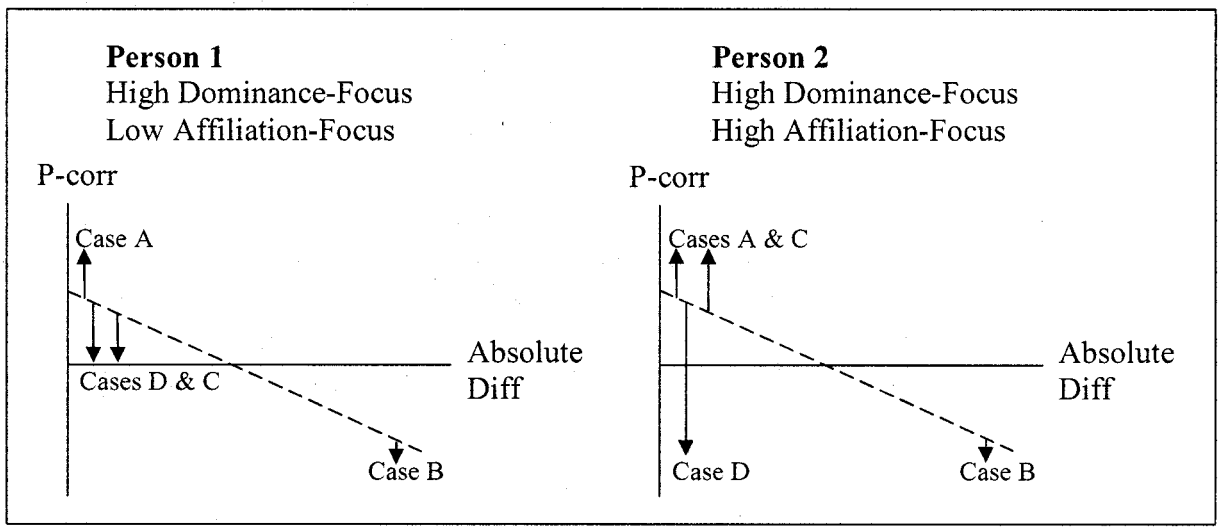
Index 2 is based in part on the MDS stimulus coordinates, which are obtained from similarity ratings for all pairs of adjectives averaged across all participants. To illustrate, the third column in the table above shows the MDS coordinates for the dominance dimension obtained from the present dataset. Dominant adjectives should load highly on this dimension and submissive adjectives should load negatively; furthermore, because warm and cold adjectives are unrelated to the dominance dimension, they should load

about zero. The absolute values of the differences between MDS stimulus coordinates for the pairs of adjectives in each case are shown in the fourth column. Again, these results are obtained from the entire sample of participants, and do not differ per individual. Thus, regardless of the dominance-focus or affiliation-focus of any individuals, we would expect the absolute values of the MDS coordinates for Cases A, C, and D to be close to zero, whereas this difference would be large and positive for Case B.

One problem with Index 2 is that the absolute value of the difference fails to distinguish pairings in which the two types of words are dimension-relevant synonyms, such as the adjectives assertive and dominant on the dominance dimension (Case A), from pairings in which the two types of adjectives are both unrelated to that dimension, such as warm and agreeable (Case C) and warm and cold (Case D). The implications of this shortcoming become clear as we calculate Index 2. This index is the correlation between the absolute value of the difference in stimulus coordinates (column 4) and the particular participant's p-correlations.

Therefore, consider a person who is almost completely dominance-focused (Person 1 shown in column 5 of the table above), who notices distinctions in his own dominance levels from interaction to interaction, but who does not notice distinctions in his own affiliation levels from interaction to interaction (that is, he is also very low in affiliation-focus). Distinctions in his self-rated dominance levels are captured by strongly positive p-correlations for his ratings of synonyms assertive and dominant (Case A), and strongly negative p-correlations for his ratings of antonyms dominant and submissive (Case B) over 21 days. His failure to notice affiliation distinctions are revealed by his zero p-correlations for affiliation-related words (Cases C and D).

If we were to compute Index 2 for the dominance-focus of Person 1, we would compute the correlation between columns 4 and 5. (Note that for clarity, these examples only show four pairings of the 16 adjectives used in this study, which are described later; however, because 16 adjectives were actually used, there are actually 120 possible pairings between them. Therefore, the correlation would be computed across 120 cases, rather than just the four shown here.) This correlation (Index 2) could be shown by plotting all the cases from the table above on the *leftmost* graph below, with the absolute difference in MDS coordinates shown on the x-axis and the p-correlations on the y-axis. This density distribution plot would consist of four types of clouds of points, located where the four cases are shown. As can be seen in this graph, a person who is perfectly dominance-focused does not have a perfect negative correlation on Index 2, because Cases C and D produce large deviations (shown by the arrows) from the best line of fit (the dotted line).




Note that in the leftmost graph above for Person 1, Cases A and B are the most relevant, and if they were the only cases taken into consideration for the computation of Index 2, there would be no difficulty because they would be located at opposite ends of

the line of best fit. However, Cases C and D (which should be irrelevant to the computation of dominance-focus) are located far away from the line of best fit, and therefore they make the correlation smaller than it would otherwise be. It is as if Index 2 works well on the right-hand side of the diagram, but is not discriminating the cases adequately on the left-hand side of the diagram.[13]

Another problem with this index is that values that are calculated for two orthogonal dimensions are actually forced to be negatively correlated. To illustrate, compare the data from Person 1 (shown in column 5 of the table) to those from Person 2 (shown in column 6). Both people are high in dominance-focus according to their strong p-correlations for Cases A and B. The important distinction is that whereas Person 1 is very low in affiliation-focus (shown by zero p-correlations for Cases C and D), Person 2 is high in affiliation-focus (shown by strong p-correlations for Cases C and D). To think about what Index 2 would look like for Person 2, consider the *rightmost* plot above, showing absolute differences on the x-axis and p-correlations on the y-axis. This person's points for Cases C and D produce large deviations (shown by the arrows) from the best line of fit (the dotted line). The deviations from the line of best fit for Person 2 are larger than the deviations for Person 1, and therefore, the correlation (Index 2 dominance-focus) is lower for Person 2 than for Person 1. We could summarize these

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[13] An interesting thought exercise is to consider that another person (not shown in the table or the graphs) whom has the same Index 2 value as Person 1 could simply have Case A and Case C interchanged on the leftmost diagram above. (That is, for Case A, his p-correlation would be zero and for Case C his p-correlation would be .80, but all other data points would be the same as for Person 1.) This person perceives his warm and agreeable behaviour over 21 days to be highly related (as shown by his high p-correlation for Case C), but his assertive and dominant behaviour over 21 days to be unrelated (as shown by his zero p-correlation for Case A). Clearly this person should not have as high a value for Index 2 as Person 1, because he does not tend to see his own levels of assertiveness and dominance to be related to one another. However, the way that Index 2 is computed, this person obtains exactly the same value for Index 2 (exactly the same value for dominance-focus) as the purely dominance-focused Person 1.

two people's data as follows: Person 1 has low affiliation-focus and a high Index 2 for dominance-focus (small scatter from the line of best fit), whereas Person 2 has high affiliation-focus and a low Index 2 for dominance-focus (large scatter from the line of best fit). Therefore as affiliation- focus increases, dominance-focus (according to Index 2) decreases, even though the actual dominance-focus of both people is the same (according to their same p-correlations for Cases A and B). Ultimately, the way that Index 2 is constructed, therefore, produces a negative correlation between dominance-focus and affiliation-focus, even if they are orthogonal constructs.

Appendix C
Semantic Similarity Questionnaire (Version A)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Extremely Dissimilar | Very Dissimilar | Moderately Dissimilar | Slightly Dissimilar | Unrelated | Slightly Similar | Moderately Similar | Very Similar | Extremely Similar |

**Instructions:**

We are going to present you with many words that people use to describe aspects of social behaviour.

1. For each of the following pairs of words please rate how similar they are in meaning.
2. If you do not understand the meaning of a word, please circle that word and indicate that you did not understand its meaning.

**Please check your gender:** Male _____ Female_____

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | How similar are **assertive** and **timid**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2. | How similar are **inconsiderate** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 3. | How similar are **sly** and **introverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4. | How similar are **dominant** and **unsociable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 5. | How similar are **assertive** and **unsociable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 6. | How similar are **dominant** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 7. | How similar are **crafty** and **warm**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 8. | How similar are **shy** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 9. | How similar are **introverted** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10. | How similar are **shy** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 11. | How similar are **dominant** and **timid**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 12. | How similar are **sly** and **cold**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 13. | How similar are **unsociable** and **shy**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 14. | How similar are **warm** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 15. | How similar are **trusting** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

16. How similar are **crafty** and **extraverted**? 1 2 3 4 5 6 7 8 9

17. How similar are **sly** and **timid**? 1 2 3 4 5 6 7 8 9

18. How similar are **dominant** and **crafty**? 1 2 3 4 5 6 7 8 9

19. How similar are **inconsiderate** and **trusting**? 1 2 3 4 5 6 7 8 9

20. How similar are **introverted** and **warm**? 1 2 3 4 5 6 7 8 9

21. How similar are **warm** and **extraverted**? 1 2 3 4 5 6 7 8 9

22. How similar are **dominant** and **cold**? 1 2 3 4 5 6 7 8 9

23. How similar are **unsociable** and **extraverted**? 1 2 3 4 5 6 7 8 9

24. How similar are **crafty** and **unsociable**? 1 2 3 4 5 6 7 8 9

25. How similar are **sly** and **inconsiderate**? 1 2 3 4 5 6 7 8 9

26. How similar are **crafty** and **trusting**? 1 2 3 4 5 6 7 8 9

27. How similar are **warm** and **agreeable**? 1 2 3 4 5 6 7 8 9

28. How similar are **crafty** and **timid**? 1 2 3 4 5 6 7 8 9

29. How similar are **introverted** and **timid**? 1 2 3 4 5 6 7 8 9

30. How similar are **inconsiderate** and **introverted**? 1 2 3 4 5 6 7 8 9

31. How similar are **dominant** and **shy**? 1 2 3 4 5 6 7 8 9

32. How similar are **cold** and **timid**? 1 2 3 4 5 6 7 8 9

33. How similar are **unsociable** and **naive**? 1 2 3 4 5 6 7 8 9

34. How similar are **assertive** and **naive**? 1 2 3 4 5 6 7 8 9

35. How similar are **dominant** and **introverted**? 1 2 3 4 5 6 7 8 9

36. How similar are **dominant** and **naive**? 1 2 3 4 5 6 7 8 9

37. How similar are **cold** and **naive**? 1 2 3 4 5 6 7 8 9

38. How similar are **timid** and **warm**? 1 2 3 4 5 6 7 8 9

39. How similar are **assertive** and **dominant**? 1 2 3 4 5 6 7 8 9

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 40. How similar are **inconsiderate** and **shy**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 41. How similar are **introverted** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 42. How similar are **crafty** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 43. How similar are **unsociable** and **trusting**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 44. How similar are **assertive** and **cold**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 45. How similar are **cold** and **warm**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 46. How similar are **naive** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 47. How similar are **crafty** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 48. How similar are **inconsiderate** and **warm**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 49. How similar are **shy** and **warm**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 50. How similar are **outgoing** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 51. How similar are **dominant** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 52. How similar are **assertive** and **introverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 53. How similar are **inconsiderate** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 54. How similar are **naive** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 55. How similar are **dominant** and **sly**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 56. How similar are **assertive** and **trusting**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 57. How similar are **assertive** and **inconsiderate**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 58. How similar are **sly** and **shy**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 59. How similar are **sly** and **naive**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 60. How similar are **trusting** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 61. How similar are **inconsiderate** and **timid**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 62. How similar are **unsociable** and **timid**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 63. How similar are **trusting** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 64. How similar are **unsociable** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 65. How similar are **assertive** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 66. How similar are **timid** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 67. How similar are **crafty** and **cold**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 68. How similar are **unsociable** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 69. How similar are **shy** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 70. How similar are **introverted** and **trusting**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 71. How similar are **sly** and **trusting**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 72. How similar are **trusting** and **warm**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 73. How similar are **unsociable** and **introverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 74. How similar are **introverted** and **naive**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 75. How similar are **dominant** and **warm**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 76. How similar are **shy** and **timid**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 77. How similar are **cold** and **inconsiderate**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 78. How similar are **timid** and **trusting**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 79. How similar are **assertive** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 80. How similar are **dominant** and **trusting**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 81. How similar are **cold** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 82. How similar are **assertive** and **crafty**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 83. How similar are **inconsiderate** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 84. How similar are **sly** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 85. How similar are **introverted** and **shy**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 86. How similar are **cold** and **introverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 87. How similar are **assertive** and **shy**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 88. How similar are **timid** and **naive**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

89. How similar are **sly** and **unsociable**? 1 2 3 4 5 6 7 8 9

90. How similar are **agreeable** and **extraverted**? 1 2 3 4 5 6 7 8 9

91. How similar are **cold** and **outgoing**? 1 2 3 4 5 6 7 8 9

92. How similar are **shy** and **trusting**? 1 2 3 4 5 6 7 8 9

93. How similar are **sly** and **crafty**? 1 2 3 4 5 6 7 8 9

94. How similar are **naive** and **trusting**? 1 2 3 4 5 6 7 8 9

95. How similar are **crafty** and **shy**? 1 2 3 4 5 6 7 8 9

96. How similar are **cold** and **trusting**? 1 2 3 4 5 6 7 8 9

97. How similar are **inconsiderate** and **naive**? 1 2 3 4 5 6 7 8 9

98. How similar are **crafty** and **naive**? 1 2 3 4 5 6 7 8 9

99. How similar are **unsociable** and **warm**? 1 2 3 4 5 6 7 8 9

100. How similar are **shy** and **naive**? 1 2 3 4 5 6 7 8 9

101. How similar are **assertive** and **warm**? 1 2 3 4 5 6 7 8 9

102. How similar are **inconsiderate** and **unsociable**? 1 2 3 4 5 6 7 8 9

103. How similar are **naïve** and **extraverted**? 1 2 3 4 5 6 7 8 9

104. How similar are **introverted** and **extraverted**? 1 2 3 4 5 6 7 8 9

105. How similar are **dominant** and **agreeable**? 1 2 3 4 5 6 7 8 9

106. How similar are **cold** and **agreeable**? 1 2 3 4 5 6 7 8 9

107. How similar are **crafty** and **introverted**? 1 2 3 4 5 6 7 8 9

108. How similar are **timid** and **extraverted**? 1 2 3 4 5 6 7 8 9

109. How similar are **assertive** and **agreeable**? 1 2 3 4 5 6 7 8 9

110. How similar are **dominant** and **inconsiderate**? 1 2 3 4 5 6 7 8 9

111. How similar are **assertive** and **sly**? 1 2 3 4 5 6 7 8 9

112. How similar are **naïve** and **warm**? 1 2 3 4 5 6 7 8 9

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 113. How similar are **sly** and **agreeable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 114. How similar are **crafty** and **inconsiderate**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 115. How similar are **sly** and **extraverted**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 116. How similar are **cold** and **unsociable**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 117. How similar are **sly** and **warm**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 118. How similar are **timid** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 119. How similar are **cold** and **shy**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 120. How similar are **agreeable** and **outgoing**? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Appendix D
Dimension Measures

**Affiliation Dimension Measure**

Listed below are 16 adjectives. Please indicate the level of **friendliness** denoted by each adjective. Please consider the **meaning** of adjectives only. Use the following scale to rate adjectives:

| 1 Not Friendly | 2 | 3 | 4 Moderately Friendly | 5 | 6 | 7 Very Friendly |
|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Dominance Dimension Measure**

Listed below are 16 adjectives. Please indicate the level of **dominance** denoted by each adjective. Please consider the **meaning** of adjectives only. Use the following scale to rate adjectives:

| 1 Not Dominant | 2 | 3 | 4 Moderately Dominant | 5 | 6 | 7 Very Dominant |
|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix E
Interpersonal Trait Measure

**Interpersonal Adjective Scale-Revised (IAS-R)**
**Nine Additional Interpersonal Adjectives (in bold)**

On this page, you will find a list of words that are used to describe people's personal characteristics. For each word in the list, indicate how accurately the word describes you. The accuracy with which a word describes you is to be judged on the following scale. Write the number of the description that best fits in the space to the left of the item in the word list. Please answer every item.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| Extremely Inaccurate | Very | Quite | Slightly Inaccurate | Slightly Accurate | Quite | Very | Extremely Accurate |

1.____introverted
2.____undemanding
3.____assertive
4.____unauthoritative
5.____unwily
6.____charitable
7.____kind
8.____soft-hearted
9.____shy
10.____uncunning
11.____unsympathetic
12.____ruthless
13.____dissocial
14.____accommodating
15.____tender-hearted
16.____cheerful
17.____dominant
18.____antisocial
19.____iron-hearted
20.____enthusiastic
21.____self-assured
22.____cruel
23.____unsparkling
24.____cunning
25.____meek
26.____uncharitable
27.____uncalculating
28.____unaggressive
29.____jovial
30.____crafty
31.____boastless
32.____domineering
33.____persistent
34.____unargumentative
35.____tender
36.____warmthless
37.____timid
38.____unbold
39.____forceful
40.____uncrafty
41.____extroverted
42.____gentle-hearted
43.____perky
44.____friendly
45.____unneighbourly
46.____self-confident
47.____outgoing
48.____boastful
49.____bashful
50.____firm
51.____unsly
52.____unsociable
53.____hard-hearted
54.____wily
55.____calculating
56.____uncheery
57.____ sly

58.____neighbourly

59.____cold-hearted

60.____distant

61.____cocky

62.____sympathetic

63.____forceless

64.____tricky

**65.____warm**

**66.____naive**

**67.____passive**

**68.____cold**

**69.____agreeable**

**70.____trusting**

**71.____submissive**

**72.____critical**

**73.____mistrusting**

Appendix F
Gender Stereotyping Questionnaires

**Female Gender Stereotyping**

Listed below are 16 adjectives. Please rate the degree to which each adjective accurately describes **women** in general. Use the following scale to rate adjective:

| 1 Not Accurate | 2 Somewhat | 3 Slightly | 4 Neutral | 5 Slightly | 6 Somewhat | 7 Very Accurate |
|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Male Gender Stereotyping

Listed below are 16 adjectives. Please rate the degree to which each adjective accurately describes **men** in general. Use the following scale to rate adjective:

| 1 Not Accurate | 2 Somewhat | 3 Slightly | 4 Neutral | 5 Slightly | 6 Somewhat | 7 Very Accurate |
|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Extended Version of the Personal Attributes Questionnaire (Female)**

The items below consist of a pair of contradictory characteristics. That is, you cannot select both characteristics at the same time. The numbers form a scale between the two extremes. You are to circle the number that describes where **women** fall on the scale.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Not at all arrogant | 1 | 2 | 3 | 4 | 5 | Very arrogant |
| 2. | Very submissive | 1 | 2 | 3 | 4 | 5 | Very dominant |
| 3. | Indifferent to other's approval | 1 | 2 | 3 | 4 | 5 | Highly needy of others' approval |
| 4. | Very home oriented | 1 | 2 | 3 | 4 | 5 | Very worldly |
| 5. | Not at all spineless | 1 | 2 | 3 | 4 | 5 | Very spineless |
| 6. | Very servile | 1 | 2 | 3 | 4 | 5 | Not at all servile |
| 7. | Not at all gullible | 1 | 2 | 3 | 4 | 5 | Very gullible |
| 8. | Subordinates self to others | 1 | 2 | 3 | 4 | 5 | Never subordinates to others |
| 9. | Very whiny | 1 | 2 | 3 | 4 | 5 | Not at all whiny |
| 10. | Not at all complaining | 1 | 2 | 3 | 4 | 5 | Very complaining |
| 11. | Very fussy | 1 | 2 | 3 | 4 | 5 | Not at all fussy |
| 12. | Doesn't nag | 1 | 2 | 3 | 4 | 5 | Nags a lot |
| 13. | Not at all excitable major crisis | 1 | 2 | 3 | 4 | 5 | Very excitable in major crisis |
| 14. | Not at all aggressive | 1 | 2 | 3 | 4 | 5 | Very aggressive |
| 15. | Never cries | 1 | 2 | 3 | 4 | 5 | Cries very easily |
| 16. | Feelings not easily hurt | 1 | 2 | 3 | 4 | 5 | Feelings easily hurt |
| 17. | Very little need for security | 1 | 2 | 3 | 4 | 5 | Very strong need for security |
| 18. | Not at all independent | 1 | 2 | 3 | 4 | 5 | Very independent |
| 19. | Not at all emotional | 1 | 2 | 3 | 4 | 5 | Very emotional |
| 20. | Does not look out only for self | 1 | 2 | 3 | 4 | 5 | Looks out only for self |
| 21. | Very passive | 1 | 2 | 3 | 4 | 5 | Very active |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | Not at all egotistical | 1 | 2 | 3 | 4 | 5 | Very egotistical |
| 23. | Not at all able to devote self completely to others | 1 | 2 | 3 | 4 | 5 | Able to devote completely to others |
| 24. | Very rough | 1 | 2 | 3 | 4 | 5 | Very gentle |
| 25. | Not at all helpful to others | 1 | 2 | 3 | 4 | 5 | Very helpful to others |
| 26. | Very boastful | 1 | 2 | 3 | 4 | 5 | Not at all boastful |
| 27. | Not at all competitive | 1 | 2 | 3 | 4 | 5 | Very competitive |
| 28. | Not at all kind | 1 | 2 | 3 | 4 | 5 | Very kind |
| 29. | Not at all aware of feelings of others | 1 | 2 | 3 | 4 | 5 | Very aware of feelings of others |
| 30. | Can make decisions easily | 1 | 2 | 3 | 4 | 5 | Has difficulty making decisions |
| 31. | Very greedy | 1 | 2 | 3 | 4 | 5 | Not at all greedy |
| 32. | Gives up easily | 1 | 2 | 3 | 4 | 5 | Never gives up easily |
| 33. | Not at all self-confident | 1 | 2 | 3 | 4 | 5 | Very self-confident |
| 34. | Feels very inferior | 1 | 2 | 3 | 4 | 5 | Feels very superior |
| 35. | Very dictatorial | 1 | 2 | 3 | 4 | 5 | Not at all dictatorial |
| 36. | Not at all understanding of others | 1 | 2 | 3 | 4 | 5 | Very understanding of others |
| 37. | Very cynical | 1 | 2 | 3 | 4 | 5 | Not at all cynical |
| 38. | Very cold in relations with others | 1 | 2 | 3 | 4 | 5 | Very warm in relations with others |
| 39. | Not at all hostile | 1 | 2 | 3 | 4 | 5 | Very hostile |
| 40. | Goes to pieces under pressure | 1 | 2 | 3 | 4 | 5 | Stands up well under pressure |

**Extended Version of the Personal Attributes Questionnaire (Male)**

The items below consist of a pair of contradictory characteristics. That is, you cannot select both characteristics at the same time. The numbers form a scale between the two extremes. You are to circle the number that describes where **men** fall on the scale.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Not at all arrogant | 1 | 2 | 3 | 4 | 5 | Very arrogant |
| 2. | Very submissive | 1 | 2 | 3 | 4 | 5 | Very dominant |
| 3. | Indifferent to other's approval | 1 | 2 | 3 | 4 | 5 | Highly needy of others' approval |
| 4. | Very home oriented | 1 | 2 | 3 | 4 | 5 | Very worldly |
| 5. | Not at all spineless | 1 | 2 | 3 | 4 | 5 | Very spineless |
| 6. | Very servile | 1 | 2 | 3 | 4 | 5 | Not at all servile |
| 7. | Not at all gullible | 1 | 2 | 3 | 4 | 5 | Very gullible |
| 8. | Subordinates self to others | 1 | 2 | 3 | 4 | 5 | Never subordinates to others |
| 9. | Very whiny | 1 | 2 | 3 | 4 | 5 | Not at all whiny |
| 10. | Not at all complaining | 1 | 2 | 3 | 4 | 5 | Very complaining |
| 11. | Very fussy | 1 | 2 | 3 | 4 | 5 | Not at all fussy |
| 12. | Doesn't nag | 1 | 2 | 3 | 4 | 5 | Nags a lot |
| 13. | Not at all excitable major crisis | 1 | 2 | 3 | 4 | 5 | Very excitable in major crisis |
| 14. | Not at all aggressive | 1 | 2 | 3 | 4 | 5 | Very aggressive |
| 15. | Never cries | 1 | 2 | 3 | 4 | 5 | Cries very easily |
| 16. | Feelings not easily hurt | 1 | 2 | 3 | 4 | 5 | Feelings easily hurt |
| 17. | Very little need for security | 1 | 2 | 3 | 4 | 5 | Very strong need for security |
| 18. | Not at all independent | 1 | 2 | 3 | 4 | 5 | Very independent |
| 19. | Not at all emotional | 1 | 2 | 3 | 4 | 5 | Very emotional |
| 20. | Does not look out only for self | 1 | 2 | 3 | 4 | 5 | Looks out only for self |
| 21. | Very passive | 1 | 2 | 3 | 4 | 5 | Very active |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. | Not at all egotistical | 1 | 2 | 3 | 4 | 5 | Very egotistical |
| 23. | Not at all able to devote self completely to others | 1 | 2 | 3 | 4 | 5 | Able to devote completely to others |
| 24. | Very rough | 1 | 2 | 3 | 4 | 5 | Very gentle |
| 25. | Not at all helpful to others | 1 | 2 | 3 | 4 | 5 | Very helpful to others |
| 26. | Very boastful | 1 | 2 | 3 | 4 | 5 | Not at all boastful |
| 27. | Not at all competitive | 1 | 2 | 3 | 4 | 5 | Very competitive |
| 28. | Not at all kind | 1 | 2 | 3 | 4 | 5 | Very kind |
| 29. | Not at all aware of feelings of others | 1 | 2 | 3 | 4 | 5 | Very aware of feelings of others |
| 30. | Can make decisions easily | 1 | 2 | 3 | 4 | 5 | Has difficulty making decisions |
| 31. | Very greedy | 1 | 2 | 3 | 4 | 5 | Not at all greedy |
| 32. | Gives up easily | 1 | 2 | 3 | 4 | 5 | Never gives up easily |
| 33. | Not at all self-confident | 1 | 2 | 3 | 4 | 5 | Very self-confident |
| 34. | Feels very inferior | 1 | 2 | 3 | 4 | 5 | Feels very superior |
| 35. | Very dictatorial | 1 | 2 | 3 | 4 | 5 | Not at all dictatorial |
| 36. | Not at all understanding of others | 1 | 2 | 3 | 4 | 5 | Very understanding of others |
| 37. | Very cynical | 1 | 2 | 3 | 4 | 5 | Not at all cynical |
| 38. | Very cold in relations with others | 1 | 2 | 3 | 4 | 5 | Very warm in relations with others |
| 39. | Not at all hostile | 1 | 2 | 3 | 4 | 5 | Very hostile |
| 40. | Goes to pieces under pressure | 1 | 2 | 3 | 4 | 5 | Stands up well under pressure |

Appendix G
Item Desirability and Item Importance Measures

**Item Desirability**

Listed below are 16 adjectives. Please think about how **ideal** you feel it would be for you to possess the following traits. From this perspective, rate how **desirable** you feel each trait is. Use the following scale to make your ratings:

| 1 Not Desirable | 2 Somewhat | 3 Slightly | 4 Neutral | 5 Slightly | 6 Somewhat | 7 Very Desirable |
|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Item Importance**

Listed below are 16 adjectives. Please think about how **important** it is that you possess the following traits. From this perspective, rate how **important** you feel each trait is. Use the following scale to make your ratings:

| 1 Not Important | 2 Somewhat | 3 Slightly | 4 Neutral | 5 Slightly | 6 Somewhat | 7 Very Important |
|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix H
Self-Esteem Measures

**Revised Self-Liking / Self-Competence Scale (SLCS-R)**

Listed below are 16 statements. You are to circle that number that describes how much you agree with each statement using the scale below.

| 1 Never Agree | 2 Sometimes Agree | 3 Rarely Agree | 4 Neutral | 5 Rarely Disagree | 6 Sometimes Disagree | 7 Never Disagree |
|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1. | I tend to devalue myself | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | I am highly effective at the things I do | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I am very comfortable with myself | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I am almost always able to accomplish what I try for | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I am secure in my sense of self-worth | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | It is sometimes unpleasant for me to think about myself | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I have a negative attitude towards myself | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | At times, I find it difficult to achieve the things that are important to me | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | I feel great about who I am | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | I sometimes deal poorly with challenges | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | I never doubt my personal worth | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | I perform very well at many things | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. | I sometimes fail to fulfill my goals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. | I am never talented | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | I do not have enough respect for myself | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | I wish I was more skillful in my activities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Single-Item Self-Esteem Scale (SISE)**

Listed below is a single statement. You are to circle that number that describes how much you agree with the statement using the scale below.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Never Agree | Sometimes Agree | Rarely Agree | Neutral | Rarely Disagree | Sometimes Disagree | Never Disagree |

1. I have high self-esteem 1 2 3 4 5 6 7

Appendix I
Daily Event-Contingent Questionnaire

**Part A:** Interaction Time

1. When did this interaction start?
    a. Date?
    b. Time?

2. How long was the interaction? (Please state your answer in minutes only)

**Part B:** Tell us about your interaction partner

3. What is the person's gender?
    a. Male
    b. Female

4. What type of relationship do you have with this person?
    a. Parent
    b. Sibling
    c. Other Relative
    d. Friend
    e. Romantic Partner
    f. Classmate / Co-Worker
    g. Supervisor / Boss
    h. Acquaintance
    i. Service Personnel
    j. Other

5. How long have you know this person?
    a. First Encounter
    b. Less than a month
    c. 1 to 6 months
    d. 6 months to 2 years
    e. Two year to ten years
    f. All my life

6. What mode of communication did you use to interact with the other person?
    a. Face-to-face
    b. Phone
    c. Internet (e.g. chat rooms, MSN)

**Part C:** Rate **your** behaviours during this interaction

Please think about how **you** behaved during this interaction. From your perspective, indicate how well each of the following adjectives describes **your** behaviour.

| 1 Extremely Inaccurate | 2 Very | 3 Quite | 4 Slightly | 5 Neutral | 6 Slightly | 7 Quite | 8 Very | 9 Extremely Accurate |
|---|---|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

**Part D:** Rate the **other person's** behaviours during this interaction

Please think about how the **other person** behaved when you interacted with him/her. From your perspective, please indicate how well each adjective describes **his/her** behaviour.

| 1 Extremely Inaccurate | 2 Very | 3 Quite | 4 Slightly | 5 Neutral | 6 Slightly | 7 Quite | 8 Very | 9 Extremely Accurate |
|---|---|---|---|---|---|---|---|---|
| Assertive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Outgoing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Naive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Passive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Unsociable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Cold | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Sly | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Dominant | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Extraverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Agreeable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Trusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Introverted | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Critical | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Mistrusting | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

**Part E:** Rate the nature of the interaction

Note: each question contained its own response scale endpoints (listed under each question scale).

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Extremely Question Endpoint | Very | Quite | Slightly | Neutral | Slightly | Quite | Very | Extremely Question Endpoint |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. How harmonious or conflictual did you find this interaction? | 1 Conflictual | 2 | 3 | 4 | 5 Neutral | 6 | 7 | 8 | 9 Harmonious |
| 2. How pleasant did you find this interaction? | 1 Unpleasant | 2 | 3 | 4 | 5 Neutral | 6 | 7 | 8 | 9 Pleasant |
| 3. How rewarding did you find this interaction? | 1 Unrewarding | 2 | 3 | 4 | 5 Neutral | 6 | 7 | 8 | 9 Rewarding |
| 4. How stressful did you find the interaction? | 1 Unstressful | 2 | 3 | 4 | 5 Neutral | 6 | 7 | 8 | 9 Stressful |

Appendix J
End of Study Questionnaire

1. On average, how many interactions did you report on each day using the Palm Pilot? _____ (e.g. 6 per day)

2. When considering the number of significant interactions that you experienced each day, what percentage of your significant interactions did you actually report on using the Palm Pilot? (e.g., 75%) _____

3. On average, how soon after the significant interactions did you complete the Palm Pilot questionnaire regarding that interaction? (e.g., 10 minutes, 1 hour, etc.)
_____

4. Please circle one of the following numbers to indicate how well your participation complied with the study expectations.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Poor Compliance (i.e., did not complete daily questionnaires regularly) | | Satisfactory Compliance (completed daily questionnaires for significant interactions nearly every day) | | Full Compliance (completed daily questionnaires for virtually every significant interaction) |

5. Were there any aspects of your interactions that you felt the Palm Pilot questionnaire did not capture? Please elaborate:_____

_____

_____

_____

6. Were there any aspects of the **Palm Pilot questionnaire** that you disliked or had difficulty with? _____

_____

_____

_____

7. Were there any aspects of working **with the Palm Pilot** that you disliked or had difficulty with? _____

_____

_____

_____

8. Were there any aspects of the **downloading session** that you disliked or had difficulty with? _____

_____

_____

_____

9. How did you feel about the level of remuneration (e.g., payment for participation, incentives for attending downloading sessions, etc.) for this study? _____

_____

_____

_____

10. Did you know any of the participants in the study? If so, what are their names? What type of relationship do you have with this individual (e.g. friend, roommate, classmate, or co-worker)? How often do interact with this individual (e.g. twice per weed, twice a day)? Do both you and the other individual belong to a specific organization (e.g. fraternities, sororities)?

| Name | Relationship | How often do you interact? | Are you members of the same organization? |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Appendix K
Palm Pilot Study Script for Introductory Session

A. Introductory Session Materials:

1. 3-page stapled consent form that is already labeled with palm number (page 1 and 2 are for procedures and page 3 for equipment).
2. 4-page handout for participants to take home
3. Next downloading sessions schedule (to set up next few dates to come into the lab).
4. Time 1 Questionnaire
5. Palm pilot checkout sheet
6. Palm pilots
7. Pens

B. Introduction to the Study

"Thanks for coming in today. I am just going to quickly remind you of the information we sent to you in the email. This is a study about people's behaviour during their daily interactions with other people."

"This is a study on people's behaviour during their daily interactions with other people. It involves signing out a Palm Pilot, which you carry with you for 3 weeks, and reporting on all your significant interactions over this 3-week period. We will be giving you instructions about how to use the Palm Pilot. Today, you will be asked to fill out several questionnaires. Once you receive your Palm Pilot, you will be asked to complete questionnaires on it for the next three weeks returning 6 times during this time frame to download the data. Each of these download sessions should take about 15 minutes. In some of the download sessions, you'll be asked to

complete a short computer-based questionnaire, which will take about 5 minutes longer. In the sixth download session, you will return to the lab to complete a final questionnaire packet and return the palm pilot to us at the end of the study. The last session should take about 30 minutes."

"Because the Palms are expensive pieces of equipment, we ask that you take full responsibility for them when they are in your possession, as if they were your own. If you lose or damage the Palm, you'll be expected to pay for the replacement cost. Do you have any questions?"

C. Consent Forms

"What I have handed out to you are two consent forms. The first reviews the general requirements of the study, while the second is a consent that covers the use and responsibility for the equipment we will give you. Please take your time now to read and sign each. Let me know if you have any questions."

"Before I collect these, I just want to make sure that you understand that:

i. You will be responsible for the Palm Pilots for the duration of the time you are in the study-loss or damage to the Palms will result in you replacing the unit,

ii. You'll use the Palm (starting today after you leave the lab) to complete a short questionnaire after each significant interaction that you have during the next 3 weeks, and

iii. You'll need to come back 6 more times to download your Palm Pilot data and complete some additional short questionnaires.

"Do you have a potential problem at this time with these requirements? If so, let me know now before we begin. I'll give you a copy of the consent forms for your own records when you leave today."

D. Questionnaire Time 1

"Please take your ONECARD out, as I will need to photocopy it for the Palm Pilot checkout. To begin, please record your WLU ONECARD number and record your Palm Pilot number (that was on your consent form) onto the top right corner of this questionnaire. Now I'd like you to complete this questionnaire."

"Just remember to read the instructions at the top of each page before answering the questions, and circle your answers carefully when responding. When you have finished, let me know. If you do have questions as you are completing this, please let me know. Okay, you may begin."

E. WLU ID Cards

Make a copy of participants' ID while participants complete the questionnaire, assign Palm Pilots and record identification information on Palm Pilot check out sheet. In addition, complete Participant Log on the computer.

F. Training on interaction definition and expectations of the study (compliance issues)

"In this study we would like you to record your view of your interactions with other people over the next 3 weeks."

For this study, an interaction is defined as either

i. Face-to-face interactions

ii. Conversations by phone, or

iii. "Live" conversations over the internet (such as instant messaging exchanges or chat-rooms). For this study, EMAIL correspondence is not considered an interaction because there isn't a "live" quality to it."

G. Definition of "Significant Interaction

"What is a "Significant" interaction?"

"You are to complete a Palm record after every significant interaction, which is defined as any conversation with anyone that lasts 5 minutes or longer. So you are to record any contact with another person that lasts more than 5 minutes."

"Think about when you interact with 1 other person. Sometimes that interaction can last awhile. You might wonder how to I record this type of interaction. Is it considered just one long interaction or several 5-minute interactions? Well, it depends on the nature of the interaction. For example, one part of your interaction may be fun and lighthearted, while another one might be sad or more serious. If there are several separable segments like this, then you should complete one questionnaire per segment."

"For example, say you spend a total of 2 hours at a coffee shop with someone, but within that time you have several different segments of conversation. A different segment can be determined by either a break in the conversation, a significant change of topic, or a shift in the emotional tone of the conversation. You should record one Palm questionnaire entry for each one of those segments within the time you are with someone. Is that clear?"

"Now, think about if you're interacting in a group of several people (not just 1-on-1 interactions). You might wonder, do I just record 1 questionnaire for the group, or 1 for each person? You should complete the questionnaire for your interaction with each person individually in the group. That is, do not complete the questionnaire for the group as a whole. Rather, if you are interacting with 3 other people, you should have 3 different questionnaire entries. Remember though: You can't fill out a questionnaire for someone in the group who you didn't talk to or

didn't say anything. In sum, I want you to fill out the questionnaire for all interactions that you have with anyone that lasts longer than 5 minutes. If you are planning on going out for an evening (involving alcohol) and don't feel it would be safe to bring your palm pilot, please don't risk it. Do you have any questions about what counts/doesn't count as an interaction for your diary entries?"

H. Important Reminders

"Please make sure to fill out your diary records as soon as possible after the interaction, immediately after the interaction, if possible. We ask you to do this because sometimes if you wait to record information about an interaction, the way you remember the interaction is different than how you actually behaved at the time of the interaction. So, this makes it very important that you complete an interaction record as soon as you possibly can after the interaction. In the example of the 2 hours that you spend with someone at a coffee shop, we know it would be odd to stop the conversation to complete a Palm record each time you have an interaction during those two hours. In such instances, we ask that you complete the Palm records just as soon afterwards as you can manage a spare few moments to complete them. Ideally, you could slip away and complete your questionnaires in privacy just as soon as your conversation is complete."

I. Timestamp

"Also, the Palm Pilot has an automatic time stamp that will help us to see how accurate you are in recording your events. We will be checking this each time you come in to download your data, so please try to record your entries as accurately as possible and as soon after they occur as you can. On average, people tend have at

least 6 interactions per day. So, aim to complete at least 6 questionnaires each day, or more if you can. Please try to complete all of the questions on the questionnaires, as they are all important to our potential findings."

J. Training on how to use the Palm Pilot and Pendragon Forms

Turning the PDA on/off:

"The on/off button is at the top left corner of the device"

Accessing the Diary Form

"The Forms 5.0 icon should appear as the only icons on the screen. To access the diary, tap on the Forms 5.0 icon. If for some reason you find that more icons appear on the screen, go to the top right pull down menu and select "ALL", which will again return you to the screen with only the Form 5.0 icon."

Demonstration: Interaction records

"I will now walk you through the use of the daily questionnaire. As we go through this demonstration, please stop me if for any reason you are confused by my instructions. Also, please notice each of the rating scales. If you are unsure about any of the anchor points on these scales, please let me know and I will be happy to explain their meaning. So let's begin."

i. "First, tap on the Form 5.0 icon. This will forward you to a screen with the file 'WLU Daily Diary Questionnaires' on the page. Tap on this line, and then tap the 'new' button at the bottom of the screen to begin a new record. When you click on the "new" button the palm records the time. Therefore, it is very important that you only press this button when you intend to complete the questionnaire from start to finish."

ii. Date of the Interaction: "Tap on the "select a day" button and choose the day of the week that the interaction is taking place. In this case, please select Monday [or whatever today's day is]."

iii. Time of interaction: "Tap on the "set time" button and record the approximate time that the interaction began. To do this, you will need to tap on the box for each digit and use the up and down arrow keys to alter the time. The box will turn purple when selected. Please make sure to choose AM or PM when you record the time of the interaction. So, for your example, please set the time to 10:15 a.m. An important note is that the time you record is not when the diary entry is made but rather it is the approximate time that the interaction began."

iv. How long was the interaction: "To answer this question, you must select the "123" numbers on the bottom right corner of the input area. Numbers and symbols will appear on the screen. Please use the numbers to indicate the length of the interaction in minutes and press done when you are finished."

v. What was the person's gender: Select Male or Female using the dropdown menu. For example, choose "Male".

vi. What type of relationship do you have with the person: "Record the type of relationship you have with the person using the drop-down menu (e.g., parent, sibling, etc.) "For example, choose parent".

vii. How long have you known this person: "Record the length of time you have known this person, using the drop-down menu (e.g., first encounter, less than a month, etc.) "For example, enter all my life".

viii. What type of contact was the interaction: "Record the type of interaction (face-to-face, phone, internet). "For example, enter face-to-face"

ix. Interaction behaviour questions: "You will notice that the program will begin by asking you to what extent you were 'assertive' in this interaction. You will choose the response option that best suits your behaviour."

x. Interpersonal Adjectives: "The following 15 questions will ask you about the extent to which other adjectives described your behaviour. What I would like you to do now is press next without entering an answer. You will notice that a message sign pops on your screen, which asks if meant to leave this question blank. If you forgot to answer the question, press no and you will return to the screen. Now, please go through the next 15 adjectives and select random answers. Stop when you get to a screen that contains a lengthy description. When you get to this section, you will also rate the behaviour of your interaction partner using these same 16 adjectives. Again, just select a random answer until you reach the end of these adjectives."

"Once you have completed these ratings, you will be asked 4 more questions:"

xi. How Harmonious was the interaction?: "Record the response option that best suits how you perceived the interaction."

xii. How Pleasant was the interaction?: "Record the response option that best suits how you perceived the interaction."

xiii. How Rewarding was the interaction?: "Record the response option that best suits how you perceived the interaction."

xiv. How Stressful was the interaction?: "Record the response option that best suits how you perceived the interaction."

"If for some reason you make a mistake in answering a question, you can return to the previous question by hitting the 'previous' key at the bottom of the screen. Any questions?"

"When you have reached the end of the interaction record, please turn off the palm pilot to conserve the battery. Also, it is important to let you know that you should be charging the battery on your palm pilot on a regular basis (i.e., once every two days or more often if possible). If the battery drains completely, we would lose all of the data you entered since the last downloading session. Does anyone have questions?

Give them the diary instruction sheet and consent form for their own records. "Here is an instruction sheet that contains information about how to start the Palm questionnaire, and it also contains contact information. These basics are also located on the insert inside your Palm Pilot carrying case."

K. Contact over the 3 weeks:

"I will be contacting you in two days to check if you have any questions and to remind you to return to download your records in 3 days from today. Please note that if you encounter ANY problems with the palm pilot or the forms, or if you have any questions, please contact me or one of the other researchers right away. My contact information is located at the top of this instruction sheet."

L. Final wrap-up, download scheduling, and reward information:

"As our last bit of business, we need to schedule each of you for your downloading sessions (x6). Each one of these sessions should take only 10 minutes

to complete. Once per week, during the downloading session, you will be asked to complete a computer-based task. This should only take an additional 5-10 minutes, and does not occur during every downloading session. It's really important that you're on time for these downloading sessions, or just a little early for them, because I'll be booking sessions with other participants on the same day."

"As an expression of our appreciation of your commitment to the study, each time you come into the lab to download your data, we will be giving you a ballot for a draw for 50 dollars, which will occur at the end of the study. If you complete the study and win the draw, then you would receive $50 for participating, and $50 more for winning the draw. There are only 30 people participating in this study, so your chances of winning are pretty good as far as lotteries go.

"One last thing I want to emphasize is that it is extremely important for you to try to complete your diary questionnaires after each conversation, as soon as you can afterwards. If for some reason you are unable to keep up with the expectations of the study, we may have to terminate your participation. As you can imagine, it is very important for us to have participants in this study who are able to successfully manage the requirements of the study, because it has a great impact on the quality of our data. So, if you are unable to fully complete the study requirements, you would be paid $2 per day that you successfully completed the study (meaning, each day that they actually completed entries!) Do you have any questions about this?"

"Thank you for coming in today and contact me if you have any concerns."

Appendix L
Palm Pilot Study Script for Downloading Sessions

A. What this session you need:

1. Left computer for uploading data
2. Palm pilot cradle
3. IAT set up on computer in the other lab room
4. Ballots for the draw
5. Snacks/Drinks
6. Gift certificates for end of 1st week and 2nd week

B. Greet Participants

Greet participant and ask them to choose a drink and snack for coming to the lab for the downloading session. Also have them fill out 1 ballot for the draw. If it is the session that participants complete the IATs, have them do this while you look at their data. Here are the IAT Instructions:

"Now I'm going to have you complete a computer-based word association task. Before you actually get started, there will be instructions on the screen to explain the task. Just to give you an idea about what to expect, the task involves placing words into one of two categories. So, you will see two category headings at the top of the screen (one on the left and one on the right) and as words pop up in the center of the screen, you will have to put the words into one of the two categories, using 2 keys on the keyboard. The really important thing is that you go as fast as you can while minimizing the amount of mistakes that you make. If you do make a mistake, a red X will come up in the center of the screen and you need to correct yourself before moving on. If you see a lot of red X's, you are going too fast and need to slow down.

However, it is normal to make some mistakes, and we do want you do go as fast as possible. When the computer task is finished, please wait for me to come back in. I will set it up for the next part of the task."

IAT instructions: "This second task is very similar to the one you just completed. All of the instructions are the same, and the only difference is that that the stimuli (or words) have changed."

i. Hot Synch the Palm Pilot to the computer on the left side of the lab (the one closest to the door)

ii. Open Pendragon Forms Manager: Select "All Programs" in the Start Menu, then click "Pendragon Forms 5.0" and lastly, "Pendragon Forms Manager 2002"

iii. Click on the questionnaire of interest (e.g., diary questionnaire) to ensure that it is highlighted. Then click on the button labeled "Edit/View". By clicking on this, you will bring up a spreadsheet that contains all the data ever collected on all the palms. In order to look at one person's data, you need to rearrange the data in ascending order, according to user name. Then click the "excel" button on the bottom right hand side of the screen, which will save the data into an excel document. Label this document according to the palm pilot number and downloading session number (e.g. sadler1_download1).

iv. In order to look at the time-stamps, you will need to sort the data according to the timestamp" variable. To do this, go to the data tab, and select "sort". Ensure the time-stamp variable is selected, in ascending order. Once you click OK, it will give you a warning that the variable will not sort properly (because it is not completely numerical). Hit OK. When looking at the data, you will see that it is

not perfectly in ascending order. This isn't a problem, since you will only need to know how many entries occurred each day.

v. Now it is time to decide if the participant has been complying with the study requirements and provide them specific feedback regarding their level of participation.

When giving feedback, be sure to first highlight some of the positive things that the participant is doing. For example, give them positive feedback on an aspect of the questionnaire that they are doing right, such as "I'm happy to see you are completing the questionnaires completely and not leaving any questions blank" or "I'm happy to see that you have been completing the questionnaires soon after the interactions take place".

C. Compliance

We are interested in looking at 5 elements of compliance:

i. How many entries are participants doing per day? It should greater than 4 each day, unless the person has a viable explanation for why they have done less on some days.

If this is an area of difficulty to the participant, first find out why meeting this requirement has been a problem for him/her. Help them problem solve ways to improve this. Then you should review the expectation that he/she should be completing the interaction questionnaire after every conversation they have with someone that lasts longer than 5 minutes.

Say: "It is really important that you improve on this, as it is essential for us to have this information for our data to be useful. If this hasn't improved by the

next downloading session, we may have to terminate your participation in the study."

ii. How long of a time-lag is there between when the event occurred (as reported by the participant) and when they completed the questionnaire (timestamp). In general, this should not be more than 2 hours.

If this is an area of difficulty for the participant, ask why he/she hasn't been able to complete the questionnaire within a reasonable amount of time (up to 2 hours) after the interaction. Then review the expectation that he/she should be completing the questionnaire very soon after the interaction occurs, at most 2 hours afterwards. Help them problem solve ways to improve this. Reiterate that this is important because if you wait to record information about an interaction you have with someone, the way you remember the interaction may be different than how you actually behaved at the time of the interaction.

Say: "It is really important that you improve on this, as it is essential for us to have this information for our data to be useful. If this hasn't improved by the next downloading session, we may have to terminate your participation in the study."

iii. Are participants completing lumps of questionnaires all at once at the end of the day (or the end of a few days, right before a downloading session)? Look at the time stamps to see if this is the case. If the time stamp is on a different day than the time of the interaction, then we know the participant is recording entries on a later date.

If this is an area of difficulty for the participant, ask why he/she hasn't been completing the questionnaire on the same day as the interactions. Help them problem solve ways to improve this. Then review the expectation that they should be completing the questionnaire very soon after the interaction occurs, at most 2 hours afterwards, and not leaving them for another day. Also, reiterate that their responses are time-stamped, so we will know if they are doing them on a different day.

Say: "It is really important that you improve on this, as it is essential for us to have this information for our data to be useful. If this hasn't improved by the next downloading session, we may have to terminate your participation in the study."

iv. Are participants are completing the entire questionnaire? Scroll across the data set to ensure there are values for each variable.

If this is an area of difficulty for the participant, ask why he/she hasn't been completing the entire questionnaire. Help them problem solve ways to improve this. Then review the expectation that they should be answering all of the questions on the questionnaire, because all of the questions are very important for the potential findings of the study.

Say: "It is really important that you improve on this, as it is essential for us to have this information for our data to be useful. If this hasn't improved by the next downloading session, we may have to terminate your participation in the study."

v. Are participants using a response set to answer the questions (e.g., all 1's and 9's, all 4's, etc.). Furthermore, are participants always giving the same response for a particular descriptor? Scroll down the data set to ensure there is some variability within the different descriptors.

If this is an area of difficulty for the participant, ask why he/she has been using this response style when completing the questionnaire. Help them problem solve ways to improve this. Then review with the participant that they can choose different responses, and are not limited to choosing only one or two (e.g., extreme) responses. For example, if the person always indicates that they are a '9' for assertiveness, mention to them that you notice that they don't vary much on assertiveness – ask why that might be, what assertiveness means to them, and stress the importance of capturing small variations in all of the descriptors.

Say: "It is really important that you improve on this, as it is essential for us to have this information for our data to be useful. If this hasn't improved by the next downloading session, we may have to terminate your participation in the study."

If this is the second time that the participant has had the same problem (i.e., they have already received a warning) and you have decided that it is necessary to remove them from the study, say:

Say: "I see you are still having problems with _____. As I mentioned last time, it is extremely important that you stick with the rules of the study, or else your data isn't very useful to us. At this point, we have to let you go from the

study. I want you to know that we aren't offended in any way, and we don't want you to take this personally. As you can imagine, it isn't useful for you to stay in the study if you aren't able to complete the diary questionnaires in a way that we need them done. So, I'll pay you at a rate of $2/day that you have completed diary entries thus far."

D. Saving Data to PC

i. Save the data file, labeled appropriately (e.g., sadler1_download1)

ii. Confirm the next appointment with the participant

iii. After he/she has left, make a note of which areas the participant had difficulty with on the participant log (sheet 2). Then check carefully at the next downloading session.

Appendix M
Palm Pilot Study Script for Conclusion Session

A. For this session you need:

1. Computer to download the final palm pilot data.
2. Time 2 Questionnaire
3. Pens
4. Final Payment to participants ($50)
5. Receipt to get them to sign for the payment

B. Download Data and Provide Participants with Feedback

To begin, ask participants for their assigned palm and download their data by hotsynching their Palm Pilots with the desktop pc closest to the door.

i. Hotsynch the Palm Pilot to the computer on the left side of the lab (the one closest to the door)

ii. Open Pendragon Forms Manager: Select "All Programs" in the Start Menu, then click "Pendragon Forms 5.0" and lastly, "Pendragon Forms Manager 2002"

iii. Click on the questionnaire of interest (e.g., diary questionnaire) to ensure that it is highlighted. Then click on the button labeled "Edit/View". By clicking on this, you will bring up a spreadsheet that contains all the data ever collected on all the palms. In order to look at one person's data, you need to rearrange the data in ascending order, according to user name. Then click the "excel" button on the bottom right hand side of the screen, which will save the data into an excel document. Label this document according to the palm pilot number and downloading session number (e.g. sadler1_download6).

iv. In order to look at the time-stamps, you will need to sort the data according to the timestamp" variable. To do this, go to the data tab, and select "sort". Ensure the time-stamp variable is selected, in ascending order. Once you click OK, it will give you a warning that the variable will not sort properly (because it is not completely numerical). Hit OK. When looking at the data, you will see that it is not perfectly in ascending order. This isn't a problem, since you will only need to know how many entries occurred each day.

v. Now it is time to decide if the participant has been complying with the study requirements and provide them specific feedback regarding their level of participation.

C. Feedback to Participants

Next, provide participants with specific feedback about the interactions they reported on. Ask them if they ran into any problems with the palm or the palm questionnaire? When giving feedback, be sure to first highlight some of the positive things that the participant is doing. For example, give them positive feedback on an aspect of the questionnaire that they are doing right, such as "I'm happy to see you are completing the questionnaires completely and not leaving any questions blank" or "I'm happy to see that you have been completing the questionnaires soon after the interactions take place".

We are interested in looking at 5 elements of compliance:

i. How many entries are participants doing per day? It should greater than 4 each day, unless the person has a viable explanation for why they have done less on some days.

ii. How long of a time-lag is there between when the event occurred (as reported by the participant) and when they completed the questionnaire (timestamp). In general, this should not be more than 2 hours.

iii. Are participants completing lumps of questionnaires all at once at the end of the day (or the end of a few days, right before a downloading session)? Look at the time stamps to see if this is the case. If the time stamp is on a different day than the time of the interaction, then we know the participant is recording entries on a later date.

iv. Are participants completing the entire questionnaire? Scroll across the data set to ensure there are values for each variable.

v. Are participants using a response set to answer the questions (e.g., all 1's and 9's, all 4's, etc.). Furthermore, are participants always giving the same response for a particular descriptor? Scroll down the data set to ensure there is some variability within the different descriptors

D. Time 2 Questionnaire and Review Instructions

"I'd like you to complete this questionnaire. It will likely take you about 10 to 15 minutes to complete. Just remember to read the instructions at the top of each page before answering the questions, and circle your answers carefully when responding. When you have finished, let me know. Do you have any questions? If you do have questions as you are completing this, please let me know. Ok, you may begin."

E. Thank Participant

"Thank you for agreeing to be a participant in our study. We appreciate the time and effort you put into your responses and meeting with us regularly for the last three weeks. Now that you've finished the study, we can tell you about our hypotheses. We couldn't tell you all of our hypotheses before the study because doing so tends to influence people's answers in studies."

F. Debrief Participant

"As you already know, this study is investigating people's views of their own behaviour and the behaviour of others during their social interactions. Many studies of social interaction suggest that when we interact, two of the most important features of people's behaviours and perceptions are their levels of dominance and their levels of friendliness. People tend to adopt preferred styles of interacting with others that are described as interpersonal traits, or styles. Some people tend to be very friendly, while others are more standoffish; some people prefer to lead, and others to follow. Much research has shown that dominance and friendliness are unrelated to each other."

"Studies of social interactions often use people's traits as a predictor for interesting outcomes. But these studies usually assess your views of your own interpersonal style more generally, without reference to any particular person, or particular role. This often helps researchers understand how people view themselves on average. However, recent research suggests that there are interesting individual differences in how consistent (or variable) people are from interaction to interaction. We are particularly interested in how much variability people perceive in their own

behaviour from interaction to interaction, and how much variability they perceive in others' behaviour."

Our hypotheses for this study are all about how variable people's perceptions are from interaction to interaction. Here are a few examples of the hypotheses we're looking at:

1. "Some work suggests that women may be more "in tune" with changes in their own and others' levels of friendliness. That is, they may notice how friendly or unfriendly people are being more readily than males do. Likewise, men may be more "in tune" with changes in their own and others' levels of dominance. That is, they may notice how dominant or submissive people are being more readily than females do. Therefore, we plan to compare female participants' variability (over the three weeks) to male participants' variability to determine whether there are noticeable gender differences in their reported behaviours."
2. "We are also interested people's explicit and implicit interpersonal styles, and how they relate to their perceptions of variability over the three weeks. Explicit interpersonal styles tend to be more conscious, and are measured by self reports on questionnaires like the ones you completed during your very first session here. Implicit interpersonal styles tend to be somewhat less conscious, and are measured by reaction time tests, like the ones you completed once per week on the computer. For a person whose explicit and implicit dominance levels are quite high, we'd expect that over all the interactions during the 3 weeks, they'd probably rate themselves as pretty dominant, with fairly low variability from interaction to interaction. However, for a person whose explicit and implicit

dominance levels are quite different from each other (one is highly dominant and the other is highly submissive), then we'd expect fairly high variability from interaction to interaction."

G. Important Note

"This next part is very important: We're asking all participants at this point to NOT tell anyone about the hypotheses for this study until about February 2006. This is because we are running more people through the study at the beginning of the year, and if they know the hypotheses before the study, that could affect how they respond. Also, please be careful not to show this debriefing sheet to other people, nor to let it sit around where someone else could read it. Once you're finished with it, please just throw it away."

H. Payment

"You are receiving $50 for your participation in our study. Please complete this receipt for your payment. Thank you again for you participation!"

## Appendix N
## Analyses of Other Variables

*Personality Trait Measure.* Participants' preferred interpersonal styles were assessed using the Revised Interpersonal Adjective Scale (IAS-R; Wiggins, Trapnell & Philips, 1988) and compared to their daily Palm Pilot reports. Recall that on this measure, participants rated how accurately 64 interpersonal traits described them on a scale from 1 (extremely inaccurate) to 8 (extremely accurate). There are eight subscales on the IAS-R, one for each octant shown in Figure 1. For example, the PA subscale consists of the adjectives assertive, dominant, forceful, self-assured, domineering, firm, self-confident, and persistent. The eight subscale scores were computed by averaging the ratings on the relevant eight items. Then, dominance and affiliation dimension scores were computed using the formulae described earlier (on pp. 48-49).

According to Interpersonal Theory, trait dominance and trait affiliation should not be related. However, the IAS-R affiliation and dominance scores significantly correlated ($r = .41, p = .01$). This finding suggests that participants who rated themselves high on trait dominance also rated themselves high on trait affiliation. In regards to a gender difference on this trait measure, men ($M = 3.17$, $SD = 3.80$) and women ($M = 3.69$, $SD = 3.97$) did not significantly differ in their trait dominance, $t\ (38) = .48, p = .63$. However, men ($M = 3.44$, $SD = 3.49$) and women ($M = 7.67$, $SD = 2.80$) differed significantly in their trait affiliation, $t\ (38) = 4.24, p < .01$. That is, women rated affiliation-related adjectives to be more accurate descriptors of their personality compared to men.

Trait dominance and trait affiliation, as assessed by the IAS-R, correlated in interesting ways with participants' self and other reports over the 21 days. First, for self-reports, the more trait affiliative participants were, the more affiliative they said they

were in their interpersonal interactions over the 21 days, $r$ (40) = .65, $p$ < .01. In addition, the more trait dominant participants were, the more dominant they said they were over the 21 days; however, this correlation only approached statistical significance, $r$ (40) = .28, $p$ = .08. Second, for reports of others, the more trait affiliative participants were, the more affiliation they saw in their interaction partners over the 21 days, $r$ (40) = .54, $p$ < .01, possibly reflecting a bias. However, such bias was not evident for trait dominance, $r$ (40) = -.11, $p$ = .51. Third, in regards to perceived complementarity, the more trait dominant participants were, the more interpersonal correspondence between their own and others' dominance, $r$ (40) = .33, $p$ = .04. In regards to affiliation, the results revealed that there appears to be no relationship between participants' trait affiliation and perceived interpersonal correspondence between their own and others' affiliation, $r$ (40) = .04, $p$ = .80.

In order to confirm that the IAS-R personality traits were distinct measures from the focus indices (SD, Index 1, Index 2, and Index 3), participants' IAS-R dominance and affiliation scores were correlated with the four affiliation-focus and dominance-focus indices for self and other ratings. Table 10 contains the correlations between the trait affiliation dimension and trait dominance dimension with all four indices of variability. While the majority of the correlations were reasonably close to zero, two interesting significant patterns were evident. For ratings of self, the correlations between trait dominance and dominance-focus ranged from -.28 to -.39. This suggests that the higher a person's mean trait dominance, the less they vary on dominance over 21 days. For ratings of others, the correlations between trait dominance and dominance-focus ranged from -.17 to -.48. This finding suggests that the higher a person's mean trait dominance,

the less variability they see in others' dominance over 21 days. Overall, trait dominance was moderately related to Index 1 and Index 2 dominance-focus in ratings of self and Index 1, Index 2, and Index 3 in ratings of others. As shown in the table, the remaining correlations were not significant and ranged from -.01 to .30. Thus, one can conclude that trait affiliation and trait dominance are distinct measures from the four dominance-focus and affiliation-focus indices; whereas trait dominance was related to selected dominance-focus indices, trait affiliation was not related to variability in affiliation or dominance over the 21-day testing period.

*Self-Esteem Questionnaire.* We hypothesized that individuals with high self-esteem may perceive their own social behaviours to be more consistent in their ratings of affiliation and dominance over time than low self-esteem individuals. Participants were asked to complete the Revised Self-Liking / Self-Competence Scale (SLSC-R; Tafarodi & Swann, 1995) and the Single-Item Self-Esteem Scale (SISE; Robins, Hendin, & Trzesniewski, 2001). The SLSC scores were computed separately for the two subscales: Self-Competence assesses individuals' perceptions of their overall capabilities, effectiveness, and agency, whereas Self-Liking assesses individuals' judgment of overall self-approval, self-acceptance, and self-derogation.

In order to determine whether a relationship exists between the self-esteem measures and variability in self-ratings over 21 days, we correlated each person's Self-Competence, Self-Liking, and SISE scores with the four focus indices (standard deviation, Index 1, Index 2, and Index 3) for affiliation and dominance. Table 11 contains the correlations between the three self-esteem measures and four variability indices. One notable finding emerged from these analyses: for ratings of self, Index 3

affiliation-focus and Self-Competence significantly correlated, $r$ (38) = .33, $p < .01$. That is, individuals who scored higher on the Self-Competence subscale of the SLSC, scored significantly higher on Index 3 affiliation-focus. This finding does not support the self-esteem literature, which states that individuals who have low self-esteem tend to be less consistent (more variable) in their trait ratings over time (Campbell, 1990). Instead, this finding suggests that individuals who are high in self-esteem are also more attentive to affiliation distinctions (or show greater variability in affiliation) over time.

The remaining correlations between the self-esteem measures and the variability indices were not significant and ranged from .25 to -.29. However, if you average the three correlations between the Self-Liking, Self-Competence, and Single-Item Self-Esteem scales with the four variability indices for self- reported dominance, a negative correlation is produced. For example, the average of the correlations between Index 1 dominance and Self-Liking (-.24), Self-Competence (-.29), and SISE (-.18) from self-reports is -.24. Similarly, the average of the correlations between Index 2 with the three self-esteem measures and Index 3 dominance with the three self-esteem measures produce negative correlations. Although these correlations are not significant, they suggest that high self-esteem individuals are more consistent in their perceptions of their own dominance over time. Similar results were evident in participants' ratings of others' dominance behaviour over time. That is, the average of the correlations between the three self-esteem measures and Index 1 dominance, Index 2 dominance, and Index 3 dominance was negative. Although not-significant, this finding suggests that high self-esteem individuals perceived greater consistency in others' dominance behaviour over

time. Parallel patterns were not evident in the correlation between the average of the three self-esteem measures and the four affiliation-focus indices.

*Item Desirability and Importance Questionnaires*. The purpose of these measures was to determine whether possible gender differences found in Study 2 were related to gender differences in participants' perceptions of the desirability or importance of the 16 adjectives. It was predicted that there would be gender similarities in men and women's ratings of item desirability and item importance. Initially, participants' ratings on item importance and desirability were expected to be different. However, the correlation between the two scales was extremely high ($r$ = .99), suggesting that the two scales measure similar constructs. Therefore, participants' ratings of item desirability and item importance were averaged for each of the 16 interpersonal adjectives. Mean desirability and importance scores of each interpersonal adjective are presented in Table 12.

Dimension scores were computed along each of the affiliation and dominance axes in order to examine men and women's desirability and importance ratings of dominance-related adjectives and affiliation-related adjectives. The results showed that women ($M$ = 7.78, $SD$ = 2.56) rated affiliation-related adjectives to be significantly more desirable and important than men ($M$ = 5.96, $SD$ = 2.66), $t$ (38) = -2.21, $p$ = .03. However, men ($M$ = 5.10, $SD$ = 2.45) and women ($M$ = 4.42, $SD$ = 2.18) did not differ in their ratings of the desirability and importance of dominance-related adjectives, $t$ (38) = 0.92, $p$ = .36. We were also interested in men's and women's desirability and importance ratings of each of the 16 interpersonal adjectives used in Study 2. The results revealed that men's ratings of the desirability and importance of the adjective "cold" were significantly higher than women' ratings of that adjective, $t$ (38) = 2.20, $p$ = .03. In addition, men' ratings of the

desirability and importance of the adjective "sly" were significantly higher than women's ratings of that adjective, $t$ (38) = 2.47, $p$ = .02.

A closer examination of the comparisons of adjectives located in octants on the right-hand side of the circumplex versus the adjectives located in octants on the left-hand side of the circumplex reveals an interesting pattern. For the six words on the warm side of the circumplex (outgoing, extraverted, warm agreeable, naïve, and trusting), women's ratings tended to be higher than men's ratings (for all six comparisons). For the six words on the cold side of the circumplex (unsociable, introverted, cold, critical, sly, and mistrusting), men's ratings tended to be higher than women's (for five of the six comparisons, two of which were significantly different). Therefore, the pattern (and significant difference on the affiliation dimension, which combines the effects of all 12 words) suggests that men appear to find traits that are more related to cold to be relatively more desirable and important then women; in contrast, women appear to find traits that are more related to warmth to be relatively more desirable and important than men.

Another interesting pattern emerged when considering all adjectives, rather than just warm adjectives and cold adjectives. This pattern is not one of a gender difference, but rather one that males and females appeared to agree on. That is, both males and females perceived adjectives with negative connotations (cold, sly, naïve, passive, submissive, unsociable, introverted, and mistrusting) to be less desirable and important than adjectives with positive connotations (warm, agreeable, assertive, dominant, outgoing, extraverted, and trusting). Therefore, there appears to be some important consistency in men's and women's ratings regarding which traits appear to be more desirable and important.

*Gender Stereotyping Questionnaires*. The purpose of including the questionnaires in Appendix F was to investigate whether women who hold traditional gender stereotypes would be more likely to rate their own and other women's behaviour higher in affiliation-focus. Similarly, would men who hold traditional gender stereotypes rate their own and other men's interpersonal behaviours higher in dominance-focus. First, participants rated how accurately each of the 16 adjectives described the typical man and typical woman. Dominance and affiliations dimension scores were computed using the formulae described earlier (pp. 48-49). The results revealed that female perceivers' ratings of the typical man ($M$ = 5.38, $SD$ = 3.44) and typical woman ($M$ = 6.83, $SD$ = 3.26) did not significantly differ in affiliation, $t$ (38) = 1.36, $p$ = .18. In addition, female perceivers' ratings of the typical man's ($M$ = 1.74, $SD$ = 1.77) and typical woman's ($M$ = 1.46, $SD$ = 2.43) levels of dominance were not significantly different, $t$ (38) = -.44, $p$ = .66. Furthermore, male perceivers' ratings of the typical man's ($M$ = -2.24, $SD$ = 2.86) and typical woman ($M$ = -1.10, $SD$ = 2.46) did not differ in affiliation, $t$ (38) = 1.36, $p$ = .18. In addition, male perceivers' ratings of the typical man ($M$ = 3.88, $SD$ = 3.27) and typical woman's ($M$ = 5.12, $SD$ = 3.28) levels of dominance were not significantly different, $t$ (38) = 1.20, $p$ = .24.

Male and female participants' ratings of the typical man's and the typical woman's levels of affiliation and dominance were separately correlated with the four affiliation-focus and dominance-focus indices (SD, Index 1, Index 2, and Index 3) for ratings of self and others (see Table 13). For ratings of self, the results showed that ratings of the typical man's level of affiliation significantly correlated with Index 3 dominance-focus ($r$ = -.39, $p$ = .01). This finding suggests that the more affiliative the typical man was

perceived to be, the less variability participants saw in their own dominance over 21 days. On the other hand, perceivers' ratings of the typical woman's level of dominance significantly correlated with Index 3 dominance-focus in ratings of self ($r$ = -.32, $p$ = .05). That is, the more dominant the typical woman was perceived to be, the less variability participants saw in their own dominance over 21 days. In addition, for ratings of others, perceivers' ratings of the typical man's level of affiliation correlated significantly with Index 3 dominance-focus ($r$ = -.41, $p$ = .01). This finding suggests that the more affiliative the typical man was perceived to be, the less variability participants saw in others' dominance over 21 days.

Participants also completed the Extended Personal Attribute Questionnaire (EPAQ; Spence, Helmreich, & Holahan, 1979) in order to test whether they hold traditional gender stereotypes (shown in Appendix F). The positive femininity (F+), negative femininity (F-), positive masculinity (M+), negative masculinity (M-), and androgynous (FM) subscales of the EPAQ were computed.

Researchers such as Korabik and McCreary (2000) have linked the femininity and masculinity subscales of the EPAQ to the four poles of the interpersonal circumplex. Specifically, they found that the four gender-specific subscales of the EPAQ can be compared to the four poles of the interpersonal circumplex as follows: the EPAQ's positive femininity (F+) subscale positively correlated ($r$ = .68, $p$ < .01) with the LM octant (warm and agreeable) and negatively correlated ($r$ = -.64, $p$ < .01) with the DE octant (cold and critical) of the interpersonal circumplex; likewise, the positive masculinity (M+) subscale positively correlated ($r$ = .66, $p$ < .01) with the PA octant (dominant and assertive) and negatively correlated ($r$ = -.61, $p$ < .01) with the HI octant

(passive and submissive) of the interpersonal circumplex. These findings suggest that the positive and negative femininity subscales of the EPAQ significantly correlated with the two poles of the affiliation dimension, whereas the positive and negative masculinity scales of the EPAQ correlated with the two poles of the dominance dimension.

In light of our gender hypotheses for the ratings of others, we hypothesized that ratings of the typical woman would be higher on the positive femininity (F+) subscale of the EPAQ compared to ratings of the typical man. In addition, we expected the ratings of the typical man to be higher on the positive masculinity (M+) subscale of the EPAQ compared to ratings of the typical woman. The results revealed that the typical woman ($M$ = 4.17, SD = .50) was rated significantly higher on F+ than the typical man ($M$ = 3.00, SD = .49), $t$ (39) = 10.27, $p < .01$. In addition, the typical man ($M$ = 3.75, SD = .36) was rated significantly higher on M+ than the typical woman ($M$ = 3.16, SD = .39), $t$ (39) = -6.43, $p < .01$. In accordance with gender stereotypes, the typical woman was perceived to be more warm and agreeable than the typical man. On the other hand, the typical man was perceived to be more assertive and dominant than the typical woman.

We were also interested in investigating whether male and female perceivers' ratings of the typical woman's and typical man's positive femininity (F+), negative femininity (F-), positive masculinity (M+), negative masculinity (M-), and androgyny (FM) differed. The results showed that female participants ($M$ = 3.58) rated the typical woman significantly higher on androgyny (MF subscale) than male participants ($M$ = 3.33), $t$ (38) = -2.22, $p$ = .03. In addition, female participants ($M$ = 3.14) rated the typical man higher on positive femininity than male participants ($M$ = 2.87); however, this finding only approached significance, $t$ (38) = -1.84, $p$ = .07. None of the other comparisons were

found to be significant (all $p$'s > .11). In conclusion, male and female participants did not vary significantly in their ratings of the typical man and typical woman with a few exceptions that did not support common gender stereotypes.

Table 1

*Illustration of Index 1 and Index 3 Computations for a Particular Participant*

| | | Factor Loading | | MDS Stimulus Coordinates | |
|---|---|---|---|---|---|
| Octant | Adjective | Affiliation | Dominance | Affiliation | Dominance |
| PA | Assertive | $A_1$ | $a_1$ | $A_2$ | $a_2$ |
| | Dominant | $B_1$ | $b_1$ | $B_2$ | $b_2$ |
| NO | Outgoing | $C_1$ | $c_1$ | $C_2$ | $c_2$ |
| | Extraverted | $D_1$ | $d_1$ | $D_2$ | $d_2$ |
| LM | Warm | $E_1$ | $e_1$ | $E_2$ | $e_2$ |
| | Agreeable | $F_1$ | $f_1$ | $F_2$ | $f_2$ |
| JK | Naive | $G_1$ | $g_1$ | $G_2$ | $g_2$ |
| | Trusting | $H_1$ | $h_1$ | $H_2$ | $h_2$ |
| HI | Passive | $I_1$ | $i_1$ | $I_2$ | $i_2$ |
| | Submissive | $J_1$ | $j_1$ | $J_2$ | $j_2$ |
| FG | Unsociable | $K_1$ | $k_1$ | $K_2$ | $k_2$ |
| | Introverted | $L_1$ | $l_1$ | $L_2$ | $l_2$ |
| DE | Cold | $M_1$ | $m_1$ | $M_2$ | $m_2$ |
| | Critical | $N_1$ | $n_1$ | $N_2$ | $n_2$ |
| BC | Sly | $O_1$ | $o_1$ | $O_2$ | $o_2$ |
| | Mistrusting | $P_1$ | $p_1$ | $P_2$ | $p_2$ |

*Note.* The following equations are examples of how to compute affiliation-focus and dominance-focus for Index 1 and Index 3.

$$\text{Index 1 Affiliation-Focus} = (A_1^2 + B_1^2 + C_1^2 + D_1^2 + E_1^2 + F_1^2 + G_1^2 + H_1^2 + I_1^2 + J_1^2 + K_1^2 + L_1^2 + M_1^2 + N_1^2 + O_1^2 + P_1^2)/16$$

$$\text{Index 1 Dominance-Focus} = (a_1^2 + b_1^2 + c_1^2 + d_1^2 + e_1^2 + f_1^2 + g_1^2 + h_1^2 + i_1^2 + j_1^2 + k_1^2 + l_1^2 + m_1^2 + n_1^2 + o_1^2 + p_1^2)/16$$

$$\text{Index 3 Affiliation-Focus} = (A_1A_2 + B_1B_2 + C_1C_2 + D_1D_2 + E_1E_2 + F_1F_2 + G_1G_2 + H_1H_2 + I_1I_2 + J_1J_2 + K_1K_2 + L_1L_2 + M_1M_2 + N_1N_2 + O_1O_2 + P_1P_2)/16$$

$$\text{Index 3 Dominance-Focus} = (a_1a_2 + b_1b_2 + c_1c_2 + d_1d_2 + e_1e_2 + f_1f_2 + g_1g_2 + h_1h_2 + i_1i_2 + j_1j_2 + k_1k_2 + l_1l_2 + m_1m_2 + n_1n_2 + o_1o_2 + p_1p_2)/16$$

Table 2

*Stress and RSQ Indices for Dimensional Solutions from Study 1 Semantic Similarity Questionnaire*

| Solution | | Version A | Version B | Version C |
|---|---|---|---|---|
| One-dimensional | *Stress* | .39 | .42 | .36 |
| | *RSQ* | .52 | .46 | .46 |
| Two-dimensional | *Stress* | .15 | .13 | .15 |
| | *RSQ* | .86 | .88 | .85 |
| Three-dimensional | *Stress* | .07 | .10 | .08 |
| | *RSQ* | .96 | .92 | .94 |

Table 3

*Descriptive Statistics for Relationship Type, Relationship Length, Communication Mode, and Length of Interaction*

| Variable | Criteria | Female | Male | Same Sex | Opposite Sex |
|---|---|---|---|---|---|
| Relationship Type | Parents | 9% | 4% | 57% | 43% |
| | Siblings | 3% | 2% | 63% | 37% |
| | Other Relatives | 3% | 2% | 60% | 40% |
| | Friends | 49% | 53% | 68% | 32% |
| | Romantic Partner | 9% | 16% | 11% | 89% |
| | Classmates/Co-Workers | 10% | 12% | 63% | 37% |
| | Supervisor/Boss | 2% | 2% | 53% | 47% |
| | Acquaintances | 5% | 5% | 57% | 43% |
| | Service Personnel | 2% | 1% | 51% | 49% |
| | Other | 7% | 3% | 63% | 37% |
| Relationship Length | First Encounter | 5% | 4% | 50% | 50% |
| | Less than a Month | 2% | 3% | 49% | 51% |
| | 1 – 6 Months | 18% | 19% | 57% | 43% |
| | 6 Months – 2 Years | 25% | 30% | 66% | 34% |
| | 2 Years – 10 Years | 35% | 34% | 52% | 48% |
| | All My Life | 15% | 10% | 61% | 39% |
| Communication Mode | Face-to-Face | 70% | 72% | 62% | 38% |
| | Phone | 14% | 11% | 50% | 50% |
| | Internet | 16% | 18% | 61% | 39% |
| Interaction Length | Average Minutes | 24.69 | 27.11 | 38.83 | 25.45 |

Table 4

*Stress and RSQ Indices for Dimensional Solutions from Study 2 Semantic Similarity Questionnaire*

| | Index | |
|---|---|---|
| Solution | Stress | RSQ |
| One-dimensional | .42 | .47 |
| Two-dimensional | .12 | .91 |
| Three-dimensional | .05 | .97 |

Table 5

*Descriptive Statistics for Each of the Ten Dependent Variables*

| Rating Type Variable | Dependent Variable | Mean | SD | Reliability |
|---|---|---|---|---|
| Self | Mean Dominance | 3.07 | 1.86 | .98 |
| | SD Dominance | 3.45 | 0.89 | .92 |
| | Mean Affiliation | 8.32 | 2.84 | .99 |
| | SD Affiliation | 3.71 | 1.01 | .90 |
| | Correlation of Affiliation & Dominance | 0.23 | 0.31 | .84 |
| Other | Mean Dominance | 3.47 | 1.68 | .96 |
| | SD Dominance | 3.31 | 0.90 | .90 |
| | Mean Affiliation | 8.31 | 2.70 | .98 |
| | SD Affiliation | 3.73 | 0.92 | .87 |
| | Correlation of Affiliation & Dominance | 0.18 | 0.21 | .53 |

Table 6

*ANOVA Main Effects and Interactions Statistics*

| Dependent Variable | Effect | F (1, 38) | p-value | $\eta^2$ |
|---|---|---|---|---|
| Mean Dominance | IntPart Main Effect | 0.06 | .81 | .00 |
| | Rating Type Main Effect | 3.04 | .09 | .07 |
| | Perceiver Main Effect | 0.15 | .70 | .00 |
| | Perceiver X IntPart | 3.49 | .07 | .08 |
| | Perceiver X Rating Type | 0.26 | .61 | .01 |
| | IntPart X Rating Type | 0.04 | .85 | .00 |
| | Perceiver X IntPart X Rating Type | 0.15 | .70 | .00 |
| Mean Affiliation | IntPart Main Effect | 5.40 | .03 | .12 |
| | Rating Type Main Effect | 0.01 | .92 | .00 |
| | Perceiver Main Effect | 16.56 | .00 | .30 |
| | Perceiver X IntPart | 0.72 | .40 | .02 |
| | Perceiver X Rating Type | 0.01 | .91 | .00 |
| | IntPart X Rating Type | 2.93 | .10 | .07 |
| | Perceiver X IntPart X Rating Type | 2.76 | .11 | .07 |
| SD Dominance | IntPart Main Effect | 2.37 | .13 | .06 |
| | Rating Type Main Effect | 1.85 | .18 | .05 |
| | Perceiver Main Effect | 1.63 | .21 | .04 |
| | Perceiver X IntPart | 0.01 | .91 | .00 |
| | Perceiver X Rating Type | 0.08 | .77 | .00 |
| | IntPart X Rating Type | 0.31 | .58 | .01 |
| | Perceiver X IntPart X Rating Type | 0.41 | .53 | .01 |
| SD Affiliation | IntPart Main Effect | 0.21 | .65 | .01 |
| | Rating Type Main Effect | 0.00 | .99 | .00 |
| | Perceiver Main Effect | 0.01 | .92 | .00 |
| | Perceiver X IntPart | 4.14 | .05 | .10 |
| | Perceiver X Rating Type | 0.10 | .75 | .00 |
| | IntPart X Rating Type | 0.87 | .36 | .02 |
| | Perceiver X IntPart X Rating Type | 0.08 | .78 | .00 |
| Correlation of Dominance and Affiliation | IntPart Main Effect | 0.38 | .54 | .01 |
| | Rating Type Main Effect | 1.19 | .28 | .03 |
| | Perceiver Main Effect | 0.31 | .58 | .01 |
| | Perceiver X IntPart | 0.70 | .41 | .02 |
| | Perceiver X Rating Type | 0.01 | .92 | .00 |
| | IntPart X Rating Type | 0.22 | .64 | .01 |
| | Perceiver X IntPart X Rating Type | 1.17 | .29 | .03 |

*Note.* "IntPart" refers to interaction partner, "Perceiver" refers to gender of perceiver, and "Rating Type" refers to ratings of self or other.

Table 7

*ANOVA Means for Self and Other Ratings*

| Dependent Variable | Gender of IntPart | Ratings of Self: Gender of Perceiver Female | Ratings of Self: Gender of Perceiver Male | Ratings of Others: Gender of Perceiver Female | Ratings of Others: Gender of Perceiver Male |
|---|---|---|---|---|---|
| Mean Dominance | Female | 3.13 | 2.89 | 3.76 | 3.16 |
| | Male | 3.02 | 3.11 | 3.48 | 3.44 |
| Mean Affiliation | Female | 9.95 | 7.00 | 9.95 | 7.33 |
| | Male | 9.69 | 6.73 | 9.68 | 6.47 |
| SD Dominance | Female | 3.51 | 3.18 | 3.41 | 3.06 |
| | Male | 3.69 | 3.30 | 3.44 | 3.19 |
| SD Affiliation | Female | 3.54 | 3.78 | 3.47 | 3.73 |
| | Male | 3.84 | 3.48 | 3.85 | 3.59 |
| Correlation of Dominance and Affiliation | Female | 0.26 | 0.23 | 0.16 | 0.21 |
| | Male | 0.16 | 0.26 | 0.16 | 0.19 |

*Note*. "IntPart" refers to interaction partner.

Table 8
*Affiliation-Focus and Dominance-Focus Indices for Self-Ratings*

| | Index 1 | | Index 2 | | Index 3 | |
|---|---|---|---|---|---|---|
| Participant | Affiliation | Dominance | Affiliation | Dominance | Affiliation | Dominance |
| 1 | .15 | .37 | .27 | .56 | .31 | .54 |
| 2 | .29 | .34 | .46 | .40 | .48 | .50 |
| 3 | .14 | .21 | .19 | .49 | .30 | .39 |
| 4 | .23 | .26 | .43 | .47 | .43 | .45 |
| 5 | .17 | .20 | .35 | .53 | .35 | .40 |
| 6 | .10 | .18 | .17 | .61 | .23 | .38 |
| 7 | .21 | .26 | .46 | .61 | .44 | .49 |
| 8 | .28 | .15 | .66 | .24 | .50 | .35 |
| 9 | .15 | .31 | .20 | .65 | .31 | .52 |
| 10 | .34 | .11 | .68 | .00 | .53 | .19 |
| 11 | .14 | .11 | .41 | .35 | .33 | .24 |
| 12 | .22 | .27 | .39 | .46 | .41 | .46 |
| 13 | .32 | .20 | .59 | .33 | .51 | .41 |
| 14 | .39 | .19 | .59 | .28 | .56 | .41 |
| 15 | .20 | .24 | .32 | .48 | .37 | .45 |
| 16 | .29 | .25 | .58 | .33 | .51 | .44 |
| 17 | .22 | .09 | .54 | .11 | .40 | -.01 |
| 18 | .15 | .15 | .41 | .29 | .34 | .30 |
| 19 | .18 | .30 | .35 | .57 | .39 | .49 |
| 20 | .23 | .17 | .62 | .28 | .44 | .34 |
| 21 | .27 | .13 | .56 | .26 | .44 | .30 |
| 22 | .17 | .22 | .46 | .43 | .39 | .41 |
| 23 | .17 | .14 | .35 | .16 | .25 | -.06 |
| 24 | .31 | .16 | .65 | .28 | .52 | .36 |
| 25 | .12 | .19 | .18 | .57 | .26 | .39 |
| 26 | .21 | .31 | .31 | .42 | .18 | .29 |
| 27 | .31 | .22 | .61 | .39 | .54 | .45 |
| 28 | .17 | .23 | .41 | .52 | .39 | .43 |
| 29 | .30 | .20 | .58 | .19 | .48 | .32 |
| 30 | .23 | .30 | .40 | .57 | .45 | .51 |
| 31 | .22 | .11 | .40 | .22 | .36 | .21 |
| 32 | .11 | .27 | .29 | .50 | .26 | .43 |
| 33 | .40 | .09 | .48 | .03 | .49 | .20 |
| 34 | .24 | .21 | .47 | .39 | .42 | .42 |
| 35 | .23 | .19 | .56 | .43 | .44 | .41 |
| 36 | .27 | .18 | .53 | .28 | .45 | .35 |
| 37 | .10 | .28 | .18 | .74 | .29 | .50 |
| 38 | .15 | .12 | .41 | .32 | .28 | .24 |
| 39 | .26 | .30 | .43 | .56 | .48 | .53 |
| 40 | .25 | .15 | .50 | .16 | .43 | .26 |

*Note.* The absolute values for Index 2 are shown (in accordance with Feldman's 1995 approach). Participants 1 to 20 are females and participants 21 to 40 are males.

Table 9

*Correlations between All Four Types of Focus Indices*

| Ratings of Self | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. SD Affiliation | - | | | | | | | |
| 2. Index 1 Affiliation | .54** | - | | | | | | |
| 3. Index 2 Affiliation | .55** | .80** | - | | | | | |
| 4. Index 3 Affiliation | .48** | .86** | .85** | - | | | | |
| 5. SD Dominance | .44** | -.11 | -.22 | -.04 | - | | | |
| 6. Index 1 Dominance | -.01 | -.23 | -.41** | -.14 | .64** | - | | |
| 7. Index 2 Dominance | -.30 | -.63** | -.69** | -.42** | .60** | .75** | - | |
| 8. Index 3 Dominance | .08 | -.11 | -.23 | .14 | .64** | .79** | .77** | - |
| **Ratings of Others** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
| 9. SD Affiliation | - | | | | | | | |
| 10. Index 1 Affiliation | .45** | - | | | | | | |
| 11. Index 2 Affiliation | .36* | .72** | - | | | | | |
| 12. Index 3 Affiliation | .31 | .80** | .67** | - | | | | |
| 13. SD Dominance | .41** | -.22 | -.37* | -.11 | - | | | |
| 14. Index 1 Dominance | .07 | -.22 | -.57** | -.08 | .55** | - | | |
| 15. Index 2 Dominance | -.22 | -.61** | -.73** | -.35* | .62** | .74** | - | |
| 16. Index 3 Dominance | .00 | -.16 | -.41** | .08 | .55** | .71** | .81** | - |

* $p < .05$
** $p < .01$

Table 10

*Correlations between IAS-R Trait Affiliation and Trait Dominance and Variability Indices*

| Self Ratings | IAS-R Affiliation Dimension | IAS-R Dominance Dimension |
|---|---|---|
| SD Affiliation | -.23 | -.01 |
| Index 1 Affiliation | -.17 | .09 |
| Index 2 Affiliation | -.15 | .13 |
| Index 3 Affiliation | -.11 | .09 |
| SD Dominance | .06 | -.28 |
| Index 1 Dominance | -.13 | -.39* |
| Index 2 Dominance | -.03 | -.35* |
| Index 3 Dominance | -.20 | -.30 |
| **Other Ratings** | **IAS-R Affiliation Dimension** | **IAS-R Dominance Dimension** |
| SD Affiliation | -.06 | .22 |
| Index 1 Affiliation | -.11 | .21 |
| Index 2 Affiliation | -.22 | .27 |
| Index 3 Affiliation | -.20 | -.02 |
| SD Dominance | .30 | -.17 |
| Index 1 Dominance | .04 | -.44** |
| Index 2 Dominance | .09 | -.42** |
| Index 3 Dominance | -.11 | -.48** |

* $p<.05$
** $p<.01$

Table 11

*Correlations between Self-Esteem and Variability Indices*

| Self Ratings | Self-Liking | Self-Competence | Single Item Self-Esteem |
|---|---|---|---|
| SD Affiliation | -.16 | .03 | -.03 |
| Index 1 Affiliation | -.20 | .10 | -.16 |
| Index 2 Affiliation | .03 | .25 | -.06 |
| Index 3 Affiliation | .10 | .33** | .01 |
| SD Dominance | -.21 | -.19 | -.11 |
| Index 1 Dominance | -.24 | -.29 | -.18 |
| Index 2 Dominance | .02 | .21 | .00 |
| Index 3 Dominance | -.08 | -.15 | .05 |
| **Other Ratings** | **Self-Liking** | **Self-Competence** | **Single Item Self-Esteem** |
| SD Affiliation | -.03 | .12 | .05 |
| Index 1 Affiliation | -.04 | .11 | -.16 |
| Index 2 Affiliation | .13 | .22 | .01 |
| Index 3 Affiliation | -.07 | -.02 | -.18 |
| SD Dominance | .01 | .01 | .08 |
| Index 1 Dominance | -.23 | -.21 | -.24 |
| Index 2 Dominance | -.05 | -.17 | .04 |
| Index 3 Dominance | -.17 | -.24 | .02 |

* $p<.05$
** $p<.01$

Table 12

*Averaged Item Desirability and Importance Scores of the 16 Interpersonal Adjectives*

| | | Mean Item Desirability and Importance Scores | |
|---|---|---|---|
| Adjective | Octant | Male | Female |
| Assertive | PA | 5.68 | 6.15 |
| Dominant | | 5.10 | 5.13 |
| Outgoing | NO | 6.33 | 6.50 |
| Extraverted | | 5.90 | 6.13 |
| Warm | LM | 6.20 | 6.60 |
| Agreeable | | 5.38 | 5.80 |
| Naïve | JK | 2.03 | 2.40 |
| Trusting | | 5.75 | 6.05 |
| Passive | HI | 2.78 | 3.23 |
| Submissive | | 2.58 | 2.58 |
| Unsociable | FG | 1.50 | 1.55 |
| Introverted | | 2.43 | 2.38 |
| Cold | DE | 2.13* | 1.43* |
| Critical | | 4.50 | 4.35 |
| Sly | BC | 3.60* | 2.30* |
| Mistrusting | | 2.63 | 2.20 |
| Dominance Dimension | | 5.10 | 4.42 |
| Affiliation Dimension | | 5.96* | 7.78* |

* $p<.05$
** $p<.01$

Table 13

*Correlations between the Typical Man's and Typical Woman's Affiliation and Dominance with Variability Indices*

| | Typical Man | | Typical Woman | |
|---|---|---|---|---|
| Self Ratings | Affiliation | Dominance | Affiliation | Dominance |
| SD Affiliation | -.16 | -.07 | -.04 | .04 |
| Index 1 Affiliation | .07 | -.23 | -.19 | -.14 |
| Index 2 Affiliation | .04 | -.03 | .04 | .04 |
| Index 3 Affiliation | -.02 | -.06 | -.04 | -.12 |
| SD Dominance | -.26 | .01 | .04 | -.28 |
| Index 1 Dominance | -.18 | -.16 | -.10 | -.28 |
| Index 2 Dominance | -.27 | -.10 | -.02 | -.26 |
| Index 3 Dominance | -.39* | -.21 | -.18 | -.32* |
| | Typical Man | | Typical Woman | |
| Other Ratings | Affiliation | Dominance | Affiliation | Dominance |
| SD Affiliation | -.10 | .02 | -.01 | .32 |
| Index 1 Affiliation | .01 | -.17 | -.16 | .06 |
| Index 2 Affiliation | .05 | -.11 | .15 | .12 |
| Index 3 Affiliation | -.14 | -.19 | .00 | -.16 |
| SD Dominance | -.19 | .11 | .02 | -.16 |
| Index 1 Dominance | -.21 | -.16 | -.24 | -.12 |
| Index 2 Dominance | -.28 | -.07 | -.11 | -.27 |
| Index 3 Dominance | -.41** | -.24 | -.24 | -.28 |

* $p<.05$
** $p<.01$

Figure Captions

*Figure 1.* Octant representation of the interpersonal circumplex.

*Figure 2.* Illustrations of Complementarity, Acomplementarity, and Anticomplementarity.

*Figure 3.* Examples of oval and circular density distributions from a particular man or woman's reported interpersonal behaviours.

*Figure 4.* Conceptual hypotheses for men's and women's perceptions of their own and interaction partners' interpersonal behaviour.

*Figure 5.* Three versions of the semantic similarity scale depicting the different subsets of interpersonal adjectives.

*Figure 6.* Derived stimulus configuration diagrams from Euclidean Multidimensional Scaling (MDS) analyses across all participants for each version of the semantic similarity questionnaire.

*Figure 7.* Derived stimulus configuration diagrams from Euclidean Multidimensional Scaling (MDS) analyses across all male participants and all female participants for Version B of the semantic similarity questionnaire.

*Figure 8.* Derived stimulus configuration diagram from Euclidean Multidimensional Scaling (MDS) analysis across all participants in Study 2.

*Figure 9.* Derived stimulus configuration diagrams from Euclidean Multidimensional Scaling (MDS) analyses across all male participants and all female participants in Study 2.

*Figure 10.* Illustration of the significant interaction of gender of perceiver by gender of interaction partner.

Figure 1

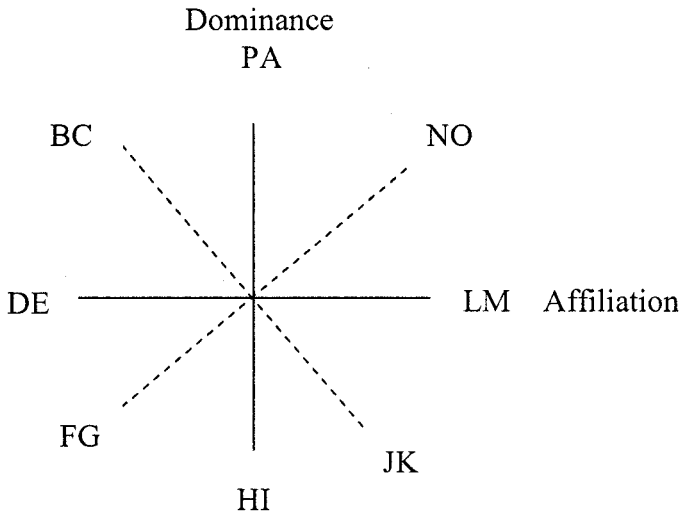


Figure 2

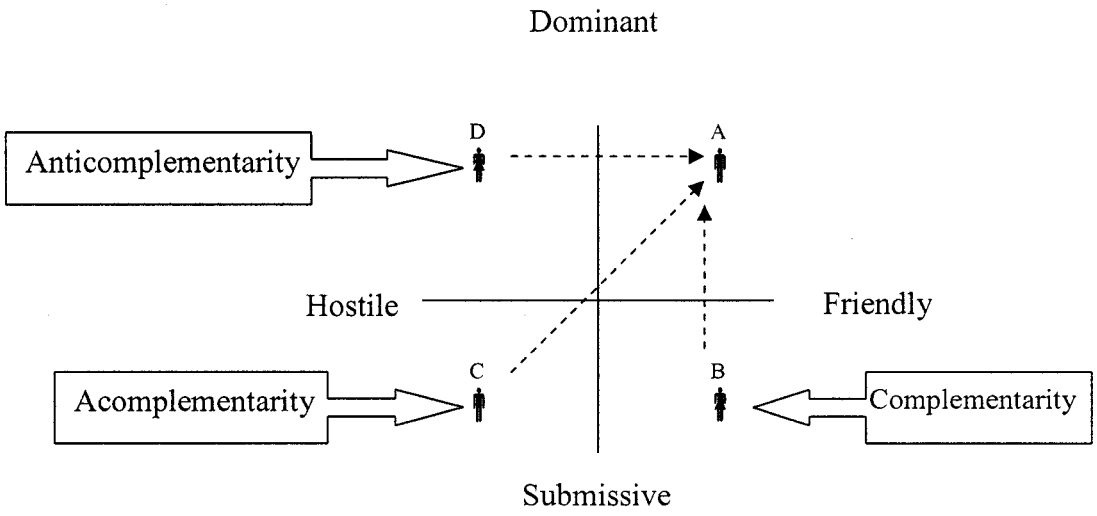
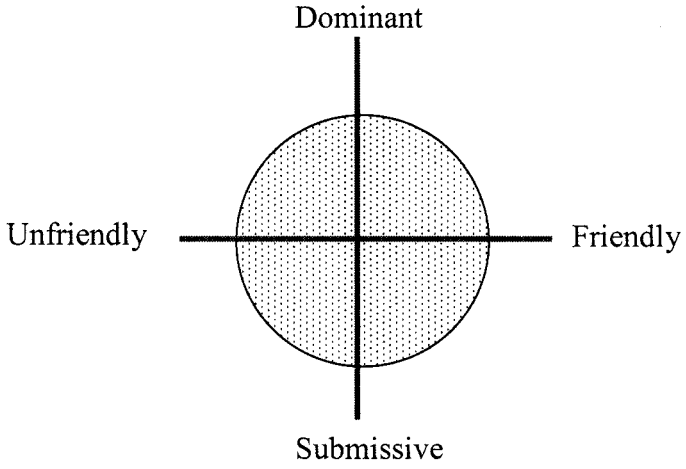
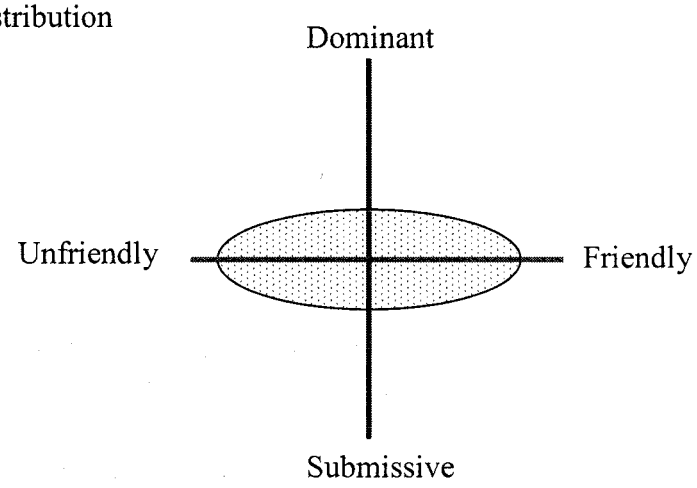

Dominant
Anticomplementarity
D
A
Hostile
Friendly
C
B
Acomplementarity
Complementarity
Submissive

Figure 3

3a. Circular Density Distribution




3b. Affiliation-Focused Density Distribution




3c. Dominance-Focused Density Distribution

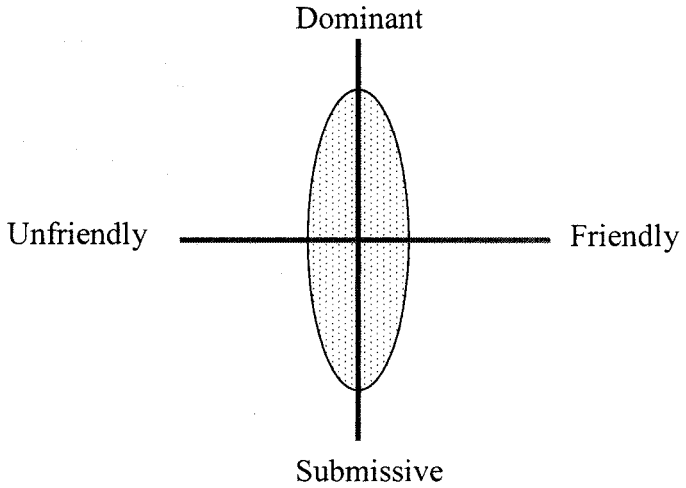
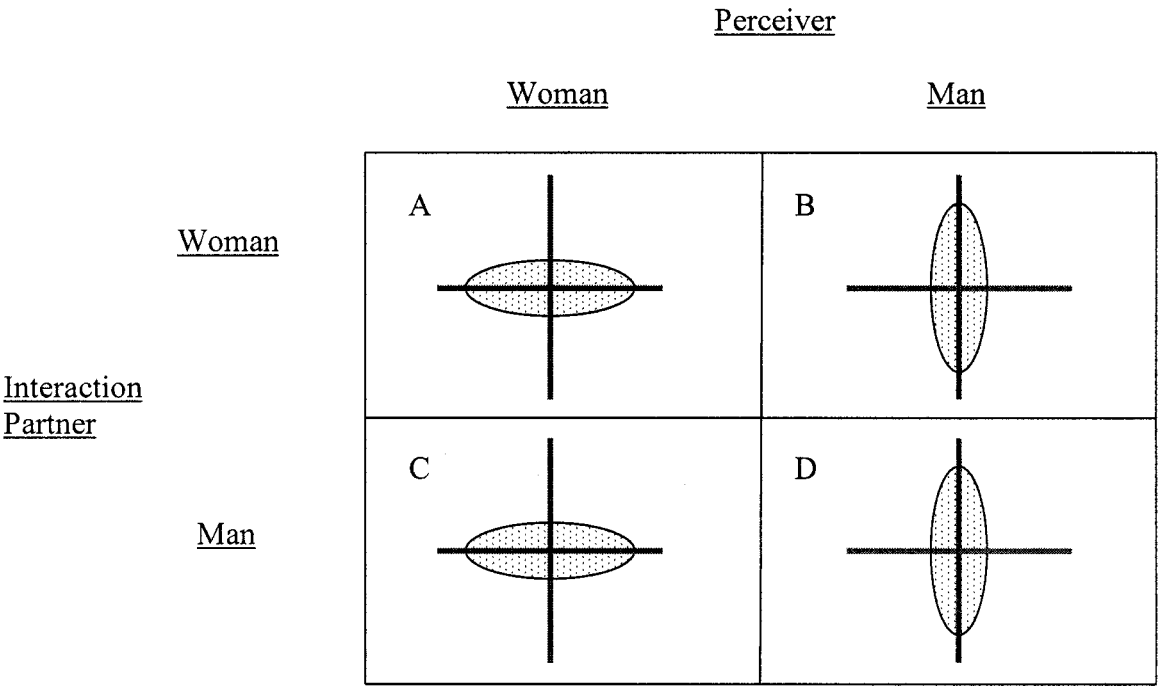


Figure 4

Ratings of Self




Ratings of Others

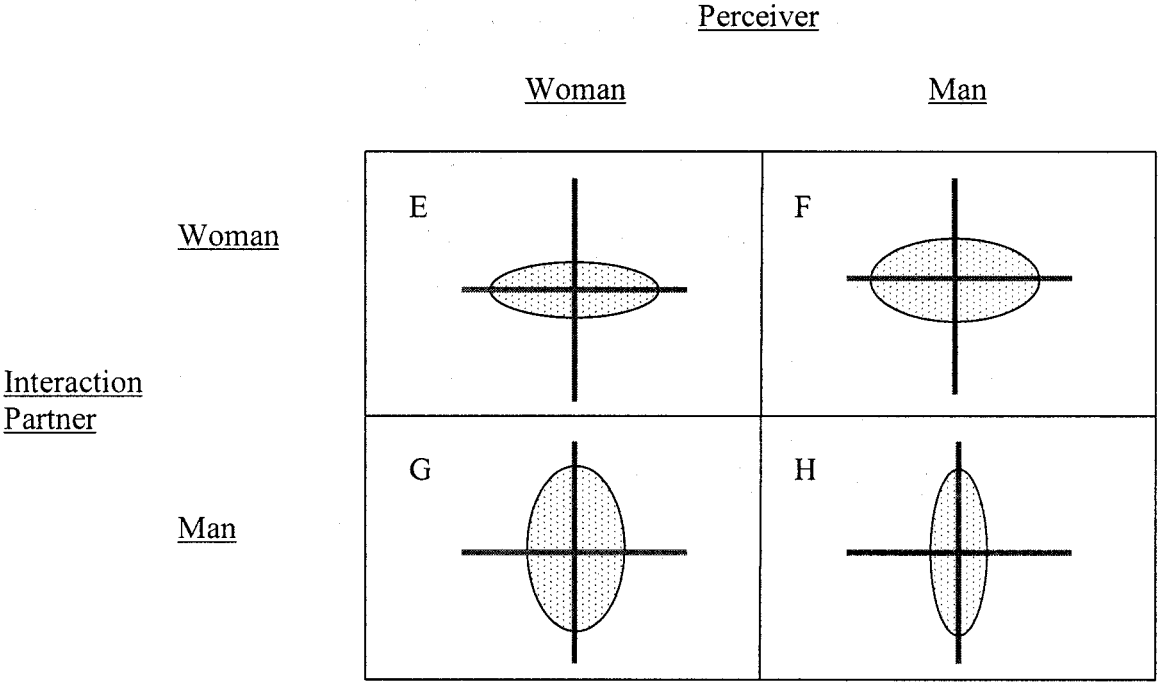
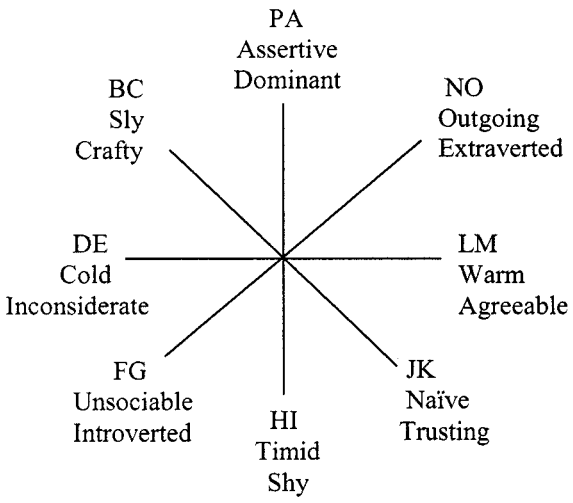
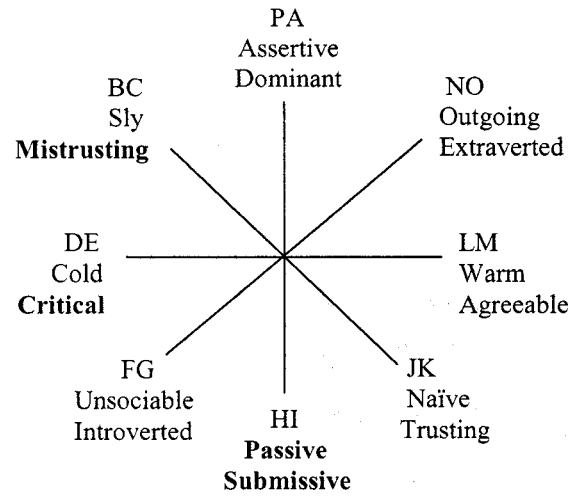


Figure 5

5a. Version A




5b. Version B




5c. Version C

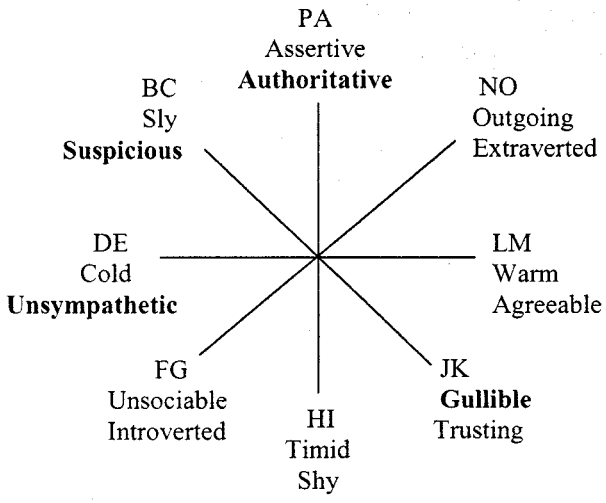
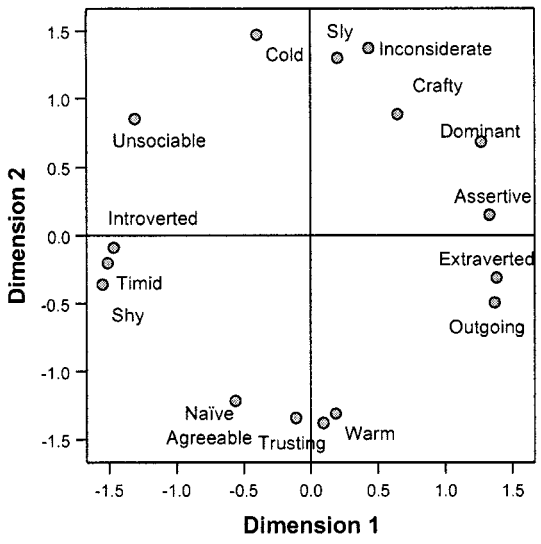
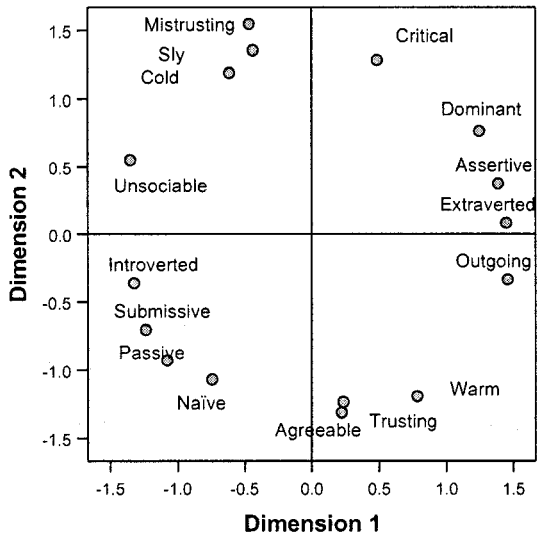


Figure 6

Version A




Version B




Version C

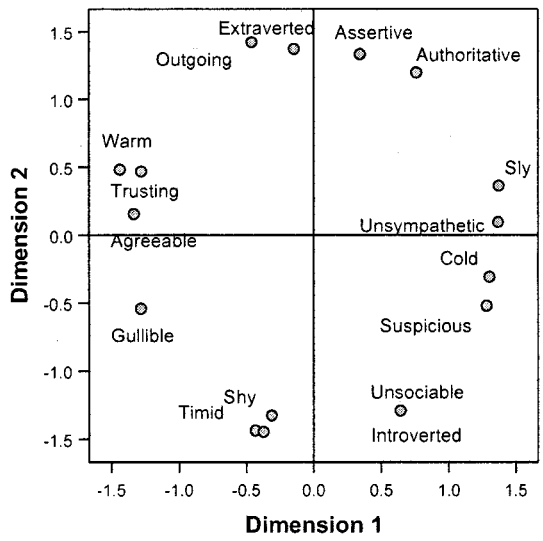
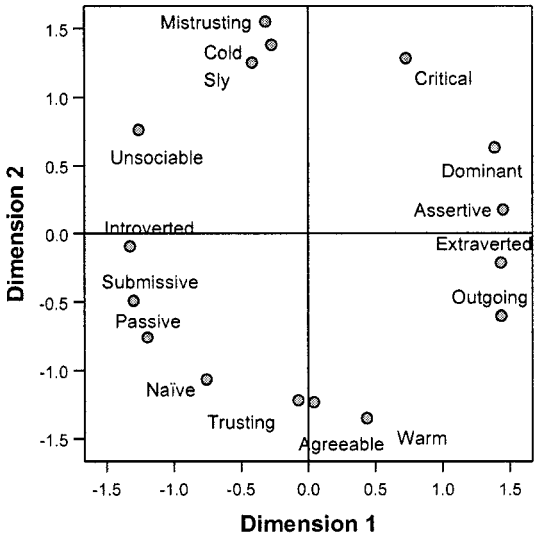


Figure 7

Females




Males

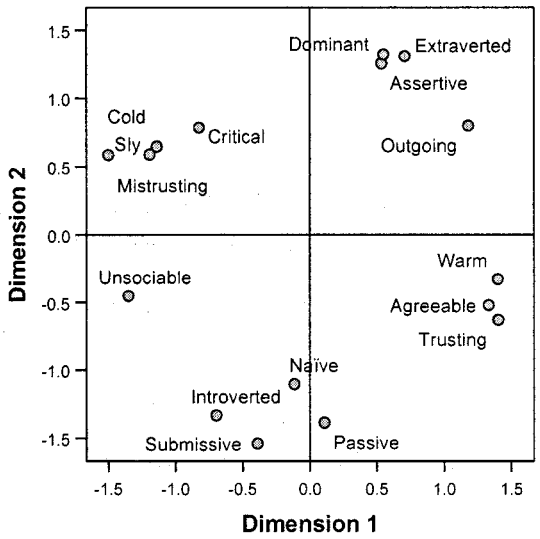


Figure 8

Euclidean Analysis

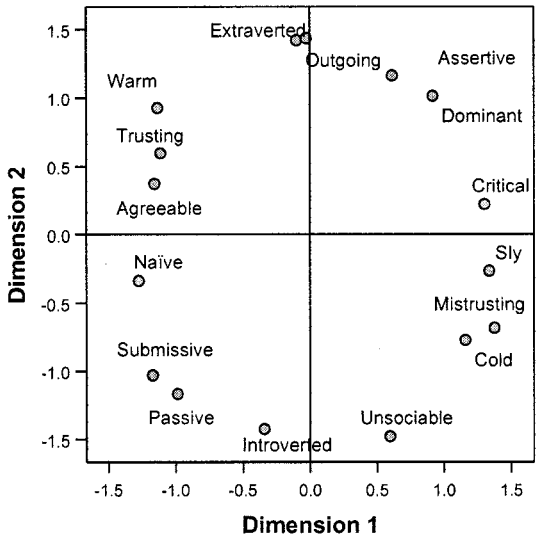
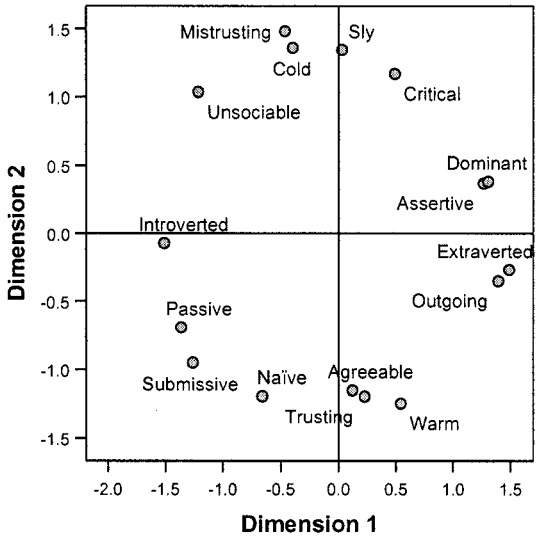


Figure 9

Females




Males

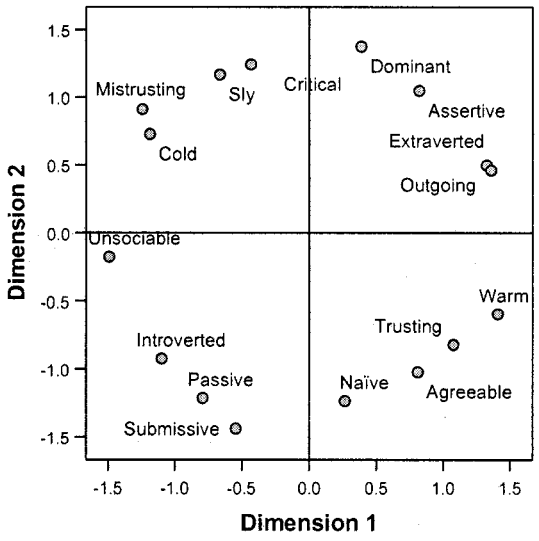


Figure 10

Standard Deviation of Affiliation
as a Function of Gender of Perceiver and Gender of Interaction Partner