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Linguistic Signaling in Speed-Dates

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Abstract

How people use language may signal as much about a person as the conversation topic itself. For example, evidence suggests that similarities in language style may signal romantic interest as people become acquainted. Additionally, language may signal various personal attributes. In the current study, I analyzed linguistic signaling in 174 transcripts from 4-minute heterosexual speed-dates to explore how language style relates to interest in dating a partner and whether linguistic features indicate individual characteristics. I also explored how desired partner features related to actual popularity of dates as well as how partner perceptions predicted romantic interest. Contrary to previous research, findings did not support the idea that language style relates to dating interest potentially because participants adapt their language style regardless of whether they are romantically interested in a partner. However, individual difference variables including self-reported personality factors and attachment style were correlated with aspects of language style. I discuss implications of this research and suggest various avenues for future research.

Keywords

language style matching, linguistic signals, speed-dating, romantic interest, initial romantic attraction, attachment style, personality, self-esteem

Summary for Lay Audience

How people use language may signal as much about a person as the conversation topic itself. For example, evidence suggests that similarities in how people use various components of language may signal romantic interest as people become acquainted. Additionally, differences in how people use language may signal various personal attributes including personality, self-esteem and attachment style. Language use may also enhance others' ability to form perceptions of an individual. In the current study, I analyzed linguistic signaling in 174 transcripts from 4-minute heterosexual speed-dates to explore how different language characteristics relate to both participants' own characteristics and to the ways in which they signal interest to potential partners. Associations between perceptions of a partner and dating interest were also explored. Contrary to previous research, findings did not support the idea that language style relates to dating interest. However, individual difference variables including self-reported personality factors and attachment style were correlated with aspects of language style. I discuss implications of this research and suggest various avenues for future research directions.

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Chapter 1

1 Introduction

1.1 Romance Research

In the words of Leo Tolstoy (1889), “All, everything that I understand, I understand only because I love. Everything is, everything exists, only because I love.” (p. 65). Love is defined as an intense feeling of affection toward others and is typically expressed using words (e.g., “I love you”) and behaviours (e.g., hugs, kisses, gift giving), which emphasize these feelings (Beichen & Murshed, 2015). Falling in love and finding a romantic partner are considered essential milestones in life, much like graduation and finding a job. Interest in dating typically appears in early adolescence, with many individuals having experienced an exclusive heterosexual relationship by late adolescence (Cavanagh, Crissey, & Raley, 2008). Not surprisingly however, these early romantic relationships are largely casual and short lived (Adams, Laursen, & Wilder, 2001). In fact, many individuals in Western societies do not find themselves in serious committed relationships until their late 20’s, with the average age of marriage in Canada now being approximately 27 years old for women and 29 for men (Statistics Canada, 2020). That said, the experience of romantic love is not limited to serious committed relationships. In fact, it is often the love experienced in the initial meeting and casual dating stages that motivates individuals to commit to a partner in a monogamous relationship (McGinnis, 2004).

Much research has explored the early stages of relationship initiation, and one aspect of love and attraction that seems to have gained some research traction is in identifying predictors of relationship initiation. For example, researchers have explored some of the more obvious predictors of romantic attraction like ideal partner preferences (Campbell, Chin, & Stanton, 2016; Eastwick & Finkel, 2008; Regan & Joshi, 2003; Fletcher, Simpson, & Thomas, 2000), similarity (Tidwell, Eastwick, & Finkel, 2013; Klohen & Luo, 2003), physical attractiveness (Eastwick & Smith, 2018; Luo & Zhang, 2009; Kurzban & Weeden, 2005; Feingold, 1991), and personality (Asendorpf, Penke, & Back, 2011; Tanchotsrinon, Maneesri, & Campbell, 2007). Even though each of these factors has some power to predict initial attraction, the problem of accurately predicting general romantic attraction is far from solved.

Of these predictors, the degree to which people perceive “common ground” or similarity between themselves and others seems to be particularly important when considering romantic attraction (Byrne & Griffitt, 1973; Klohen & Luo, 2003; Montoya, Horton, & Kirchner, 2008; Tidwell, Eastwick, & Finkel, 2013). Similarity manifests in numerous ways including shared interests, goals, attitudes and beliefs (Luo, 2017). Interestingly, people might also perceive similarity in a potential partner’s nonverbal behaviour. For example, evidence suggests that behavioural mimicry might enhance liking such that the more a potential partner mimics one’s nonverbal behaviour (e.g., posture, laughter, limb movement), the more one likes that person (Cacioppo et al., 2014; Miles, Nind, & Macrae, 2009; Guéguen, 2009; Chartrand & Bargh, 1999).

Another important predictor that may serve as a subtle indicator of similarity is the way people speak (Niederhoffer & Pennebaker, 2002). For example, how and what people choose to disclose to a potential romantic partner may serve as an indicator of liking, that in turn elicits liking from the partner (Collins & Miller, 1994). At lower levels, the subtle ways in which people style their language (e.g., how they use pronouns or articles) may indicate similarity beyond simple conversation topics. Indeed, research suggests that people may even change how they style their language to signal interpersonal interest (Ireland et al., 2011).

The goal of the current study was to explore linguistic trends in dating pairs, and to identify common features in the dialogue of heterosexual dyads in a speed-dating context. Specifically, we were interested in exploring the topics romantically interested individuals talk about during an initial meeting, and the types of words men and women use during dates. Additionally, we were interested in exploring the degree to which personal characteristics like personality, self-esteem, and attachment style could be signaled through language. Finally, we sought to reexamine language style and whether it is a reliable predictor of romantic attraction. Using transcripts from a speed-dating event, this project hopes to offer valuable insights into how people talk when they are interested in forming a romantic relationship, and how language signals aspects of the self.

1.2 Speed-dating

Prior to speed-dating, many studies on initial romantic attraction used manipulated interactions. Specifically, it was common for individuals to be paired with confederates and for discussions to

be structured and limited in scope (Tidwell, Eastwick, & Finkel, 2012). One of the more well-known exceptions is a study by Byrne and colleagues (1970) which involved arranging 30-minute "dates" between naïve individuals, depending on their degree of self-reported similarity. In this study, they found that romantic attraction was largely influenced by perceived similarity to one's partner and the physical attractiveness of that partner. One limitation of this research design is that it only allowed individuals to meet one other person. In addition, although these dates were unscripted and highly naturalistic, they were also unrecorded – making it difficult to understand how subtle aspects of the dates, such as participants' language and nonverbal behaviour, related to desire for a second date. Modern speed-dating methods overcome these concerns (Fisman, Iyengar, Kamenica, & Simonson, 2006; Eastwick & Finkel, 2008; Luo & Zhang, 2009; Stokoe, 2010; Asendorpf, Penke, & Back, 2011).

The main purpose of speed-dating events is to provide an environment in which single people can meet a series of potential romantic partners in a short period of time. Participants go on brief "dates" with other attendees, with interactions typically lasting between 3-8 minutes. Unlike traditional dates, in which people meet one other person for a longer interval, these short dates allow people to explore several romantic options in succession in a single location. After the speed-dating event, participants can choose which of their dates they would be interested in seeing again. If two participants express mutual romantic interest, they are given the opportunity to contact each other to potentially set up a longer date.

Perhaps the main reason behind the popularity of speed-dating is that it allows the fast "screening" of several potential dates in the convenience of a single location. With conversations being measured in minutes, participants have a chance to interact with a larger variety of potential partners in a substantially shorter time period than other dating methods allow. Speed-dating is also advantageous relative to traditional dating because it offers intentional clarity– that is, all event participants know that the other attendees have the explicit intention of finding a romantic partner. This intentional clarity not only benefits event participants, but researchers as well.

In 2006, the first empirical report using speed-dating methods was published (Fisman et al., 2006). A steady stream of new speed-dating publications has emerged since that time (e.g.,

Eastwick & Finkel, 2008; Luo & Zhang, 2009; Stokoe, 2010; Asendorpf, Penke, & Back, 2011; Valentine, Li, Penke, & Perrett, 2014; Joel, Eastwick, & Finkel, 2017). Prior to that publication, much of the existing literature on romantic attraction involved retrospective and hypothetical methodology (Berschied & Regan, 2005). For example, participants in studies might be asked to recall how they met their current romantic partner and what that person was like when they met (e.g., Metts, Cupach, & Bejlovec, 1989; Rhodewalt & Eddings, 2002), or might receive a list of hypothetical partners with varying characteristics and asked about romantic interest (Stretch & Figley, 1980; Fiore, Taylor, Mendelsohn, & Hearst, 2008).

Although interesting, such methods are limited in the type of information they offer. For example, retrospective reports are limited by reporting biases including forgetting, selective recall, and social desirability (Berschied & Regan, 2005). This is especially problematic when investigating longer-term relationships, as there is a greater period between the point of recall and the point of relationship formation. Moreover, evidence shows that participants' answers in hypothetical situations do not always translate to real dating behaviour (Finkel, Eastwick, & Mathews, 2007). Thus, when people have the opportunity to genuinely consider dating a real person they have met versus a hypothetical partner, the characteristics they say are important in a mate and what they actually select may not be well matched (Eastwick & Finkel, 2008; Eastwick, Finkel, & Eagly, 2011; Tidwell, Eastwick, & Finkel, 2013, Joel, Eastwick, & Finkel, 2017). The present work uses data from a speed-dating study to answer questions about initial attraction.

Here I examine the following research questions about initial attraction:

1) What are the linguistic properties of a 4-minute first date and are there significant differences between men and women?

2) Can similarities in language style predict dating interest and relationship initiation?

3) Can individuals perceive differences in personality, self-esteem, and attachment style based on the linguistic cues expressed by their speed-dating partners?

1.3 Language and Language Style Matching

One major advantage of speed-dating is that it allows the possibility of capturing people's actual speech, behaviour, and interests, rather than their recollections of what they talked about. However, there has been significantly less investigation in the area of language than in other areas such as profile selection (Ireland, Slatcher, Eastwick, Scissors, Finkel, & Pennebaker, 2011). Most of the research that has examined the role of communication in the context of relationship initiation has been laboratory based and focused on subjective measures like perceived communication quality (Sprecher & Duck, 1994). This comes as no surprise, as text analysis is time-consuming compared to self-report and decision analyses. However, recent technical advances have substantially advanced the process of linguistic analysis. For example, new APIs and software for speech-to-text processing have reduced the burden of manual transcription (Këpuska & Bohouta, 2017). Additionally, software capable of categorizing speech from text such as the Linguistic Inquiry and Word Count (LIWC) application (Pennebaker, Booth, & Francis, 2007) or the Universal Sentence Encoder (Cer et al., 2018) can explore and accurately categorize words into many word categories in texts of any length. Thus, researchers can easily extract information on the linguistic properties of transcripts in mere minutes, allowing the examination of language with unprecedented ease.

Language is the most commonly used medium through which humans navigate their social spheres. People use words to express their thoughts and emotions, to disclose their intentions and desires, and to describe and promote their social relationships (Tausczik & Pennebaker, 2010). Accordingly, researchers have found language related cues for various personal indicators including status, dominance, and social hierarchies. For example, social standing with a hierarchy has been shown to positively correlate with usage of first-person plural words such as "we", "us", and "our" (Sexton & Helmreich, 2000).

There have also been studies that have explored language use more broadly in terms of gender differences. For example, Mulac, Weimann, Widemann & Gibson (1988) found evidence suggesting that women contribute more questions in dyadic conversations (e.g., "Should we grab a drink?") whereas men use more directives (e.g., "Let's go grab a drink"). Additionally, some evidence would suggest that women used lengthier sentences both in written and verbal communication contexts (Mulac & Lundell, 1986; Mulac et al., 1988). However, these findings

have been challenged by more recent research that failed to find significant differences between genders in number of words spoken and number of questions asked (Thomson & Murachver, 2001) or found differences in the opposite direction (Mulac, Seibold, & Farris, 2000). One explanation for these contradictory outcomes is the difference in context (e.g., chatting with a friend versus providing professional advice) and whether communication occurred in person or over email (Newman, Groom, Handelman, & Pennebaker, 2008).

In terms of close relationships, researchers have found that the way individuals refer to others may be an indication of how close they feel to them. For example, research suggests that the use of second person words such as "you", especially by men in heterosexual relationships, may predict lower quality relationships (Simmons, Chambless, & Gordon, 2008; Slatcher, Vazir, & Pennebaker, 2008). In addition, the use of positive emotion words like "love", "nice", and "sweet" by male partners may predict greater relationship satisfaction in existing couples (Slatcher et al., 2008). Similarly, evidence suggests that married couples who used first-person plural words like "we" may have greater marital satisfaction and a lower likelihood of marital dissolution (Seider, Hirschberger, Nelson, & Levenson, 2009; Simmons, Gordon, & Chambless, 2005). However, these studies explored language use in existing couples and ignored the type of language that people may use to spark initial attraction.

Few studies have explored dialogue during the courtship phase of relationship development due to limitations in methodology and transcript processing. However, using speed-dating methods we are slowly beginning to gain a better understanding of how language use influences initial romantic attraction. For example, research by McFarland, Jurafsky, and Rawlings (2013) found that asymmetrical focus was the key to attraction in a courtship encounter. Specifically, they found that heterosexual pairs reported feeling more connected when female participants were the focus of the conversation (as reflected by their frequent use of first-person pronouns), and male partners reinforced their position rather than attempting to mimic it. This finding is particularly interesting, considering mimicry has been a consistent indicator of mutual liking across multiple studies (Van Baaren, Holland, Steenaert, & Van Knippenberg, 2003; Lakin & Chartrand, 2003; Maurer & Tindall, 1983; Chartrand & Bargh, 1999). In fact, one study, which explored language use in courtship situations, found verbal mimicry to be a strong predictor of relationship initiation (Ireland et al., 2011).

In 2010, Pennebaker and colleagues introduced the Language Style Matching (LSM) algorithm for calculating the degree of stylistic similarity between speakers (Gonzales, Hancock, & Pennebaker, 2010). Here, "language style" refers to an individual's use of "function" words. Function words include prepositions (in, under, about), pronouns (I, we, their), auxiliary verbs (shall, be, was), conjunctions (and, but, because), articles (a, an, the), etc. Function words account for less than 1% of all the words people know and hear, but they reflect 55 – 60% of all the words that people use and encounter in daily life (Chung & Pennebaker, 2007). In English and other languages, function words are among the shortest words, and are processed almost non-consciously (Chung & Pennebaker, 2007; Van Petten & Kutas, 1991).

Understanding function words requires shared knowledge between interacting individuals (Chung & Pennebaker, 2007). For this reason, the use of function words in speech says a lot about a speaker, their relationship to their partner, and the topic being discussed. For example, consider the sentence "I was speaking with her about it." The function words, "I", "with", "her", and "it" offer little explanation on who the speaker (I) is, who their conversational partner (her) is, and what the topic of discussion (it) is. Thus, it would be difficult to understand this sentence outside of the direct context of the specific conversation and relationship. Interestingly, people's use of function words within a conversation may therefore describe aspects of their shared speech that predict interpersonal closeness, independent of the context (Ireland et al., 2011).

The LSM algorithm is often used to compare function word use between two pieces of text, with the generated outcome being bound between 0 and 1 such that scores closer to 1 reflect a greater degree of stylistic similarity. To date, LSM has been used to explore a multitude of contexts including cooperation (Taylor et al., 2013; Donohue & Liang, 2011), group cohesion (Gonzales, Hancock, & Pennebaker, 2010; Tausczik & Pennebaker, 2013), attachment and power dynamics (Muir, Joinson, Cotterill, & Dewdney, 2017; Bayram & Ta, 2019), and relationship initiation (Ireland et al., 2011). For example, Ireland and colleagues used LSM to investigate the outcomes of speed-dating interactions, and relationship stability following the initial date. Specifically, they transcribed 40 speed-date interactions from participants who mutually expressed romantic interest and those who mutually did not. They used the LSM algorithm to measure the degree of stylistic similarity between speakers during four-minute dates. In line with their predictions, the researchers found that LSM predicted relationship initiation, such that higher LSM scores

increased the likelihood of mutual interest in a date. Additionally, the researchers found that couples who had greater LSM scores upon the initiation of the relationship were more likely to be together at a three-month follow-up point. Thus, LSM seems to be a valuable predictor, not just of relationship initiation, but also relationship stability over time.

It is possible that LSM signals similarity in a way that is non-consciously perceived by one's partner (Ireland et al., 2011). This raises the question of whether there are other variables in speed-dating conversations that may be linguistically signaled. Though there is a lack of direct evidence to answer this question, some evidence suggests that certain variables may be associated with the use of specific word categories. For example, there is reason to believe that language usage may relate to individual difference variables (e.g., Pennebaker & King, 1999). Thus, social partners may use linguistic cues as information to deduce a partner's personality and other characteristics.

1.4 Self-reported Personality

Many studies have explored associations between personality and romantic attraction. Most commonly, personality is measured using a five-factor structure that includes the dimensions: extraversion, agreeableness, conscientiousness, openness to experience and emotional stability (Barrick & Mount, 1991; John, Donahue, & Kentle, 1991; Goldberg, 1992). These dimensions may be associated with differences in interpersonal behaviour. For example, individuals who score high on extraversion are more outgoing and sociable compared to those who score low on this trait (Watson & Clark, 1997; Goldberg, 1992; Goldberg, 1993). Additionally, individuals who score high on agreeableness may be more sensitive, trusting, kind, and warm compared to less agreeable people (Goldberg, 1993).

There is evidence that individuals rank their preference for personality traits such as kindness and trustworthiness very highly when considering potential romantic partners (Buss, 1985; Buss & Barnes, 1986). Such preferences have been cross-culturally verified in both men and women (Buss,1989). There is also evidence that individuals seek romantic partners with similar self-reported personality types, with higher levels of conscientiousness, extraversion, and agreeableness being even more desirable in a future partner (Figuerdo, Sefcek, & Jones, 2006). Furthermore, one speed-dating study found that opposite sex partners who were fun/ exciting,

responsive, dependable/ trustworthy, and friendly/ nice were more desirable as potential dates than partners lacking in this cluster of traits (Eastwick & Finkel, 2008).

Researchers have attempted to explain why individuals rank personality traits so highly when considering potential romantic partners. For example, one reason why individuals associate so much importance with personality traits such as warmth and trustworthiness is because of parenting implications. Specifically, people high in warmth have been found to be more caring toward their children (Buckels et al., 2015) and more responsive caregivers (Prinzie, Stams, Dekovic, Reijntjes, & Belsky, 2009). Thus, choosing a partner who has a warm and kind demeanor may enhance offspring survival (Valentine, Li, Meltzer, & Tsai, 2020), as well as quality of life for a partner. Specifically, an individual with a trustworthy partner may feel closer and safer to their partner and may also be less likely to abandon their partner or to end the relationship (Buss, 1991).

Taken together, partner personality seems to be an important variable in the context of mate selection. However, one important question to consider is how individuals perceive and process these personality traits during first contact. Many studies have explored relationships between self-reported personality and both verbal and nonverbal cues. For example, research on the big five personality traits found that verbal aggression was associated with low levels of agreeableness (Barlett & Anderson, 2012; de Vries et al., 2013). Additionally, argumentativeness was found to be associated with low agreeableness scores and high levels of extraversion, neuroticism, and openness (Barlett & Anderson, 2012). There is also some research which suggests that extraverts talk more and longer when it is their turn to talk (Argyle, 1988). Additionally, individuals high in extraversion may talk faster and with shorter pauses (La France, Heisel, & Beatty, 2004; Frank, Maroulis, & Griffin, 2013) compared to individuals low on extraversion and high on neuroticism, who use more and longer pauses (Argyle, 1988; Hargie, 2011).

Though much work has explored how factors such as rate and volume of speech signal personality dimensions, little has been done in terms of examining how personality might be associated with how people use specific language signals. Nonetheless, it is possible that language style may signal aspects of personality to receivers, allowing them to make initial

inferences that affect their dating choices. On that basis, the current study explores how different language elements are associated with personality dimensions.

1.5 Self-esteem

Like language style, self-esteem has been studied in the context of relationship initiation. Self-esteem, or one's attitude toward oneself and feelings of self-worth (Rosenberg, 1965), is a highly studied construct in the social sciences (Baumeister, 1998). For example, self-esteem may predict diverse outcomes including academic achievement (Arshad, Zaidi, & Mahmood, 2015; Ross & Broh, 2000), happiness (Baumeister, Campbell, Kreuger, & Vohs, 2003), and satisfaction in marriage and relationships (Erol & Orth, 2014; Larson, Anderson, Holman, & Niemann, 1998). People with high self-esteem tend to feel good about themselves and see themselves as valuable and worthy of respect (Baumeister et al., 2003). Individuals with high self-esteem typically feel less stressed and less depressed than those with a negative self-view (Baumeister et al., 2003). Additionally, people with high self-esteem are more social and attempt to improve their status in society by highlighting their positive attributes like intelligence, strength, and likeability (Krämer & Winter, 2008; Jones & Pittman, 1982). Conversely, those with low self-esteem are more likely to engage in behaviours that impede satisfying social relationships and lead to increased levels of depression, anxiety, and loneliness (Sowislo & Orth, 2013; Vanhalst, Luyckx, Scholte, Engles, & Goossens, 2013; Peplau et al., 1985).

Though language characteristics have not been explored specifically within the context of self-esteem, there is evidence that other self-concept-related states affect the ways in which people use language. For example, there is some research suggesting that depression and anxiety may influence the way people talk (Newell, McCoy, Newman, Wellman, & Gardner, 2018). Depressed affect, for instance, may influence rate of speech (Ellgring & Scherer, 1996), vocal pitch (Stassen, Bomben, & Günther, 1991), and the types of words used (Pennebaker, Mehl, & Niederhoffer, 2003). Typically, those with depressed affect use more negative emotion words, fewer positively valenced words, and fewer first-person singular pronouns than non-depressed individuals (Rude, Gortner, & Pennebaker, 2004). Increased use of first-person singular pronouns may be associated with heightened focus on personal shortcomings, which may, in turn, result in more intense feelings of depressed affect and self-focus (Pyszczynski & Greenberg, 1987). There is also evidence that stress and anxiety, which typically occur in

situations where uncertainty and feelings of helplessness are prevalent, may result in depressed affect and subsequent changes in word type use (Newell et al., 2018). Thus, individuals experiencing both acute and chronic stress are more likely to use depressed language (Newell et al., 2018).

Due to the relatively strong relationships between low self-esteem, anxiety, and depression (Sowislo & Orth, 2013), there is reason to believe that there would be differences in linguistic characteristics across individuals with various levels of self-esteem, and that these differences would impact attractiveness as a potential date. Specifically, we expected individuals with low self-esteem to use more depressed language, and this to be associated with a lower likelihood of having a partner saying yes to a future date. Additionally, there is some evidence suggesting that high self-esteem may be beneficial in women, such that men prefer women with high self-esteem (Luo & Zhang, 2009). For example, individuals with high self-esteem may use more positive words and highlight factors that make them attractive. Thus, high self-esteem may be associated with more positive language, increased use of personal pronouns and increased achievement-related words. This may motivate partners of individuals with high self-esteem to be more likely to agree to a second date with them.

1.6 Attachment Style

As with self-esteem, there is no direct literature exploring the linguistic characteristics associated with attachment styles to our knowledge. However, like self-esteem, there is reason to believe they may also relate to language use patterns. Attachment styles, originally proposed by John Bowlby to explain mother-infant bonding and care (Bowlby, 1969), are also relevant to adult relationships and romantic attraction (Ziefman & Hazan, 2008). Broadly, work on infant-caregiver dyads has identified several major patterns of attachment. These include secure attachment, in which infants learn to trust reliable attentive caregivers; anxious attachment, in which infants display anxiety after the departure of a caregiver that is unresolved by the caregiver's return; and avoidant attachment, in which infants appear to refuse and reject the caregiver's affections (Ainsworth, Blehar, Waters, & Wall, 1978).

Hazan and Shaver (1987) suggested that infant-caregiver relationships shared similar features to romantic relationships between adults. For example, in both infant-caregiver and romantic

relationships, one may experience distress in the absence of the other, and that distress is usually remedied upon reunion (Hazan & Shaver, 1987). Using statements relating to the different styles of infant attachment, Brennan, Clark, and Shaver (1998) sought to identify the specific dimensions of adult attachment. Using these descriptors, they found endorsement patterns that mirrored those described in the infant literature amongst adults. Related work also suggests that attachment patterns amongst adults occur with similar frequency amongst infants, with approximately 60% of adults classifying themselves as securely attached, while roughly 20% classify as avoidant and the remaining 20% classify as anxious (Bakermans-Kranenburg & Van Ijzendoom, 2009).

Though there has been extensive research on adult attachment, not much is known about how attachment styles influence language use. That said, there are reasons to believe that there is an association between attachment style and the use of specific word types. For example, there are associations between anxiety, which has been suggested influence speech (Rude, Gortner, & Pennebaker, 2004; Newell et al., 2018) and anxious attachment (Heimberg, Hart, Schneier, & Liebowitz, 2001). Specifically, researchers have found that anxiously attached individuals exhibit more social anxiety, avoidance, and depressed affect (Heimberg et al., 2001). In addition, they over-anticipate the degree to which their social partners perceive their romantic overtures, leading to potential rejection (Vorauer, Cameron, Holmes & Pearce, 2003). Thus, individuals who are anxiously attached may use more loneliness-related language (e.g., more first-person singular words, more negative emotion words, and fewer positive emotion words). In terms of individuals with secure attachment, there is some evidence that suggests that securely attached individuals are happier and more willing to communicate (Bayrami et al., 2012). Thus, securely attached participants may use more positive emotion words and speak more compared to those with avoidant or anxious attachment styles. Finally, avoidant individuals may signal their attachment style by speaking less than those who classify themselves in the other attachment categories. For example, they may speak less to avoid the discomfort caused by exchanging intimate details with a partner (Brenna, Clark, & Shaver, 1998).

1.7 Limitations of Previous Research

To date, there have been many studies on initial romantic attraction. However, a major limitation with the literature has been the use of the “bogus stranger paradigm,” in which individuals

interact with a confederate or receive information on a hypothetical partner (Luo & Zhang, 2009). Though such methodology facilitates greater control over experimental conditions, it also makes it difficult to generalize the findings to real-life. Specifically, it is unclear how well the findings from these hypothetical studies map onto real world behaviours given that these paradigms do not allow the establishment of real romantic relationships. To address this limitation, we collected our data from a real-life speed-dating event where individuals had the chance to interact with and establish real romantic relationships with others.

Although there have been hundreds of studies observing the effects of variables such as similarity (e.g., Byrne, 1961; Wetzel & Insko, 1982), attractiveness (e.g., Berschied, Dion, Walster, 1971; Luo & Zhang, 2009), and personality (Klohnen & Luo, 2003), this work does not necessarily capture how people make the decision to pursue a potential date. Moreover, evidence in the literature is quite mixed on whether and how these traits relate to dating interest (Wiederman & Allgeier, 1992; Tassinary & Kristi, 1998; Zentner & Mitura, 2012). Moreover, work on linguistic characteristics of initial dates is less common, although linguistic predictors of romantic attraction are likely influential. One particularly interesting finding in this domain is that similarity in language style predicts dating interest (Ireland et al., 2011). Importantly, although the authors suggested that individuals may change their language style to indicate liking for a partner, thereby enhancing language similarity, they did not test the alternate idea that people with pre-existing similarity in language style simply liked one another more. To address whether people change their language to match that of a liked partner, we compared participants' average language style with partners in whom they did not express interest, to their language style with partners with whom they did express interest.

1.8 The Current Study

Linguistic characteristics of conversations have been studied in a multitude of contexts. However, the linguistic research in the context of relationship initiation is lacking, which leaves much room for exploration and discovery. Here, we conducted a preliminary exploration of language use in speed-dating to ask a series of research questions. Much of this work is exploratory. For example, we examine gender differences in speech characteristics including speech volume and question frequency. We also examine how language use patterns may signal characteristics that are relevant to interpersonal perception, including individuals' ability to

formulate judgments of their interaction partners. Because of the exploratory nature of this work, we had little ability to generate clear *a priori* hypotheses. We therefore treat these results as exploratory and suggest future confirmatory research to address significant findings. Our main goal was to evaluate the effectiveness of language style matching (LSM) as a predictor of relationship outcomes. Based on the existing literature (Ireland et al., 2011), we expected LSM to be a significant predictor of mutual romantic interest, such that pairs who shared higher LSM scores would be more likely to mutually agree to a future date with their partner. We also examined whether any LSM effects might be due to participants' changing their language to signal attraction or to participants' perceived similarity.

To test our predictions, the current study used data from a novel sample of heterosexual couples who attended a speed-dating event. Measures of personality, self-esteem and adult attachment style were collected prior to the event. During the event, dates were recorded and transcribed. Transcripts were processed for language characteristics, and the outputs for speakers and pairs were analyzed. Ultimately, our hope is to contribute to the understanding of how individuals communicate initial attraction, how variables such as gender, personality, self-esteem, and attachment styles relate to linguistic styles, and how linguistic styles can be used to predict relationship initiation. It is vital to study these early stages of attraction, as they are likely to have implications for relationship progression, quality, and dissolution (Weiser & Niehuis, 2014).

Chapter 2

2 Methods

2.1 Participants

We recruited 180 heterosexual singles, with an even ratio of men and women, to attend one of six speed-dating events. To qualify, participants had to be between 18-21 years old and attending Western University or an affiliate college. Additionally, participants had to report interest in seeking a heterosexual date. Participants learned about the study via a campus-wide email sent to all students along with posters distributed across campus. Participants completed an online personality profile and several additional questionnaires before receiving an invitation to sign up for a speed-dating event. They received no compensation for completing the event, although attendance at the event was free. Participants additionally received $3 for completing each of a series of 6 follow-up questionnaires about their dates (not analyzed for this project). Participants documented their informed consent prior to both completing the online personality profile and the dating session. The University of Western Ontario's Non-Medical Research Ethics Board approved all study procedures (see Appendix A for ethics approval and letters of information and consent).

2.2 Procedures

Participants who signed up for the study completed a series of questionnaires and reported their dating interests and preferences as part of a dating profile prior to attending a speed-dating event. Although participants completed a larger number of profile questionnaires, the ones used in the present work are the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), the Big Five Personality Inventory (BFI; John, Donahue, & Kentle, 1991), and the Experiences in Close Relationships – Revised (ECR-R; Fraley, Waller, & Brennan, 2000), a questionnaire measure of adult attachment. We also explored data from a set of rating items participants completed after each date during the event. These questionnaires are described below.

After participants completed the pre-session questionnaires, they received an email allowing them to submit their schedules, which allowed us to invite them to an event. A computer pseudo-

randomly assigned participants to speed-dating events with the constraint that the event fit within their schedule and that each event included 15 women and 15 men. Participants then confirmed their event participation via an online link. The six dating events took place over three successive days (two events scheduled per day). Participants were each allowed to register for only one event.

On the day of their event, participants arrived at the waiting area for a large campus lab in the Social Science Centre. They were signed in, completed a consent form for the dating event, and assigned a unique Study ID. Participants also received a questionnaire booklet (see Questionnaires below) in which they rated each of their dates. Participants were then directed to a seat for their first date. Each date session was recorded using Kinect (version 2) sensors for Xbox-One with Windows adapters. Each sensor recorded data onto its own Windows computer. The Kinect records full audio and video data of the session, along with infrared pointclouds that capture depth information for modeling facial behaviour. The current project focuses on the audio recordings.

Once both participants were seated at an interaction station, the date began. An experimenter started each session by ensuring that the Kinect sensor was capturing data. The experimenter then reminded participants that they would have 4 minutes to discuss whatever they wished. The experimenter then left the room to give participants privacy during their discussion.

Dates lasted 4 minutes, during which participants (one male and one female) were given an opportunity to introduce themselves and speak freely to their partner. At the end of the date, the experimenter re-entered the room and instructed the participants to record their impressions of the partner in their booklet. After completing the booklet, participants were then moved to the next station. Because evidence suggests that participants are “choosier” and less likely to say “yes” to a future meeting when they do not move to a new seat (Finkel & Eastwick, 2009), we asked both men and women to change seats and/or stations on every new date. Men and women each interacted with all members of the opposite sex during the session.

At the end of the event, all attendees received an email with a link where they could report which of their dates they were interested in meeting again. Contact information was only exchanged if two participants mutually indicated desire to meet for another date (“yessed” one another). We

sent short follow up questionnaires to each participant who found a match at one week, two weeks, two months, four months, six months and one-year post-event. Participants who reported that they were no longer seeing their partners were removed from the contact list and were no longer given follow-up questionnaires. The questionnaires asked participants whether they were still dating the partner they had met at the event, and their level of relationship satisfaction. Due to extremely high levels of attrition after the 2-week follow-up (>80%), these data were not analyzed for the present study.

2.3 Questionnaires

Factors in Choosing a Mate (adapted from Botwin, Buss, & Shakelford, 1997). This questionnaire was designed to measure partner preferences. Participants were asked to report their preferred marriage age, the age difference they believed was acceptable between themselves and their spouse, and who they preferred to be older in the relationship. Participants were also asked to rate the importance of various characteristics in a potential romantic partner. Evaluations were done using a four-point Likert-type scale ranging from 0 = Indispensable to 3 = Irrelevant or unimportant. Participants rated the importance of characteristics like “good cook and housekeeper”, “pleasing disposition”, “similar educational background”, and more in their future spouse. An additional list of characteristics was included to measure the desirability of certain characteristics in a romantic partner. Participants were asked to use “1” to indicate a high priority characteristic, “2” for medium priority, and “3” for the lowest priority characteristic. The list of characteristics included items like “kind and understanding”, “religious”, and “exciting personality”. Full text for all questionnaires appears in Appendix A.

Rosenberg Self-Esteem Scale (Rosenberg, 1965). The RSES is considered a valid and reliable tool for the assessment of self-esteem (Blascovich & Tomaka, 1991). The questionnaire includes ten items, and responses are recorded using a four-point Likert-type scale ranging from 1= Strongly Disagree to 4 = Strongly Agree. Statements include “I feel like I have a number of good qualities” and “I am able to do things as well as most other people”. Other reverse-scored statements include “I certainly feel useless at times” and “at times I think I am no good at all”. Individuals rate themselves on how much they agree or disagree with each statement. The Cronbach’s alpha on the scale was .88, indicating good internal consistency in the present sample.

The Big Five Inventory (John, Donahue, & Kentle, 1991). The BFI is a 44 item self-report measure of personality (John, Donahue, & Kentle, 1991). The inventory uses a 5-point Likert-type scale ranging from 1 = Disagree Strongly to 5 = Agree Strongly. Participants are asked to rate their level of agreement on several short statements relative to themselves. Thus, participants read "I see myself as someone who…" and rate themselves on traits like "is talkative", "tends to be lazy", and "worries a lot". The BFI is scored by averaging the responses to the items related to each of the Big Five personality dimensions (e.g., Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness). Higher scores on a dimension of the Big Five suggest that an individual may exhibit more traits associated with that dimension. Evidence suggests that the BFI is both a reliable and valid measure of personality dimensions (McCrae & Costa, 1987). The Cronbach's alpha for the extraversion dimension was .89, indicating good internal consistency in the present sample. The Cronbach's alpha for agreeableness was .73, which also indicates good internal consistency. Conscientiousness, neuroticism and openness had Cronbach's alphas of .75, .78 and .74 respectively, which also reflected relatively good internal consistency.

Experiences in Close Relationships – Revised (Fraley, Waller, & Brennan, 2000). The ECR-R is a 36 item self-report measure of adult attachment patterns in close relationships (Fraley, Waller, & Brennan, 2000). The questionnaire uses a 7-point Likert-type scale ranging from 1= Strongly Disagree to 7 = Strongly Agree. The first 18 items on the scale measure attachment related anxiety. The items include statements like "I'm afraid that I will lose my partner's love" and "I often worry that my partner will not stay with me". Scoring for these items is done by averaging a person's response on these 18 items. Higher averages indicate a greater degree of attachment related anxiety. Items 19-36 explore attachment-related avoidance. Items for attachment-related avoidance include "I prefer not to show a partner how I feel deep down" and "I find it difficult to allow myself to depend on romantic partners". Like attachment-related anxiety, the scored for items 19-36 are averaged. Higher averages represent higher attachment-related avoidance. Individuals who score low on both attachment-related anxiety and avoidance are categorized as securely attached. Evidence suggests that the ECR-R is both a reliable and valid measure of adult attachment style (Sibley, Fischer, & Liu, 2005). The Cronbach's alpha for the items on anxious attachment was .89 and .93 for avoidant attachment items, indicating very good internal consistency in the present sample.

Post-date Questionnaire (adapted from Tidwell, Eastwick, & Finkel, 2013). At the start of each event, participants were given a series of post-date questionnaires to complete after each of their dates. Participants rated each date on a series of 21 items that measured a variety of traits. Items on the questionnaire included "I thought my partner was physically attractive", "I thought my partner was smart", and "my partner and I had a lot in common". Participants rated their partners on these items using a 100-point visual analogue scale anchored by strongly disagree to strongly agree. The ratings were manually measured and recorded. Post-date questionnaire items were selected based on the items used in previous studies (Tidwell, Eastwick, & Finkel, 2013).

2.4 Transcription and Coding

To prepare the audio data for analysis, we transcribed all intact audio sessions. Technical difficulties in Events 1 and 2 meant that audio files from these sessions could not be acquired. Additionally, several other dates within sessions were missing because of either excess noise in the recordings (158 files), which made transcription impossible, or technical difficulties that caused the audio files to fail to save (96). The remaining files (174) were manually transcribed and then reviewed and edited by the researcher to ensure accuracy. Transcribers were unaware of any study hypotheses or whether participants had indicated interest in the partner.

The corrected transcripts were submitted to the Linguistic Inquiry and Word Count (LIWC) software (Tausczik & Pennebaker, 2010), using the 2015 dictionary (Pennebaker, Boyd, Jordan, & Blackburn, 2015). The software works by matching words to dictionary categories (e.g., happiness, positive emotions, prepositions, nouns, adverbs) and calculating the percentage of words in the text which belong to the appropriate word categories. There are approximately 90 linguistic categories into which a word may fit, and each word may appear in multiple categories. For example, the word "cried" may appear in five categories including sadness, negative emotion, overall affect, verbs, and past focus (Pennebaker, Boyd, Jordan, & Blackburn, 2015).

To complete the process of preparing the corrected transcripts for LIWC processing, we made several additional edits. Specifically, we removed transcriber notes (e.g., "laughs," "sighs") so that these words would not affect analyses. Additionally, we made changes to non-fluencies and filler words, based on the LIWC software manual. Specifically, non-fluencies included stutters,

all which were reworded to “uh”. Thus, in the example “I do-, I don’t know what to say”, we would reword it to “uh, I don’t know what to say”. Words like “uh-huh” and “uh-uh” were changed to “yes” and “no”, respectively. Finally, we replaced “huh?” with “what?”, as per the recommendation of the LIWC user manual.

To accurately code filler words (e.g., “like”, “I mean”, “you know”) transcripts were searched and each match checked. Based on the LIWC manual suggestion, filler phrases were denoted by removing the space between words (e.g., “you know” was switched to “youknow”). In the case of a single word, the filler prefix “rr” was added (e.g., “like” was rewritten as “rrlike”) to allow the software to make the distinction between the other contexts where “like” may be used in a meaningful way. To investigate the types of words individuals used, we combined the transcribed words spoken by a single participant across all their dates and compiled them into a single file to obtain overall LIWC outputs. To assess LSM scores between daters, we segmented transcripts by speaker and compared LIWC outputs between them relative to the nine function word categories.

2.5 Data Analysis

For the main analysis, we used the segmented speaker files and processed them with the LIWC software. From the output, we extracted the values from the nine function word categories (personal pronouns, impersonal pronouns, articles, conjugations, prepositions, auxiliary verbs, high-frequency adverbs, negations, and quantifiers) for each speaker. The values reflect the percentage of words a speaker used during their date that fit to that specific word category. With personal pronoun (ppron) used as an example, we used the following formula to calculate LSM scores for pairs:

$$LSM_{\text{ppron}} = 1 - [(\,|\,ppron_1 - ppron_2\,|\,)/(ppron_1 + ppron_2 + 0.0001)]$$

In this equation, ppron1 is the percentage of personal pronouns in the dialogue used by person 1, and ppron2 is person 2’s personal pronoun use. Absolute values ensure that the composite LSM score is a positive value. The addition of 0.0001 in the denominator ensures that a denominator of 0 cannot occur and enables a relatively accurate score to be calculated for each dyad (see Ireland et al., 2011). This equation was used to calculate scores for the other eight function word

categories as well. The LSM values generated by each equation for the nine function word categories were averaged to produce the composite LSM score used for subsequent analysis.

In addition to LSM, we also calculated a “similarity” variable. This variable was generated by averaging dyads’ scores on items from the post date questionnaire. Specifically, we averaged the scores of the two daters on the items “my date and I seemed to have a lot in common” and “my date and I seemed to have similar personalities”. Dating interest was also calculated using ratings from the post date questionnaire. Specifically, we used the item “I am likely to say yes to my date”. Individuals who gave their partner a score at or above 50% were coded as interested (or likely to say “yes” to a date with their partner) while individuals who scored at or below 49.99% were coded as uninterested. This ensured that we had a measure of dating interest for all transcripts as some individuals failed to complete the post-event questionnaire in which they said “yes” or “no” to future dates with each partner.

Chapter 3

3.1. Results

3.2. Descriptive Data

We recruited 180 participants for the speed-date event, with equal proportions of men and women. However, due to absences at the events themselves, our final sample consisted of data from 134 individuals (62 women, 72 men). We recruited undergraduate students, and the age of our sample ranged between 18 and 21. However, the age distribution between genders was imbalanced. Though the average age for men (M = 19.29, SD = 1.24) and women (M = 19.53, SD = .88) was not statistically different (t (132) = 1.276; p = .204), the most common age represented by women was 20 while the most common age for men was 18 (Figure 1), leading to a high frequency of dates in which the woman was older than the man.

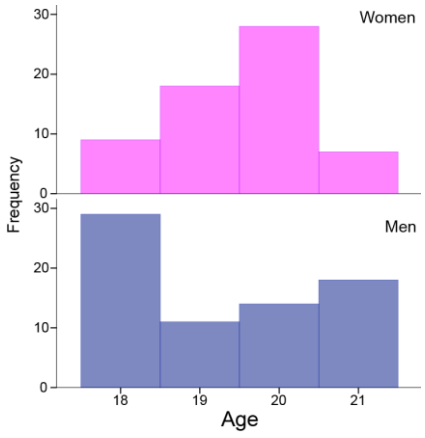

Figure 1 Histogram of Ages for Men and Women. Frequency distributions of age in years for men and women in the sample.

We encouraged diversity in our sample by recruiting across campus. Thus, individuals from over 23 different majors and 9 countries were represented. However, due to the geographic location of the campus where participants were recruited, 80% of participants identified themselves as Canadian.

From these 134 individuals, we recorded 174 useable audio files that were subsequently transcribed. These files come from events three through six and are associated with 113 unique participants (63 men and 50 women). Analyses involving questionnaires use the full sample of 134 participants whereas those describing the transcribed dates use only this sample of 174 transcribed files.

3.3. Factors in Mate Choice Questionnaire

Prior to attending the speed-date, participants reported their expectations about which factors they thought would influence their choice in a romantic partner. When asked what age they preferred to get married, both men (*M* = 28.41, *SD* = 2.16) and women (*M* = 27.54, *SD* = 2.05) in the sample reported 28 as being ideal. In terms of age differences at marriage, most men (*M* = 3.17, *SD* = 4.36) and women (*M* = 2.80, *SD* = 1.44) believed that a three-year age difference between themselves and their spouse was ideal. Consistent with current cultural norms and findings in the literature (Kenrick, Keefe, Gabrielidis, & Cornelius, 1996), 62.5% of men reported the desire to be older than their future partner, while 93.5% of women desired a partner who would be older than themselves. Additionally, 16.7% of men reported a preference for an older partner, whereas only 3.2% of women reported a preference for being older than their partner (20.8% of men and 3.3% of women did not respond to this item).

Using a four-point Likert-type scale (0 = Indispensable, 1 = Important, but not indispensable, 2 = Desirable, but not very important, and 3 = Irrelevant or unimportant), participants rated several items on their importance when considering a potential mate. Items ranged from personality and looks (e.g., rate the importance of sociability, dependable character, good looks in a future partner) to prospects (e.g., rate the importance of good finances, ambitions, desire for home and children in a future) and shared features (e.g., rate the importance of similar educational, religious, and political backgrounds in a future partner). We explored the differences between men and women and the degree of importance they assigned to each item (see Figure 2 for results). We found significant differences in variables related to personality, prospects, and shared features.

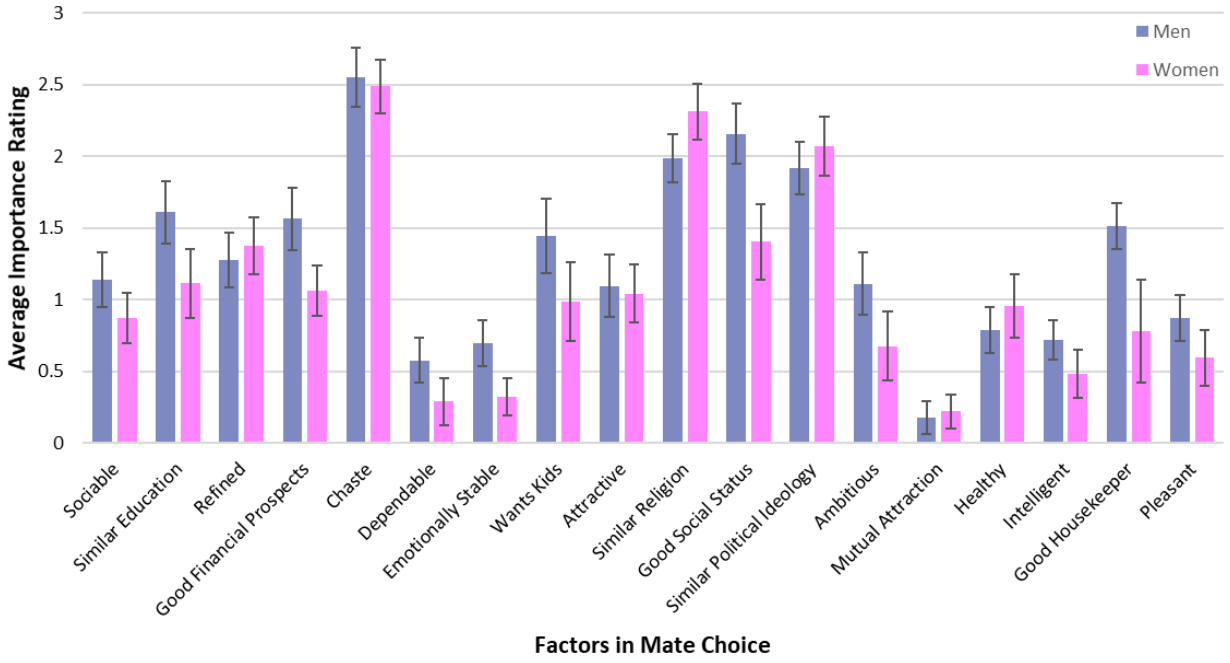

Figure 2. Mean Differences of Mate Choice Factors Between Men and Women. Ratings closer to 0 suggest that a factor is "indispensable" while higher ratings suggest that it is "irrelevant/ unimportant". All factors were rated at least somewhat important. The error bars represent the 95% confidence interval.

While exploring personal traits like emotional stability and intelligence, we found significant differences between men and women. Specifically, emotional stability was reported by participants as very important in a future mate. However, women felt that this trait was more indispensable than did men, $t(132) = 3.53$, $p < .001$. In addition, ambitiousness was also rated as being an important trait by both men and women. However, as with emotional stability, women believed ambition in a mate was more indispensable compared to men who believed it was an important, but not indispensable trait, $t(128) = 3.16$, $p = .002$. Women also believed that having a similar educational background was important when choosing a mate, whereas men thought it was desirable but not very important, $t(128) = 3.07$, $p = .003$. In general, participants' reported pre-date preferences followed expected gender norms.

According to major evolutionary theories of mate choice, women should desire men with better ability to provide resources and to protect them from hardship (Buss, 2016; Buss 1989; Wiederman & Allgeier, 1992). Accordingly, women believed that it was important to have a partner with good financial prospects and a potential to earn a high income, whereas men believed it was not a very important trait for their spouse to possess, $t(131) = 3.48$, $p < .001$. The same was true of social status. On average, women rated this trait as more important in their future mate compared to men, $t(131) = 5.09$, $p < .001$.

Given the theoretical importance of this variable for women, along with previous research (Kenrick et al., 1990; Buss, 1989), we suggested that men with greater potential to be high wage-earners should receive more yesses. Therefore, we compared the proportion of yesses men received based on their major in university, a proxy for earning potential and social status (Hamermesh & Donald, 2008). Men were grouped into three major categories: science, technology, engineering, and mathematics (STEM), Ivey (i.e., majors in business and marketing), and arts and humanities (i.e., majors in language and social science). The average proportion of yesses men earned in each of the three categories was compared using a one-way ANOVA. The results suggest that there is no difference between men's university major and the proportion of yesses they receive on a speed-date, $F(3, 50) = .72$, $p = .546$. Thus, although women may rate good financial prospects as being an important mate trait, it did not significantly influence their decision to say yes to a male partner. Nonetheless, men majoring in the arts and humanities did have the lowest average proportion of yesses received ($M = 33.75$, $SD = 24.91$) compared to those in STEM ($M = 41.91$, $SD = 28.14$) and in Ivey ($M = 38.68$, $SD = 22.21$). Together these results suggest that women do not necessarily make initial decisions to explore a potential relationship with financial prospects in mind.

3.4. Conversations and Language: Descriptive Analysis

We transcribed 174 speed-date interactions and created participant-specific texts by combining their dialogue across all interactions into a single transcript. These participant specific transcripts were analyzed using the LIWC software to explore the linguistic properties of speed-dating interactions. We found that participants exchanged an average of 440 words (SD = 125.10, min = 148, max = 1077) in each four-minute interaction. They frequently used filler words (such as: "like", "I mean", "you know"; 4.44% of the dialogue on average) and affirmations (e.g., "okay"

and “yeah”; 6.25% of the dialogue on average). Almost all participants began their dates by exchanging basic information including name, year, and program or major. There were no significant gender differences in these exchanges. Overall, conversations seemed to follow a similar trajectory. Within the first 30-seconds, daters introduced themselves and got to know their partners, including the program they were enrolled in, and their age. Next, participants typically chose one or two topics to continue talking about until the end of the date. For example, participants asked further questions about the program their partner was enrolled in, how they liked university, their aspirations post graduation, what they did during a recent holiday, their favourite hobbies and forms of entertainment, and finally, where they came from and where they lived.

When looking specifically at speech characteristics, we found significant differences between men and women on several variables (see Figure 3). For example, we found men (M = 6.49, SD = 1.38) spoke more words per sentence than did women (M = 5.87, SD = 1.33), $t(110) = 2.46$, p = .016. Additionally, men (M = 467.31, SD = 134.91) and women (M = 413.76, SD = 108.02) differed significantly in the amount of words they spoke during each interaction, such that men spoke more on average. In terms of articles, men and women used them to a varying degree, such that men (M = 3.88, SD = .76) used significantly more words like “a”, “an”, and “the” more than women (M = 3.48, SD = .83), $t(107) = 2.69$, p = .008. Other differences between men and women included the degree to which they spoke about their “drives” or motivations (e.g., affiliation, achievement, power, reward, and risk) and word use related to presence or position in “space” (down, in, thin, etc.). Specifically, men (M = 5.29, SD =1.15) used more words associated with achievement, power, and risk compared to women (M = 4.89, SD =.79), $t(111) = 2.12$, p = .040. Men also showed more use of “space” words than did women, $t(107) = 2.41$, p = .018.

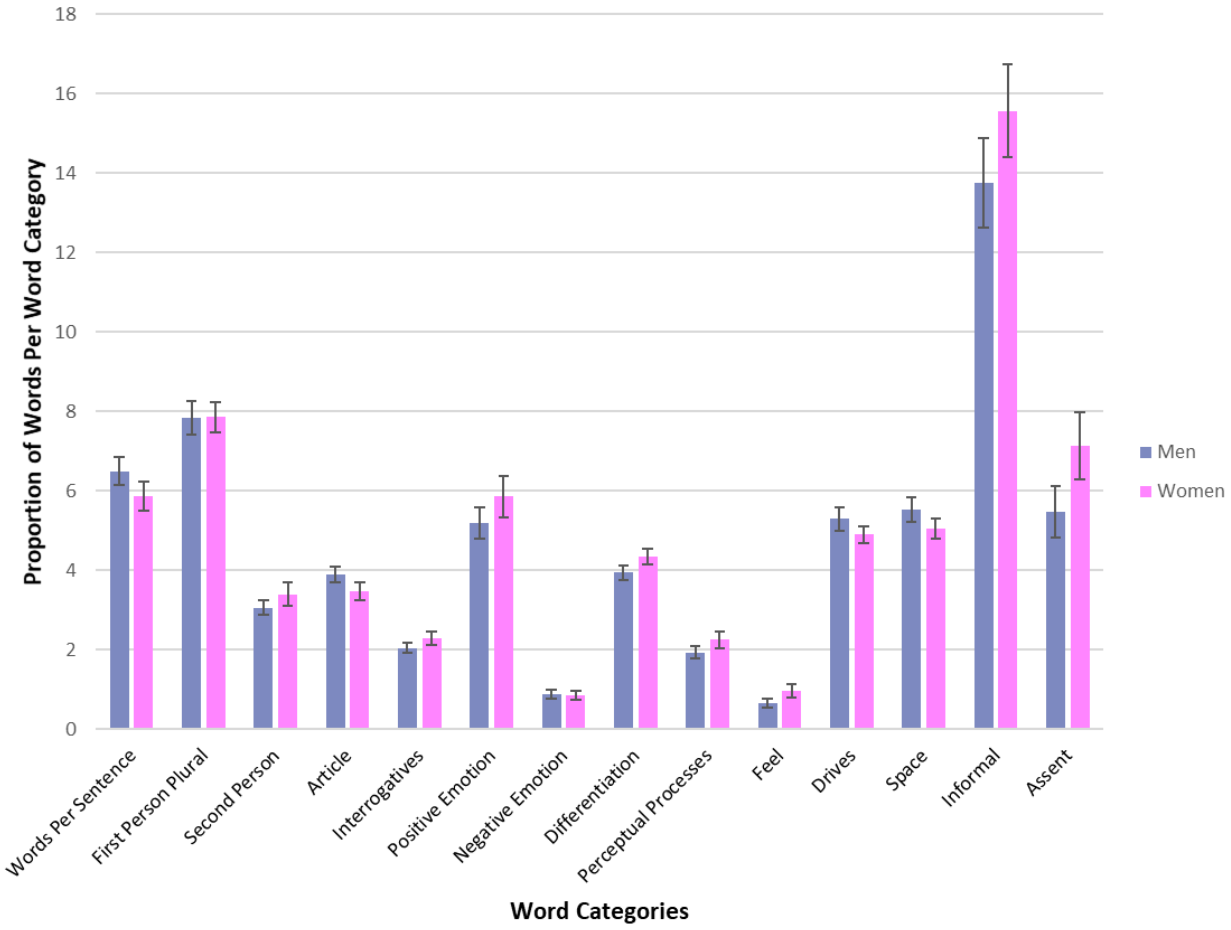

Figure 3. Mean Differences Between Men and Women on Various Word Categories. Participants' transcripts were generated by combining dialogue across all their interactions into a single document. Each document was analyzed using LIWC software, and the output revealed the proportion of words in each word category that participants used across all their interactions. The bars represent proportion of words per word category, and the error bars represent the 95% confidence interval.

We also found significant differences between men and women in other word categories including the use of first-person plural and second person words. Specifically, men used words such as "we", "us", and "our" more frequently than did women, $t(100) = 2.15$, $p = .034$. Conversely, women used second person words such as "you" and "your" significantly more than did men, $t(111) = -2.03$, $p = .05$. Women also used significantly more interrogatives, assents,

positive emotion words, differentiation, perceptual processes, feel words, and informal language than men. Specifically, women used questions words like “how”, “when”, and “what” significantly more than did men, $t(101) = -2.33$, $p = .045$. Assents, which include words like “agree”, “okay”, and “yes” were also used significantly more by women than by men, $t(100) = -3.12$, $p = .002$. Positive emotion words like “love”, “nice”, and “sweet” were also used to a greater degree by women than by men, $t(101) = -2.05$, $p = .043$. Interestingly, men and women did not differ in their use of negative emotion words, $t(110) = .42$, $p = .677$.

In terms of differentiation words like “hasn’t”, “but”, and “else”, we found that women used them more than men, $t(110) = -2.89$, $p = .005$. Additionally, words related to perceptual processes like “hearing”, “feeling”, and “looking” were used more on average by women than men, $t(95) = -2.43$, $p = .017$. Similarly, women also used more words describing aspects of how they “feel” (both in a physical and emotional context) and “touch” compared to men, $t(94) = -3.31$, $p < .001$. Finally, informal language, which consisted of filler words, swear words, and non-fluencies, was used significantly more by women than by men, $t(110) = -2.23$, $p = .028$.

3.5. Giving and Receiving Yesses

During the speed-dating event, participants had the opportunity to speak with up to 15 other people, depending on session attendance. On average, participants went on approximately nine dates over the course of the event ($M = 9.10$, $SD = 2.23$). At the end of the event, participants were directed to a website where they reported which of their partners they wished to see on a future date. We collected and analyzed over 1200 responses. Figure 4 shows the proportion of yesses received by both men and women. On average, men received yesses from about 39% of their partners, with some men (9%) receiving zero yesses across all interactions. All women received at least one “yes” from their male partners, and on average, about 50% of their dates said yes to them. Thus, women ($M = 50.50$, $SD = 23.89$) received significantly more yesses from men than did men from women ($M = 38.95$, $SD = 25.77$), $t(105)=2.401$, $p = .018$.

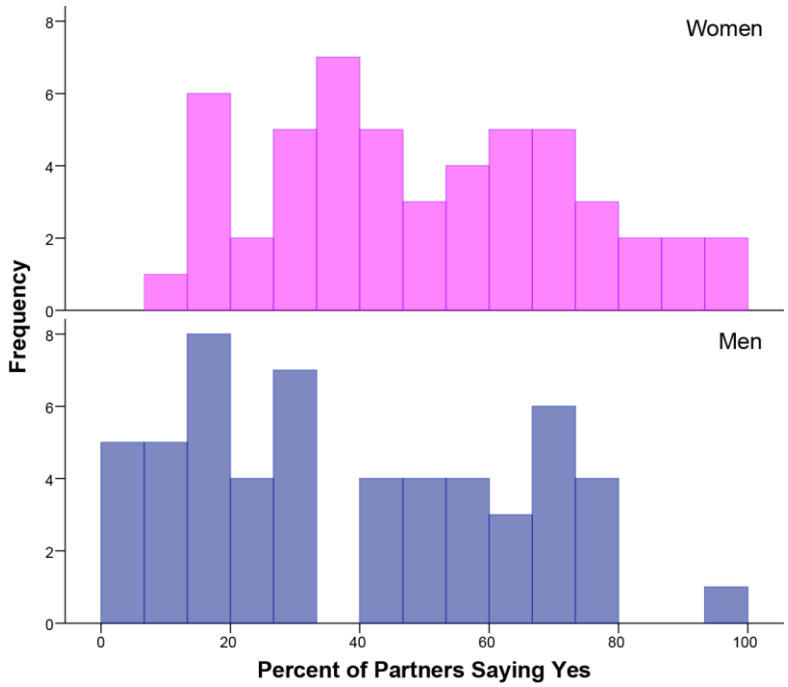

Figure 4. Percentage of Partners Saying Yes to a Future Date. The bars represent the number of participants who received a specific proportion of yesses from their dates, ranging from 0 to 100.

We also explored relationships between popularity and linguistic categories (see Table 1 for a list of significant associations). Here, we defined popularity using the proportion of yesses received from partners. Thus, individuals who received a greater proportion of yesses were more popular. Results show that popular individuals typically talked more and used more clout words (e.g., words which

Table 1

Significant Correlations Between Word Categories and Popularity

Word category	*r*	*p*
Word count	.26	.006
Clout	.28	.004
Second person	.24	.014
Negative emotion	-.20	.036
Social processes	.27	.005
Friends	.30	.002
Tentative	-.20	.039
Work	-.26	.006
Fillers	.20	.035

Note. Two-tailed test. Popularity values were determined using the proportion of yesses an individual received.

suggest that the author is speaking with expertise and confidence), second person pronouns, words associated with social processes and friends, and filler words. The results also show that popular individuals use fewer negative emotion words, tentative words (e.g., “maybe” and “perhaps”), and words related to work (e.g., “job” and “major”).

3.6. Linguistic Signals of Individual Difference Variables

The individual difference variables used in the current analyses were self-esteem scores from the RSE scale, scores from the five dimensions of the BFI (i.e., extraversion, agreeableness, conscientiousness, neuroticism, and openness), and attachment style scores from the ECR-R (e.g., attachment anxiety and avoidance). Scores on these measures were compared to various linguistic categories to explore the linguistic markers of each individual difference variable (see Figure 5 for correlations between individual difference variables and linguistic categories). Self-esteem scores did not correlate significantly with any of the linguistic categories. This was contrary to our expectation that lower self-esteem would be related to language markers like greater use of negative words and first-person singular words.

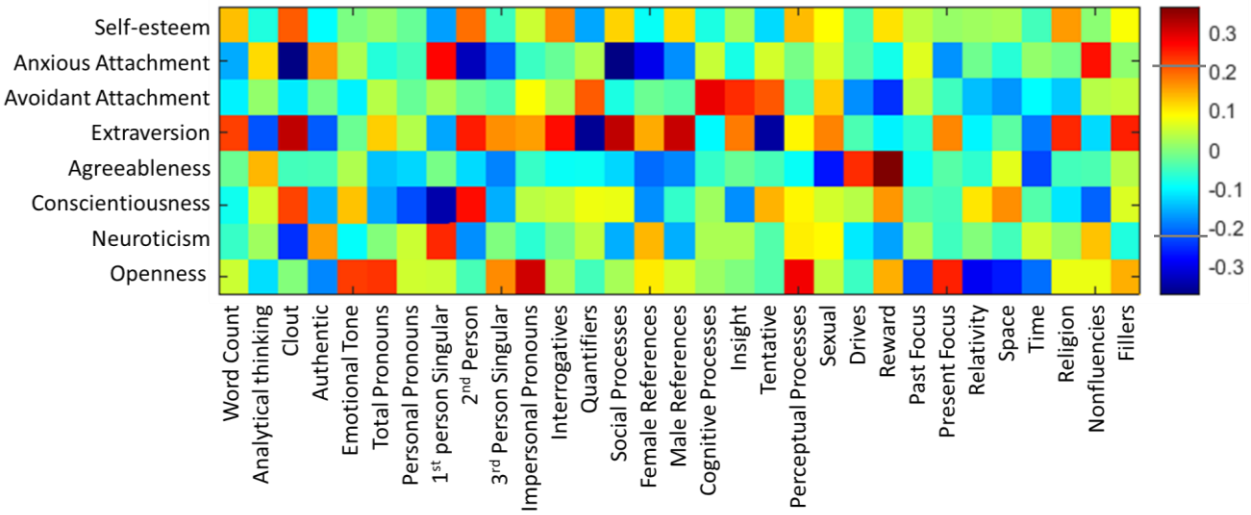

Figure 6. Correlations Between Individual Difference Measures and Word Categories. Correlations are represented by colour (e.g., dark red indicates correlations > .3; dark blue indicates correlations < -.3). Correlations ± .21 are significant at $p < .05$, as indicated by the grey bars on the scale.

In terms of the BFI, we found that, as expected higher scores on extraversion were associated with greater word count (r = .23, p = .035) such that individuals with greater extraversion scores talk more. Results also revealed an association between neuroticism and first-person singular words (r = .24, p = .023), which was also consistent with our expectations. Exploratory results also revealed that higher extraversion scores are associated with greater use of words related to social processes (r = .32, p = .003) and filler words (r = .249, p = .020). Agreeableness was associated with words related to sexuality (e.g., "horny" and "love"), drives (e.g., "affiliation" and "achievement"), reward (e.g., "prize and benefit"), and time (e.g., "end" and "until"). Interestingly, openness scores were related to words concerning the past (e.g., "ago" and "did") and present (e.g., "today" and "now"), but not future words (e.g., "will" and "soon"). Thus, individuals who scored higher on openness use fewer words relating to the past (r = -.23, p = .030) and more words relating to the present (r = .25, p = .021).

When exploring attachment styles, we suggested the possibility that anxiously attached individuals may use more loneliness-related language (e.g., more first-person singular words, negative emotion words, and fewer positive words), and that higher scores on avoidant attachment might be associated with lower word counts and shorter sentences. Our results reflected these patterns to a certain degree. For example, we found we found a relationship between attachment anxiety and use of first-person singular pronouns such that individuals higher in attachment anxiety used more first-person singular words (r = .27, p = .011). However, the associations between attachment anxiety and the use of positive (r = .11, p = .297) and negative emotions (r = .12, p = .282) words were not significant. Additionally, the relationship between word count and attachment avoidance scores was not significant (r = -.12, p = .321).

3.7. LSM, Similarity, and Dating Interest

LSM scores for each dyad (N = 174) were calculated using the procedure outlined in Ireland and colleagues' (2011) paper. Composite LSM scores were generated by averaging the LSM values from each pair across the nine function word categories. Typically, LSM scores in transcribed conversations range between .75 and .95, with an average LSM score of approximately .84 (Niederhoffer & Pennebaker, 2002). The data from the current study were comparable (M = .85, SD = .04). Table 2 includes example excerpts from dates with high and low LSM scores. Finally,

to remain consistent with the Ireland (2011) analytic procedure, LSM scores were converted to *z*-scores prior to analysis based on the full sample's LSM scores.

Table 3

Example Transcript Excerpts from Dates with High and Low LSM Scores

High LSM (.94)	Low LSM (.66)
M: Yeah. Anything uh what else do you like? Do you like reading? Movies? **F:** Um I like doing like art, artsy things. **M:** Okay. **F:** So I joined like a lot of art clubs. **M:** Okay, what kind of clubs? **F:** So, there's like Western Art Club, and then there's crafting for a cure. **M:** Okay. **F:** You might be interested in that actually **M:** Okay. **F:** You're basically crafting with kids, and you get to go to hospitals. **M:** Oh! **F:** And stuff like that. So, if you're interested. **M:** Yeah, sounds interesting. **F:** Yeah, It sounds really fun. **M:** Yeah. And you just make like, handcrafts? **F:** Yeah. So. **M:** What was the most recent one you made? **F:** Um. The first meeting was actually this week so we haven't actually had events yet.	**F:** Do you play basketball? **M:** Uh no, but I fence. **F:** What? **M:** I fence. **F:** Oh, so you play basketball. **M:** No no. **F:** Huh? **M:** I don't play basketball I- I fence. You know, like sword play? You know fencing? **F:** Mm. **M:** Fencing is just sword play, it's just sword fighting. **F:** I'm sorry. Hm. I feel like something is in my teeth. **M:** I noticed. But um, yeah yeah yeah. **F:** Oh! I know it's you is like, you wear all in white- **M:** Yeah you wear- **F:** And wear a mask. **M:** Yeah, fencing. **F:** It's, did you guys train right beside the table tennis club? One time? **M:** I have never trained by the tennis club.

Note. "M" represents dialogue from the male partner and "F" represents dialogue from the female partner. Participants in the high LSM date mutually agreed to a future date whereas participants in the low LSM date mutually disagreed to a future date.

Similarity was also included as a variable in the current analysis to match the model in the Ireland paper (2011). The values for the similarity variable were calculated by averaging the ratings of speaker 1 and speaker 2 on the items "my date and I seemed to have a lot in common" and "my date and I seemed to have similar personalities" from their post date questionnaires.

Dyad-level similarity and LSM scores were used as predictors of dating interest. Dating interest was determined by whether an individual agreed to a future date with their partner. If a participant said “yes” to another date, this was coded as “1”. If a participant said “no” to a further date, the response received a code of “0”.

As in the work described by Ireland and colleagues (2011), we analyzed three models using binary logistic regression to predict dyad-level outcomes. The first model included only LSM as a predictor of relationship outcomes, the second model included only similarity, and the third included both LSM and similarity as predictors of dating interest. Because these variables are dyad-level variables, accounting for both partners jointly, these models predict dating interest at the dyad level. Dyad-level dating interest has three possible categories: mutual yessing (in which both partners request a second date); mutual no-ing (both partners decline a second date); and mismatches, in which one partner requests a second date and the other partner declines. Whereas Ireland and colleagues (2011) examined only mutual yes and mutual no outcomes, our study design included mismatches, meaning that we did not specifically select cases for inclusion in which the outcome was matched. We therefore examine these data separately. In the first analysis, we included data from mutually interested and mutually disinterested pairs, as in Ireland et al. (2011). Additionally, in a second analysis, we included data from mutually interested pairs, and clustered mutual no’s and mismatched outcomes into a single group.

Results in the first analysis which included data from pairs who mutually agreed and mutually disagreed to a second date failed to support LSM as a significant predictor of dating interest, odds ratio (OR) = 0.91, $p = .637$ (see Table 3). However, the similarity-only model revealed that perceived similarity significantly predicted dating interest, OR = 0.67, $p = .001$. Unsurprisingly, similarity remained a significant predictor of dating interest when LSM was included in the regression model, OR = 0.67, $p = .001$. Thus, every 1-standard deviation decrease in average perceived similarity ratings reduced the likelihood of mutual yessing by about 33%, however, the likelihood of mutual yessing was not associated with LSM scores.

Table 4

Regressing Dating Interest on Language Style and Similarity

Model and Predictor	β	*SE* (β)	Wald Statistic	*p*	Odds Ratio	95% CI for OR	
Outcome 1 (*N* = 74 dyads)							
						Lower Bound	Upper Bound
Model 1							
LSM	-0.10	0.21	0.22	.637	0.91	.60	1.37
Model 2							
Similarity	-0.40	0.09	18.87	.001	0.67	.56	.80
Model 3							
LSM	-0.20	0.29	0.46	.497	0.82	.46	1.46
Similarity	-0.40	0.09	19.13	.001	0.67	.56	.80
Outcome 2 (*N* = 174 dyads)							
						Lower Bound	Upper Bound
Model 1							
LSM	0.11	0.20	0.32	.575	1.12	.76	1.64
Model 2							
Similarity	0.29	0.06	26.08	.001	1.34	1.20	1.50
Model 3							
LSM	0.15	0.21	0.47	.494	1.16	.76	1.75
Similarity	0.30	0.06	26.12	.001	1.34	1.20	1.51

Note. Outcome 1 uses data from pairs who mutually said "yes" or "no" to a future date with their partner. Outcome 2 uses pairs who mutually said "yes" and combined mutual "no" and "mismatches" to represent lack of dating interest.

A similar pattern of results was found in the second analysis. As above, we found that when both mismatched responses and mutual disinterest were coded as "no", LSM did not significantly predict dating interest (OR = 1.12, p = .575). However, perceived similarity continued to be a significant predictor both on its own (OR = 1.34, p = .001), and when LSM was included in the model, OR = 1.34, p = .001. Thus, for every standard deviation increase in a dyad's similarity scores, speed-daters' likelihood of mutual romantic interest increased by approximately 34%.

Overall, the results failed to offer support for LSM as an effective predictor of dyad-level romantic interest. However, results do support the idea that daters' perceived similarity does relate to the likelihood of mutual yessing. Specifically, the greater a pair's perceived similarity, the more likely they are to mutually yes one another.

3.8. Signaling Interest with Language Style

Despite the fact that we failed to replicate the result that LSM is related to outcomes, evidence does suggest that aspects of subtle mimicry at both nonverbal and verbal levels may be used to signal interest in another person (Guéguen, 2009; Chartrand & Bargh, 1999; Maurer & Tindall, 1983). That is, participants may indeed change their language style to match that of a partner with whom they desire a match and retain their typical style with a partner to whom they do not feel romantically predisposed. Thus, their language style when interacting with partners they plan to "no" should be more representative of their typical style because they are not attempting to signal liking (Romero, Swaab, Uzzi, & Galinsky, 2015; Kovacs & Kleinbaum, 2019). Importantly, the idea that people actively change their language style with a given partner has, to our knowledge, been assumed but has not yet been empirically examined.

Our analysis approach to this question has two stages. First, we ask whether participants change their language styles in the presence of partners in whom they are interested, relative to their own language styles with partners in whom they are not. If participants change their own language style when interacting with a partner they like, their language style should differ more from their own language style with non-desired partners. Second, we examine how participants' typical language styles when they intend to "yes" or "no" a partner compare with their language style in actual interactions with partners they yessed or no-ed.

To examine this idea, we computed participants' average LSM scores using a similar method to that by which we derived the above LSM scores. Here, however, the LSM scores were derived within a single participant, instead of within a dyad consisting of two different people. To examine these scores, we computed each participant's LSM score when they said "no" to a specific partner, relative to the participant's own language style with each of the other partners to whom they said "no". We then averaged these LSM scores across all the partners they "no-ed" to derive each individual's typical language style. Participants whose language styles are highly

consistent across these “no” interactions receive LSM scores near 1, whereas those whose styles are less consistent receive scores that are lower. We then computed each participant’s LSM score in the interactions in which they said “yes,” relative to their own behaviour in each of their “yes” interactions and took the average of these scores to derive an overall LSM score for their “yes” interactions. Again, higher scores mean greater language consistency. If participants do change their language styles with yessed partners, we should expect to see lower scores for the “yes” interactions, relative to the “no” interactions. To generate a single “language deviation” score for each participant, we subtracted participants’ average LSM score for “yessed” partners from the average LSM score for their “no-ed” partners. Thus, the greater the deviation from 0, the more participants changed their language style in the presence of liked partners. Because this difference score is directional, positive values indicate higher levels of inconsistency, thereby implying greater language style change across partners.

There were 113 unique participants with useable session transcripts. Of these, 11 had 0 transcripts in which they said “no” to a date and 19 had 0 transcripts in which they said “yes” to a date, leaving a total of 83 participants whose data could be examined in this way. Figure 6 shows the LSM difference scores for each participant, ordered by size. The average LSM deviation was .0182 (*SD* = .090). A one-sample t-test confirmed that this value was not significantly different from 0, $t(82) = 1.84$, $p = .070$. Interestingly however, when examined in the context of gender, men’s language style (*M* = .0328, *SD* = .0995) did change in the presence of a liked partner, one-sample $t(42) = 2.16$, $p = .036$, whereas women’s language style (*M* = .0025, *SD* = .0777) did not, *one-sample* $t(39) = 0.21$, $p = .838$. The difference between men’s versus women’s language style changes did not reach statistical significance, $t(81) = 1.54$, $p = .128$.

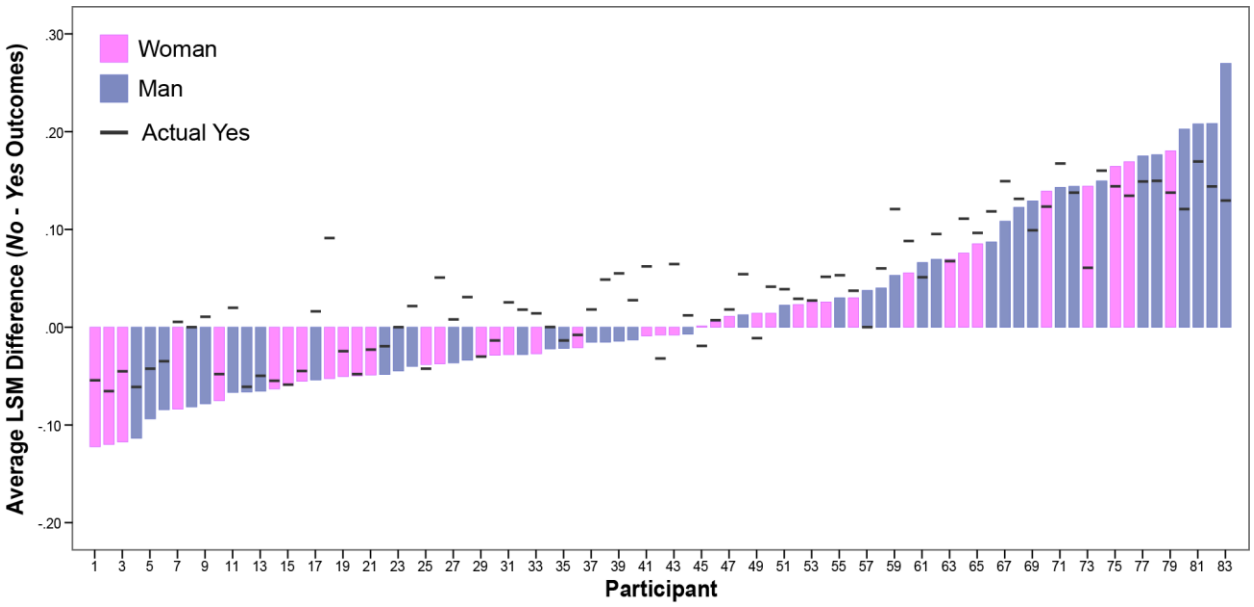

Figure 7. Language Style Differences for Participants. Bars show each individual participant's average LSM change when interacting with liked partners, relative to those they did not wish to date again. Bar colour indicates participant gender. Greater deviations from 0 show greater LSM change. The dark hatches indicate the average of each participant's actual LSM scores with the partners they dated.

The second step in this analysis examines whether changes in participants' language styles brought them closer to the language styles of participants they yessed. To ask this question, we used the dyad-level LSM score between the participant and the actual yessed partner (or the average of these LSM scores if participants yessed more than one partner) and determined the difference between that score and the participant's average language style scores when they said no to a partner. If this value differs from zero, it suggests that participants did indeed change their language from their typical style when talking with people they liked. We also computed this same difference when participants said "no" (using the self- and other-relevant LSM-scores for no-ed partners). One sample t-tests confirmed that when participants liked a partner, they did show significant change in language style, *one-sample* $t(82) = 5.12$, $p < .001$. Interestingly, they also showed significant changes in language style when they did not wish for a second date, *one-sample* $t(82) = 6.01$, $p < .001$. These findings indicate that participants adapted their language style to match that of a partner regardless of whether they were romantically interested in a future date with that individual. Examined in the context of gender, men changed their language styles to a greater degree with liked partners than with those in whom they were not romantically interested, $t(81) = 2.17$, $p = .033$ (see Figure 7). When speaking with partners in whom they were not romantically interested, there was no significant difference between men and women's behaviour, $t(81) = 0.95$, $p = .343$.

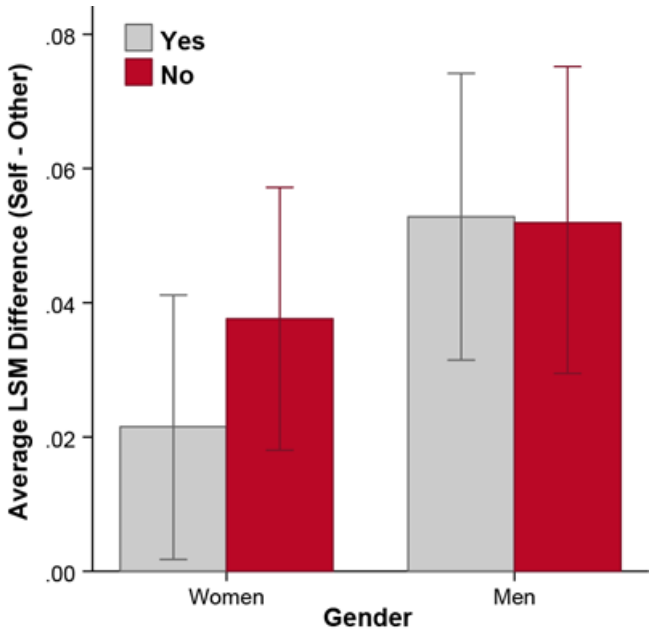

Figure 8. Change from Typical Language Style when Interacting with a Partner for Women and Men. Bars show the average difference between self-relevant LSM scores and LSM scores calculated with partners to whom participants said "yes".

3.9. Post-date Ratings and Dating Interest

To examine how the post-date ratings participants gave one another related to dating interest, we began by exploring the factor structure of the post-date questionnaire. To do so, we used principle axis factoring (PFA) and oblimin rotations. PFA is used to determine the least number of factors that account for the common variance in the post date questionnaire. The items in the post date questionnaire all relate to positive partner ratings. Thus, we suspected some correlation between the factors. The use of an oblique rotation such as the oblimin rotation allows us to obtain a simple factor structure that is easier to understand, with the assumption that the factors are correlated.

Only 19 of the 21 items in the questionnaire were used in the analysis. The items “I am likely to say ‘yes’ to my date” and “my date is likely to say ‘yes’ to me” were omitted because they were not direct measures of partner traits like the other items. The results from the rotated factor structure revealed three factors with eigenvalues greater than 1. Together, the factors accounted for 71.26% of the variance in the data. Items were included if they had a primary factor loading over .60 (see Table 4 for the list of factor loadings). The items “friendly” and “trustworthy” were excluded because they shared similar factor loadings on more than one factor.

Table 5

Dimensions of the Post Date Questionnaire

Items	Factors and Factor Loadings		
	Agreeable Personality	Competence	Attractiveness
Associated Variance	54.91%	10.08%	6.27%
Exciting	.849	.554	.507
Funny	.844	.503	.461
Liked Date	.828	.535	.659
Charismatic	.824	.551	.391
Similar Personality	.798	.424	.588
Connection	.776	.457	.682
Confident	.760	.492	.398
Common Ground	.740	.405	.520
Responsive	.725	.541	.260
Assertive	.656	.459	.407
Friendly	.648	.607	.188
Smart	.582	.871	.203
Sharp	.602	.827	.231
Ambitious	.544	.809	.298
Career Prospects	.490	.791	.324
Trustworthy	.609	.627	.285
Sexy	.595	.381	.896
Physically Attractive	.596	.423	.880
Attracted to Date	.676	.412	.858
	Cronbach's Alpha		
	.942	.895	.937

Note. Extraction method: Principal Axis Factoring. Rotation method: Oblimin with Kaiser normalization. The items "Trustworthy" and "Friendly" were excluded from the scales because they loaded onto more than one factor.

We scored the questionnaire based on these data. In general, men gave higher ratings to their dates than did women (Figure 8). We then asked how participants' ratings predicted their dating interest using a multi-level implementation of the social relations model that nested partners within participants and also allows for the examination of actor-partner interdependence at the dyad level. This model therefore controls for interdependence at both the session level (all the men who attended a speed-dating event dated all the women who attended that same event but none of the men) and at the level of a given couple. Because all dyads were distinguishable (i.e., comprised of one man and one woman), we allowed the model to examine gender differences in predictions. These analyses were conducted using purpose-written scripts in MATLAB (v2020a; The Mathworks Inc., Natick, MA). Analyses employed a generalized least squares model with correlated errors and model fitting utilized restricted maximum likelihood estimation. Here, we are primarily interested in predicting dating interest based on post-date ratings, in the context of a particular participant's ratings across partners. Thus, along with participant gender, the predictors in the model were participants' ratings of each of their partner's agreeableness, competence and attractiveness. The outcome variable was dating interest (based on participants' ratings of their likelihood of "yessing" their partner at the end of the speed-dating event).

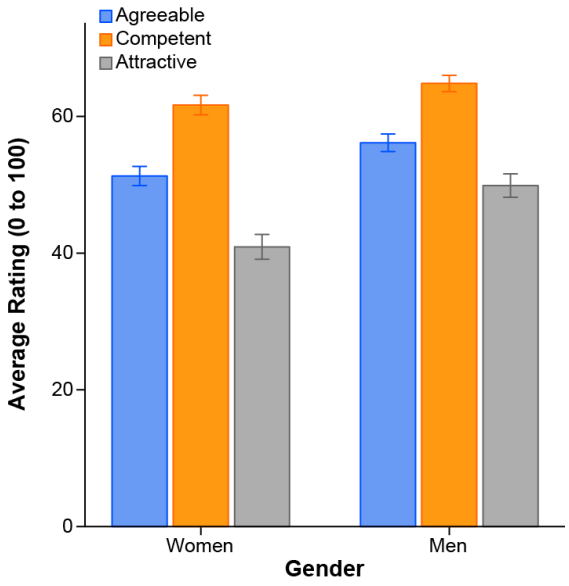

Figure 10. Post-date Ratings By Gender. Bars show the average rating that male and female participants gave their partners on Agreeable Personality, Competence and Attractiveness. Error bars show the 95%CI.

Across six dating sessions, this analysis included a total of 587 unique dyads (an additional 85 dates were excluded due to missing data). Participants' ratings significantly predicted dating interest for both men ($R^2 = .519$) and women ($R^2 = .503$), $\chi^2(12) = 847.445$; $p < .001$. Moreover,

there was no evidence to suggest that men and women were using the rating scale differently (p = .483). Thus, the post-date ratings appear to be a valid predictor of dating interest.

Within the model, a partner's agreeableness was a significant predictor of dating interest for both men (*standardized actor effect* = .240; r = .190; p < .001) and women (*standardized actor effect* = .323; r = .298; p < .001). There were no gender differences in the degree to which men's and women's ratings of partner agreeableness predicted their dating interest, Z = -1.249; p = .212. Interestingly, there were no significant differences between the partner effects, Z = -1.182; p = .237. This suggests that when one participant found their date to be warm, likeable and generally agreeable, their date rated them similarly. In considering the degree to which this was an actor versus a partner effect, the combined actor effect was significant (*standardized actor effect* = .283; r = .240; p < .001) but the partner effect was not (*standardized partner effect* = -.010; r = -.009; p = .759).

Interestingly, participants' rating of partner competence did not predict their dating interest from either women (*standardized actor effect* = -.039; r = -.050; p = .224) or men (*standardized actor effect* = -.032; r = -.032; p = .447). There were no gender differences in the strength of this effect, Z = 0.138; p = 891. Somewhat surprisingly, because the literature suggests that women should prefer men with higher social status and earning potential (Buss, 1991; Buss & Barnes, 1986; Buss, 1989), the partner effect from women to men was not significant (*standardized partner effect* = .039; r = .048; p = .250). The same was true for the partner effect from men to women (*standardized partner effect* = .055; r = .056; p = .176). These effects were not significantly different, Z = -0.310; p = .757. Thus, perceptions of the degree to which a partner was competent did not predict dating interest. However, this may be due to the fact that in this university-student sample, participants generally perceived one another as quite competent.

Finally, we consider the degree to which ratings of partner attractiveness predicted dating interest. Unsurprisingly, the actor effects were significant for both men (*standardized actor effect* = .567; r = .460; p < .001) and women (*standardized actor effect* = .441; r = .435; p < .001). The difference between these effects was statistically different, Z = 2.123; p = .034, suggesting that men's dating interest is more strongly related to their perceptions that a date is attractive. The partner effects were not statistically significant for either gender (Men: *standardized partner*

effect = -.047; *r* = -.045; *p* = .227; Women: *standardized partner effect* = -.020; *r* = -.020; *p* = .620). Taken together, these effects suggest an "actor only" model in the prediction of dating interest, meaning that only the raters' ratings seem to predict dating interest to a significant degree, even though there is some correspondence in how dyad members rated each other.

Chapter 4

4.1. General Discussion and Future Directions

The main objective of the current research was to explore the variables that predict initial attraction in a speed-dating event, as well as trends in language use during first dates and to replicate the effects of language style matching (LSM) on dating interest, which was previously found to be an effective predictor of romantic attraction (Ireland et al., 2011). Data were collected from a large heterosexual speed-dating study. In the current study, we utilized only date transcripts, questionnaire responses from before the speed-dating event (e.g., RSE, BFI, ECR-R, and factors in mate choice questionnaire), and participants' ratings of each of their dates (e.g., post date questionnaire).

Surprisingly, we failed to find support for the previous finding suggesting that LSM predicts dating interest (Ireland, et al., 2011). There are several possible reasons for why the results of the original paper were not replicated. One major difference between our work and prior work is that we did not select participants based on dating outcomes. Instead, we transcribed all sessions in which the audio files were of sufficient quality that transcriptions were possible. Thus, our sample used a broader range of data that included multiple outcomes relative to previous work. We also included a much larger sample of session transcripts (174) than prior work (40). Smaller sample sizes are more vulnerable to statistical outliers than are larger ones, and consequently more prone to false positives (VanVoorhis & Morgan, 2007; Cohen, 2013).

We also asked whether participants changed their language when interacting with partners in whom they were and were not romantically interested. That analysis suggested another, more likely explanation for the failed replication of the previous LSM research. Specifically, we compared participants' "typical" language style when they yessed and no-ed partners to the actual language styles they used when interacting with partners specifically. That analysis suggested that participants adapt their speech to their partners regardless of romantic interest. Thus, LSM may not be a specific predictor of romantic interest, but rather a phenomenon that occurs in all conversations, regardless of romantic attractiveness. Thus, the act of being in a

verbal conversation and adapting to a partner may indeed lead to natural changes in language style.

The exploratory results for the pre-event questions on factors of mate choice were largely consistent with the existing literature. For example, women rated financial prospects, and social status as being important and desirable traits in a future partner than did men. Such results have been demonstrated repeatedly across cultures (Buss & Barnes, 1986; Buss, 1989; Geary, Vigil, & Byrd-Craven, 2004). The evolutionary explanation is that women tend to prefer partners who can provide greater levels of resources to ensure the survival of themselves and of their future offspring. Interestingly, the same evolutionary theories suggest that men value fertility cues in potential partners significantly more than women (Buss, 1989). These fertility cues typically relate to a women's level of physical attractiveness (Swami, Furnham, & Joshi, 2008; Jokela, 2009; Shackelford & Larsen, 1999).

The results from the current study failed to reveal a significant difference between men's and women's preferences for a physically attractive partner. This may reflect changing social norms. Interestingly, although we did replicate prior research suggesting that women have a strong preference for men of higher social standing (e.g., Buss, 2006; Buss, 1989; Wiederman & Allgeier, 1992), we did not find that this influenced women's actual likelihood of yessing a partner. However, one reason that we may not have found this prior effect may relate to the nature of the sample. Specifically, we collected data from undergraduate students between 18 and 21 years old. The current average age of marriage and the establishment of long-term relationships is approximately 27 for women and 29 for men (Statistics Canada, 2020). As such, it is possible that participants were not considering long-term partners when ranking the importance of physical attractiveness, but rather short-term relationships. Indeed, one study by Kenrick and colleagues (1990) found that sex differences in the preference for a physically attractive partner only appeared when college students were asked about it in the context of marriage and long term, committed relationships.

We also took a descriptive approach to the interactions and explored the linguistic properties of conversations across all dates from the speed-dating event. Overall, men used longer sentences than women. However, overall word count did not differ between genders. The finding that men

and women do not differ in how much they talk overall is consistent with some of the existing literature (e.g., James & Drakich, 1993) and contradicts the prevailing stereotype that women speak more than men (Talbot, 2008; Hyde & Linn, 1988). Filler words and affirmations were among the most commonly used word types in our speed-dating corpus. Some research suggests that the use of filler words is associated with nervousness (Goldwater, Jurafsky, & Manning, 2010), and unprepared speech (Beaudreau, Storandt, & Strube, 2006; van Middendorp & Geenen, 2008). It is possible in a context like speed-dating, that there may be some anxiety associated with making a good first impression and individuals may be uncertain about how much and what details they should disclose to their partners. Thus, face-related concerns (e.g., Robinson, Harris, & Burton, 2015; Keltner & Anderson, 2000; Schlenker & Leary, 1982) may have influenced individuals' use of filler words in this context. However, it is unclear how the proportion of filler words used in the current sample compares how frequently people use filler words in their daily life. Thus, it is difficult to offer a conclusive statement as to why filler words may have been so common in our corpus.

With respect to the idea that properties of speech use related to variables such as self-esteem, attachment, and personality, we found some interesting associations. For example, our results revealed that self-esteem was unrelated to language use, despite findings in the previous literature (Newell et al., 2018; Pennebaker, Mehl, & Niederhoffer, 2003; Ellgring & Scherer, 1996). However, in terms of personality, extraversion appeared to be positively related to linguistic properties including word count and social processes, such that individuals higher in extraversion typically spoke more and used more words associated with social processes (i.e., "talk" and "friend"). This was not surprising considering the outgoing and social traits associated with the extraverted personality dimension (Watson & Clark, 1997). Furthermore, we found positive associations between anxious attachment and first-person singular words, which also aligned with our expectations.

Finally, we asked how participants' views of their partners predicted their dating interest. Interestingly, we found some evidence of reciprocity in ratings of agreeableness and attractiveness such that when one partner found the other agreeable and/or attractive, the partner also found their date agreeable and/or attractive. This effect was not present for ratings of partner competence. Ratings of both agreeableness and attractiveness appeared to predict desire for a

second date. Interestingly, competence did not seem to influence dating interest amongst partners. In terms of attractiveness, the results were largely consistent with the existing literature (e.g., Sprecher, Sullivan, & Hatfield, 1994). Specifically, we found that both women and men thought a mate's physical attractiveness was similarly important prior to the dating session. However, this variable more strongly predicted men's dating interest than it did women's dating interest.

4.2. Limitations and Future Directions

One important limitation in the current study was that it was not preregistered. Preregistration of studies is invaluable as it allows researchers to specify the research design, hypotheses, and analytic plans prior to the observation of outcomes (Nosek & Lindsay, 2018). This is particularly valuable for confirmatory research. However, the current study was largely exploratory in nature. As such, the results require replication and should be interpreted with caution at the current time. We encourage future researchers to develop preregistered designs to further explore the nature of linguistic style change in contexts where individuals are and are not romantically interested in their dates. Additionally, it may be worth exploring how well individuals can perceive and judge personal difference variables like personality dimensions and attachment styles through verbal or written dialogue, and how these ultimately influence dating interest.

There were also some limitations related to the current sample. First, a large number of interactions were omitted from the analysis due to excessive noise in the audio files recorded during the event. To insure this is not an issue in such research, we encourage future researchers to use noise-canceling microphones and to record interactions in individual rooms. Next, we found that men who signed up for our speed-dating event were somewhat younger than the women. In 24% of the dates in our sample, the women were at least a year older than their male counterparts. Although the men in our sample did not seem to mind this age gap, requesting dates with many of their partners, it is therefore possible that the women, whose selection behaviour indicated greater "choosiness," found their partners less interesting as potential dates as the maturity gap between them widened (see Kenrick, Keefe, Gabrielidis, & Cornelius, 1996). Finally, there were more male participants than female participants who attended the speed-dating event. Though efforts were made to keep the male to female ratio even, it was ultimately impossible to enforce. Due to the uneven number of male and female participants, many male

participants had to wait alone for several minutes until their next female partner was available. These gaps between interactions may have influenced participants in ways that were not considered in the current study. Future researchers may choose to explore how breaks between speed-dating interactions impact individuals' behaviour, and how the differences compare to typical speed-dating practices, which are fast paced and without breaks.

Future researchers may also consider exploring speed-dating scripts more thoroughly. Although we did not do a formal analysis of the topics participants discussed in the current study, we found anecdotal evidence that individuals used a scripted approach to their interactions. Specifically, conversations began with introductions and transitioned quickly to talk about school, housing, and hobbies and interests. Due to time constraints, the current study did not explore other important features of interaction including conversational depth and reciprocity, which may provide more insight into who desires a second date. Thus, future research may consider a deeper analysis of the content, depth or reciprocity of conversations and how these variables influence dating interest.

Finally, it may be worth expanding beyond linguistic categories and exploring other linguistic characteristics like turn taking. Turn taking refers to the act of alternating speakers one at a time during conversation and is an essential facet of communication in both humans (Ghilzai & Baloch, 2015) and other animals such as zebra finches and song sparrows (Filippi, Hoeschele, Spierings, & Bowling, 2019) and may be especially important in pair bonding (D'Amelio, Klumb, Adreani, Gahr, & Ter Maat, 2017). Differences in turn length, turn frequency and interruptions within conversations may therefore be a more fruitful avenue for predicting dating interest than language style, and would certainly provide more descriptive information about the degree to which a conversation is animated and the partners involved.

4.3. Conclusion

The goal of the current study was to gain a better understanding of how heterosexual individuals signal different aspects of themselves and their interest in a partner through their use of language during a date. In addition, the study aimed to replicate the finding that LSM can predict dating rapport in a larger sample with more diverse dating outcomes. Overall, these results revealed associations between linguistic factors and individual difference variables such as attachment

and personality. Additionally, there is reason to believe that the predictive ability of LSM in determining the likelihood of romantic interest may be limited. These findings offer a valuable foundation for future studies that will serve to enhance our understanding of how and why people choose to initiate relationships and the types of communications that support this process. Ideally, future research will examine the extent to which these linguistic signals of personality are detectable by conversation partners, and how they ultimately impact relationship outcomes.

References

Adams, R. E., Laursen, B., & Wilder, D. (2001). Characteristics of closeness in adolescent romantic relationships. *Journal of Adolescence*, *24*(3), 353-363.

Ainsworth, M. D. S., Blehar, M., Waters, E., & Wall, S. (1978). Patterns of attachment.

Wiederman, M. W., & Allgeier, E. R. (1992). Gender differences in mate selection criteria: Sociobiological or socioeconomic explanation?. *Ethology and Sociobiology*, *13*(2), 115-124.

Argyle, M. (1988). *Bodily communication*. London: Methuen/Routledge.

Arshad, M., Zaidi, S. M. I. H., & Mahmood, K. (2015). Self-Esteem & Academic Performance among University Students. *Journal of Education and Practice*, *6*(1), 156-162.

Asendorpf, J. B., Penke, L., & Back, M. D. (2011). From dating to mating and relating: Predictors of initial and long-term outcomes of speed-dating in a community sample. *European Journal of Personality*, *25*(1), 16-30.

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2009). The first 10,000 Adult Attachment Interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attachment & human development*, *11*(3), 223-263.

Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American psychologist*, *54*(7), 462.

Barlett, C. P., & Anderson, C. A. (2012). Direct and indirect relations between the Big 5 personality traits and aggressive and violent behavior. *Personality and Individual Differences*, *52*(8), 870-875.

Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: a meta-analysis. Personnel psychology, *44*(1), 1-26.

Bayrami, M., Heshmati, R., Mohammadpour, V., Gholamzadeh, M., Hasanloo, H. O., & Moslemifar, M. (2012). Happiness and willingness to communicate in three attachment styles: A study on college students. *Procedia-Social and Behavioral Sciences*, *46*, 294-298.

Bayram, A. B., & Ta, V. P. (2019). Diplomatic chameleons: Language style matching and agreement in international diplomatic negotiations. *Negotiation and Conflict Management Research*, *12*(1), 23-40.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles?. *Psychological science in the public interest*, *4*(1), 1-44.

Beaudreau, S. A., Storandt, M., & Strube, M. J. (2006). A comparison of narratives told by younger and older adults. Experimental Aging Research, 32, 105-117.

Berscheid, E., Dion, K., Walster, E., & Walster, G. W. (1971). Physical attractiveness and dating choice: A test of the matching hypothesis. *Journal of experimental social psychology*, *7*(2), 173-189.

Beichen, L., & Murshed, F. (2015). Culture, expressions of romantic love, and gift-giving. *Journal of International Business Research*, *14*(1), 68.

Berscheid, E., & Regan, P. (2005). *The psychology of interpersonal relationships*. New York: Prentice-Hall.

Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. *Measures of personality and social psychological attitudes*, *1*, 115-160.

Bowen, J. D., Winczewski, L. A., & Collins, N. L. (2017). Language style matching in romantic partners' conflict and support interactions. *Journal of Language and Social Psychology*, *36*(3), 263-286.

Bowlby, J. (1969). *Attachment and loss*. London: Hogarth Press.

Botwin, M. D., Buss, D. M., & Shackelford, T. K. (1997). Personality and mate preferences: Five factors in mate selection and marital satisfaction. *Journal of personality*, *65*(1), 107-136.

Buckels, E. E., Beall, A. T., Hofer, M. K., Lin, E. Y., Zhou, Z., & Schaller, M. (2015). Individual differences in activation of the parental care motivational system: Assessment, prediction, and implications. *Journal of Personality and Social Psychology*, *108*(3), 497.

Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence?. *Journal of personality and social psychology*, *75*(1), 219.

Buss, D. M. (1985). Human mate selection: Opposites are sometimes said to attract, but in fact we are likely to marry someone who is similar to us in almost every variable. *American scientist*, *73*(1), 47-51.

Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and brain sciences*, *12*(1), 1-14.

Buss, D. M. (1991). Evolutionary personality psychology. *Annual review of psychology*, *42*(1), 459-491.

Buss, D. M. (2016). *The evolution of desire: Strategies of human mating*. Hachette UK.

Buss, D. M., & Barnes, M. (1986). Preferences in human mate selection. *Journal of personality and social psychology*, *50*(3), 559.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview.

Byrne, D. (1961). The repression-sensitization scale: Rationale, reliability, and validity. *Journal of personality*.

Byrne, D., Ervin, C. R., & Lamberth, J. (1970). Continuity between the experimental study of attraction and real-life computer dating. *Journal of Personality and Social Psychology, 16*(1), 157–165.

Byrne, D., & Griffitt, W. (1973). Interpersonal attraction. *Annual review of psychology*, *24*(1), 317-336.

Cacioppo, S., Zhou, H., Monteleone, G., Majka, E., Quinn, K., Ball, A., . . . Cacioppo, J. (2014). You are in sync with me: neural correlates of interpersonal synchrony with a partner. *Neuroscience, 277*, 842-858.

Campbell, L., Chin, K., & Stanton, S. C. (2016). Initial evidence that individuals form new relationships with partners that more closely match their ideal preferences. *Collabra: Psychology*, *2*(1).

Cavanagh, S. E., Crissey, S. R., & Raley, R. K. (2008). Family structure history and adolescent romance. *Journal of Marriage and Family*, *70*(3), 698-714.

Cer, D., Yang, Y., Kong, S., Hua, N., Limtiaco, N., John, R. S., . . . Kurzweil, R. (2018). Universal Sentence Encoder for English. *Proceedings of the 2018 Conference on*

Empirical Methods in Natural Language Processing: System Demonstrations. doi:10.18653/v1/d18-2029

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: the perception–behavior link and social interaction. *Journal of personality and social psychology*, *76*(6), 893.

Chung, C., & Pennebaker, J. W. (2007). The psychological functions of function words. *Social communication*, *1*, 343-359.

Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Academic press.

Collins, N. L., & Miller, L. C. (1994). Self-disclosure and liking: a meta-analytic review. *Psychological bulletin*, *116*(3), 457.

D'Amelio, P. B., Klumb, M., Adreani, M. N., Gahr, M. L., & Ter Maat, A. (2017). Individual recognition of opposite sex vocalizations in the zebra finch. *Scientific reports*, *7*(1), 1-10.

de Vries, R. E., Bakker-Pieper, A., Konings, F. E., & Schouten, B. (2013). The communication styles inventory (CSI) a six-dimensional behavioral model of communication styles and its relation with personality. *Communication Research*, *40*(4), 506-532.

Donohue, W. A., & Liang, Y. J. (2011). Transformative linguistic styles in divorce mediation. *Negotiation and Conflict Management Research*, *4*(3), 200-218.

Eastwick, P. W., & Finkel, E. J. (2008). Sex differences in mate preferences revisited: Do people know what they initially desire in a romantic partner?. *Journal of personality and social psychology*, *94*(2), 245.

Eastwick, P. W., & Smith, L. K. (2018). Sex-differentiated effects of physical attractiveness on romantic desire: A highly powered, preregistered study in a photograph evaluation context. *Comprehensive Results in Social Psychology*, *3*(1), 1-27.

Eastwick, P. W., Finkel, E. J., & Eagly, A. H. (2011). When and why do ideal partner preferences affect the process of initiating and maintaining romantic relationships?. *Journal of personality and social psychology*, *101*(5), 1012.

Ellgring, H., & Scherer, K. R. (1996). Vocal indicators of mood change in depression. *Journal of Nonverbal Behavior*, *20*(2), 83-110.

Eng, W., Heimberg, R. G., Hart, T. A., Schneier, F. R., & Liebowitz, M. R. (2001). Attachment in individuals with social anxiety disorder: the relationship among adult attachment styles, social anxiety, and depression. *Emotion*, *1*(4), 365.

Erol, R. Y., & Orth, U. (2014). Development of self-esteem and relationship satisfaction in couples: Two longitudinal studies. *Developmental psychology*, *50*(9), 2291.

Feingold, A. (1990). Gender differences in effects of physical attractiveness on romantic attraction: A comparison across five research paradigms. *Journal of Personality and social psychology*, *59*(5), 981.

Figueredo, A. J., Sefcek, J. A., & Jones, D. N. (2006). The ideal romantic partner personality. *Personality and Individual Differences*, *41*(3), 431-441.

Finkel, E. J., & Eastwick, P. W. (2009). Arbitrary social norms influence sex differences in romantic selectivity. *Psychological Science*, *20*(10), 1290-1295.

Finkel, E. J., Eastwick, P. W., & Matthews, J. (2007). Speed-dating as an invaluable tool for studying romantic attraction: A methodological primer. *Personal Relationships*, *14*(1), 149-166.

Fiore, A. T., Taylor, L. S., Mendelsohn, G. A., & Hearst, M. (2008, April). Assessing attractiveness in online dating profiles. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 797-806).

Fisman, R., Iyengar, S. S., Kamenica, E., & Simonson, I. (2006). Gender differences in mate selection: Evidence from a speed dating experiment. *The Quarterly Journal of Economics*, *121*(2), 673-697.

Fletcher, G. J., Simpson, J. A., & Thomas, G. (2000). Ideals, perceptions, and evaluations in early relationship development. *Journal of personality and social psychology*, *79*(6), 933.

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of personality and social psychology*, *78*(2), 350.

Frank, M. G., Maroulis, A., & Griffin, D. J. (2013). The voice. *Nonverbal communication: Science and applications*, 75-97.

Geary, D. C., Vigil, J., & Byrd-Craven, J. (2004). Evolution of human mate choice. *Journal of sex research*, *41*(1), 27-42.

Ghilzai, S. A., & Baloch, M. (2015). Conversational Analysis of Turn taking Behavior and Gender Differences in Multimodal Conversation. *Journal of Language Studies*, *25*(4),1-13.

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological assessment*, *4*(1), 26.

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American psychologist*, *48*(1), 26.

Goldwater, S., Jurafsky, D., & Manning, C. D. (2010). Which words are hard to recognize? Prosodic, lexical, and disfluency factors that increase speech recognition error rates. *Speech Communication*, *52*(3), 181-200.

Gonzales, A. L., Hancock, J. T., & Pennebaker, J. W. (2010). Language style matching as a predictor of social dynamics in small groups. *Communication Research*, *37*(1), 3-19.

Guéguen, N. (2009). Mimicry and seduction: An evaluation in a courtship context. *Social Influence*, *4*(4), 249-255. doi:10.1080/15534510802628173

Hamermesh, D. S., & Donald, S. G. (2008). The effect of college curriculum on earnings: An affinity identifier for non-ignorable non-response bias. *Journal of Econometrics*, *144*(2), 479-491.

Hargie, O. (2011). *Skilled interpersonal communication: Research, theory and practice*. Routledge.

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of personality and social psychology*, *52*(3), 511.

Ireland, M. E., Slatcher, R. B., Eastwick, P. W., Scissors, L. E., Finkel, E. J., & Pennebaker, J. W. (2011). Language style matching predicts relationship initiation and stability. *Psychological science*, *22*(1), 39-44.

James, D., & Drakich, J. (1993). Understanding gender differences in amount of talk: A critical review of research.

Jensen, M. (2016). Personality traits and nonverbal communication patterns. *International Journal of Social Science Studies.*, *4*, 57.

Joel, S., Eastwick, P. W., & Finkel, E. J. (2017). Is romantic desire predictable? Machine learning applied to initial romantic attraction. *Psychological science*, *28*(10), 1478-1489.

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). Big five inventory. *Journal of Personality and Social Psychology*.

Jokela, M. (2009). Physical attractiveness and reproductive success in humans: evidence from the late 20th century United States. *Evolution and Human Behavior*, *30*(5), 342-350.

Jones, E. E., & Pittman, T. S. (1982). Toward a general theory of strategic self-presentation. *Psychological perspectives on the self*, *1*(1), 231-262.

Keltner, D., & Anderson, C. (2000). Saving face for Darwin: The functions and uses of embarrassment. *Current directions in psychological science*, *9*(6), 187-192.

Kenrick, D., Keefe, R., Gabrielidis, C., & Cornelius, J. (1996). Adolescents' Age Preferences for Dating Partners: Support for an Evolutionary Model of Life-History Strategies. *Child Development*, *67*(4), 1499-1511.

Kenrick, D. T., Sadalla, E. K., Groth, G., & Trost, M. R. (1990). Evolution, traits, and the stages of human courtship: Qualifying the parental investment model. *Journal of personality*, *58*(1), 97-116.

Këpuska, V., & Bohouta, G. (2017). Comparing speech recognition systems (Microsoft API, Google API and CMU Sphinx). *Int. J. Eng. Res. Appl*, *7*(03), 20-24.

Klohnen, E. C., & Luo, S. (2003). Interpersonal attraction and personality: What is attractive--self similarity, ideal similarity, complementarity or attachment security?. *Journal of personality and social psychology*, *85*(4), 709.

Kovacs, B., & Kleinbaum, A. M. (2019). Language style similarity and friendship networks. *Tuck School of Business Working Paper*, (3131715).

Krämer, N. C., & Winter, S. (2008). Impression management 2.0: The relationship of self-esteem, extraversion, self-efficacy, and self-presentation within social networking sites. *Journal of media psychology*, *20*(3), 106-116.

Kurzban, R., & Weeden, J. (2005). HurryDate: Mate preferences in action. *Evolution and Human Behavior*, *26*(3), 227-244.

La France, B. H., Heisel, A. D., & Beatty, M. J. (2004). Is there empirical evidence for a nonverbal profile of extraversion?: a meta-analysis and critique of the literature. *Communication Monographs*, *71*(1), 28-48.

Lakin, J. L., & Chartrand, T. L. (2003). Using nonconscious behavioral mimicry to create affiliation and rapport. *Psychological science*, *14*(4), 334-339.

Larson, J. H., Anderson, S. M., Holman, T. B., & Niemann, B. K. (1998). A longitudinal study of the effects of premarital communication, relationship stability, and self-esteem on sexual satisfaction in the first year of marriage. *Journal of sex & marital therapy*, *24*(3), 193-206.

Li, N. P., Yong, J. C., Tov, W., Sng, O., Fletcher, G. J., Valentine, K. A., ... & Balliet, D. (2013). Mate preferences do predict attraction and choices in the early stages of mate selection. *Journal of Personality and Social Psychology*, *105*(5), 757.

Luo, S. (2017). Assortative mating and couple similarity: Patterns, mechanisms, and consequences. *Social and Personality Psychology Compass*, *11*(8).

Luo, S., & Zhang, G. (2009). What leads to romantic attraction: Similarity, reciprocity, security, or beauty? Evidence from a speed-dating study. *Journal of personality*, *77*(4), 933-964.

Maurer, R. E., & Tindall, J. H. (1983). Effect of postural congruence on client's perception of counselor empathy. *Journal of counseling psychology*, *30*(2), 158.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of personality and social psychology*, *52*(1), 81.

McFarland, D. A., Jurafsky, D., & Rawlings, C. (2013). Making the connection: Social bonding in courtship situations. *American journal of sociology*, *118*(6), 1596-1649.

McGinnis, S. L. (2004). Cohabiting, dating, and perceived costs of marriage: A model of marriage entry. *Journal of Marriage and Family*, *65*(1), 105-116.

Metts, S., Cupach, W. R., & Bejlovec, R. A. (1989). I love you too much to ever start liking you': Redefining romantic relationships. *Journal of Social and Personal Relationships*, *6*(3), 259-274.

Miles, L. K., Nind, L. K., & Macrae, C. N. (2009). The rhythm of rapport: Interpersonal synchrony and social perception. Journal of Experimental Social Psychology,45(3), 585-589. doi:10.1016/j.jesp.2009.02.002

Montoya, R. M., Horton, R. S., & Kirchner, J. (2008). Is actual similarity necessary for attraction? A meta-analysis of actual and perceived similarity. *Journal of Social and Personal Relationships*, *25*(6), 889-922.

Muir, K., Joinson, A., Cotterill, R., & Dewdney, N. (2017). Linguistic style accommodation shapes impression formation and rapport in computer-mediated communication. *Journal of Language and Social Psychology*, *36*(5), 525-548.

Mulac, A., & Lundell, T. L. (1986). Linguistic contributors to the gender-linked language effect. *Journal of Language and Social Psychology*, *5*(2), 81-101.

Mulac, A., Seibold, D. R., & Farris, J. L. (2000). Female and male managers' and professionals' criticism giving: Differences in language use and effects. *Journal of Language and Social Psychology*, *19*(4), 389-415.

Mulac, A., Wiemann, J. M., Widenmann, S. J., & Gibson, T. W. (1988). Male/female language differences and effects in same-sex and mixed-sex dyads: The gender-linked language effect. *Communications Monographs*, *55*(4), 315-335.

Newell, E. E., McCoy, S. K., Newman, M. L., Wellman, J. D., & Gardner, S. K. (2018). You Sound So Down: Capturing Depressed Affect Through Depressed Language. *Journal of Language and Social Psychology*, *37*(4), 451-474.

Newman, M. L., Groom, C. J., Handelman, L. D., & Pennebaker, J. W. (2008). Gender differences in language use: An analysis of 14,000 text samples. *Discourse Processes*, *45*(3), 211-236.

Niederhoffer, K. G., & Pennebaker, J. W. (2002). Linguistic style matching in social interaction. *Journal of Language and Social Psychology*, *21*(4), 337-360.

Nosek, B. A., & Lindsay, D. S. (2018). Preregistration becoming the norm in psychological science. *APS Observer*, *31*(3).

Pennebaker, J. W., Booth, R. J., & Francis, M. E. (2007). Linguistic inquiry and word count: LIWC [Computer software]. *Austin, TX: liwc. net*, *135*.

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn,27 K. (2015). *The development and psychometric properties of LIWC2015*.

Pennebaker, J. W., & King, L. A. (1999). Linguistic styles: Language use as an individual difference. Journal of personality and social psychology, 77(6), 1296.

Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual review of psychology*, *54*(1), 547-577.

Peplau, L. A. (1985). Loneliness research: Basic concepts and findings. In *Social support: Theory, research and applications* (pp. 269-286). Springer, Dordrecht.

Prinzie, P., Stams, G. J. J., Deković, M., Reijntjes, A. H., & Belsky, J. (2009). The relations between parents' Big Five personality factors and parenting: A meta-analytic review. *Journal of personality and social psychology*, *97*(2), 351.

Regan, P. C., & Joshi, A. (2003). Ideal partner preferences among adolescents. *Social Behavior and Personality: an international journal*, *31*(1), 13-20.

Regan, P. C., Levin, L., Sprecher, S., Christopher, F. S., & Gate, R. (2000). Partner preferences: What characteristics do men and women desire in their short-term sexual and long-term romantic partners?. *Journal of Psychology & Human Sexuality*, *12*(3), 1-21.

Pyszczynski, T., & Greenberg, J. (1987). Self-regulatory perseveration and the depressive self-focusing style: a self-awareness theory of reactive depression. *Psychological bulletin*, *102*(1), 122.

Robinson, L., Harris, A., & Burton, R. (2015). Saving face: Managing rapport in a Problem-Based Learning group. *Active Learning in Higher Education*, *16*(1), 11-24.

Rhodewalt, F., & Eddings, S. K. (2002). Narcissus reflects: Memory distortion in response to ego-relevant feedback among high-and low-narcissistic men. *Journal of Research in Personality*, *36*(2), 97-116.

Romero, D. M., Swaab, R. I., Uzzi, B., & Galinsky, A. D. (2015). Mimicry is presidential: Linguistic style matching in presidential debates and improved polling numbers. *Personality and Social Psychology Bulletin*, *41*(10), 1311-1319.

Rosenberg, M. (1965). Rosenberg self-esteem scale (RSE). *Acceptance and commitment therapy. Measures package*, *61*(52), 18.

Rosenberg, M. (2015). *Society and the adolescent self-image*. Princeton university press.

Ross, C. E., & Broh, B. A. (2000). The roles of self-esteem and the sense of personal control in the academic achievement process. *Sociology of education*, 270-284.

Rude, S., Gortner, E. M., & Pennebaker, J. (2004). Language use of depressed and depression-vulnerable college students. *Cognition & Emotion*, *18*(8), 1121-1133.

Sexton, J. B., Thomas, E. J., & Helmreich, R. L. (2000). Error, stress, and teamwork in medicine and aviation: cross sectional surveys. *Bmj*, *320*(7237), 745-749.

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization model. *Psychological bulletin*, *92*(3), 641.

Shackelford, T. K., & Larsen, R. J. (1999). Facial attractiveness and physical health. *Evolution and Human Behavior*, *20*(1), 71-76.

Shackelford, T. K., Schmitt, D. P., & Buss, D. M. (2005). Universal dimensions of human mate preferences. *Personality and individual differences*, *39*(2), 447-458.

Sibley, C. G., Fischer, R., & Liu, J. H. (2005). Reliability and validity of the revised experiences in close relationships (ECR-R) self-report measure of adult romantic attachment. *Personality and Social Psychology Bulletin*, *31*(11), 1524-1536.

Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological bulletin*, *139*(1), 213.

Sprecher, S., & Duck, S. (1994). Sweet talk: The importance of perceived communication for romantic and friendship attraction experienced during a get-acquainted date. *Personality and Social Psychology Bulletin*, *20*(4), 391-400.

Sprecher, S., Sullivan, Q., & Hatfield, E. (1994). Mate selection preferences: Gender differences examined in a national sample. *Journal of Personality and Social Psychology*, *66*(6), 1074–1080. https://doi.org/10.1037/0022-3514.66.6.1074

Stassen, H. H., Bomben, G., & Günther, E. (1991). Speech characteristics in depression. *Psychopathology*, *24*(2), 88-105.

Statistics Canada. No date. *Table 39-10-0020-01 Mean age and median age at divorce and at marriage, by sex.* Last updated July 21, 2020. DOI: https://doi.org/10.25318/3910002001-eng

Stokoe, E. (2010). "Have you been married, or…?": Eliciting and accounting for relationship histories in speed-dating interaction. *Research on Language and Social Interaction*, *43*(3), 260-282.

Stretch, R. H., & Figley, C. R. (1980). Beauty and the boast: Predictors of interpersonal attraction in a dating experiment. *Psychology: A Journal of Human Behavior*.

Swami, V., Furnham, A., & Joshi, K. (2008). The influence of skin tone, hair length, and hair colour on ratings of women's physical attractiveness, health and fertility. *Scandinavian Journal of Psychology*, *49*(5), 429-437.

Talbot, M. (2008). 20 Gender Stereotypes: Reproduction and Challenge. *The handbook of language and gender*, *25*, 468.

Tanchotsrinon, P., Maneesri, K., & Campbell, W. K. (2007). Narcissism and romantic attraction: Evidence from a collectivistic culture. *Journal of Research in Personality*, *41*(3), 723-730.

Tassinary, L. G., & Hansen, K. A. (1998). A critical test of the waist-to-hip-ratio hypothesis of female physical attractiveness. *Psychological Science, 9*(2), 150-155.

Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of language and social psychology*, *29*(1), 24-54.

Taylor, P. J., Dando, C. J., Ormerod, T. C., Ball, L. J., Jenkins, M. C., Sandham, A., & Menacere, T. (2013). Detecting insider threats through language change. *Law and Human Behavior*, *37* (4), 267–275. https://doi.org/10.1037/lhb0000032

Thomson, R., & Murachver, T. (2001). Predicting gender from electronic discourse. *British Journal of Social Psychology*, *40*(2), 193-208.

Tidwell, N. D., Eastwick, P. W., & Finkel, E. J. (2013). Perceived, not actual, similarity predicts initial attraction in a live romantic context: Evidence from the speed-dating paradigm. *Personal Relationships*, *20*(2), 199-215.

Tolstoy, N. L. & Dole, H. N. (1889). *War and peace*. T.Y. Crowell & Co.

Valentine, K. A., Li, N. P., Meltzer, A. L., & Tsai, M. H. (2020). Mate preferences for warmth-trustworthiness predict romantic attraction in the early stages of mate selection and

satisfaction in ongoing relationships. *Personality and Social Psychology Bulletin*, *46*(2), 298-311.

Valentine, K. A., Li, N. P., Penke, L., & Perrett, D. I. (2014). Judging a man by the width of his face: The role of facial ratios and dominance in mate choice at speed-dating events. *Psychological science*, *25*(3), 806-811.

Van Baaren, R. B., Holland, R. W., Steenaert, B., & van Knippenberg, A. (2003). Mimicry for money: Behavioral consequences of imitation. *Journal of Experimental Social Psychology*, *39*(4), 393-398.

Vanhalst, J., Luyckx, K., Scholte, R. H., Engels, R. C., & Goossens, L. (2013). Low self-esteem as a risk factor for loneliness in adolescence: Perceived-but not actual-social acceptance as an underlying mechanism. *Journal of abnormal child psychology*, *41*(7), 1067-1081.

van Middendorp, H., & Geenen, R. (2008). Poor cognitive-emotional processing may impede the outcome of emotional disclosure interventions. British Journal of Health Psychology, 13, 49-52.

Van Petten, C., & Kutas, M. (1991). Influences of semantic and syntactic context on open-and closed-class words. *Memory & Cognition*, *19*(1), 95-112.

VanVoorhis, C. W., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in quantitative methods for psychology*, *3*(2), 43-50.

Vorauer, J. D., Cameron, J. J., Holmes, J. G., & Pearce, D. G. (2003). Invisible overtures: Fears of rejection and the signal amplification bias. *Journal of Personality and Social Psychology*, *84*(4), 793-812.

Watson, D., & Clark, L. A. (1997). Extraversion and its positive emotional core. In *Handbook of personality psychology* (pp. 767-793). Academic Press.

Weiser, D. A., & Niehuis, S. (2014). Relationship initiation and early dating. *Family Relations*, *59*, F3-F4.

Wetzel, C. G., & Insko, C. A. (1982). The similarity-attraction relationship: Is there an ideal one?. *Journal of Experimental Social Psychology*, *18*(3), 253-276.

Wiederman, M. W., & Allgeier, E. R. (1992). Gender differences in mate selection criteria: Sociobiological or socioeconomic explanation?. *Ethology and Sociobiology*, *13*(2), 115-124.

Zeifman, D., & Hazan, C. (2008). Pair bonds as attachments: Reevaluating the evidence. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 436–455). The Guilford Press.

Zentner, M., & Mitura, K. (2012). Stepping out of the caveman's shadow: Nations' gender gap predicts degree of sex differentiation in mate preferences. *Psychological science*, *23*(10), 1176-1185.

Appendices

Appendix A: Ethics approval, consent forms, and letters of information

Western Research

Research Ethics

Western University Non-Medical Research Ethics Board
NMREB Full Board Initial Approval Notice

Principal Investigator: Dr. Erin Heerey
Department & Institution: Social Science\Psychology,Western University

NMREB File Number: 108313
Study Title: The social signs of romantic attraction: A speed dating study

NMREB Initial Approval Date: October 18, 2016
NMREB Expiry Date: October 18, 2017

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Western University Protocol	Received September 27, 2016	
Advertisement	Poster	2016/09/26
Recruitment Items	Recruitment Email	2016/10/18
Letter of Information & Consent	Online	2016/09/26
Letter of Information & Consent	Written Consent Form	2016/09/26
Letter of Information & Consent	Video Uses Consent Form	2016/09/26
Instruments	All Questionnaires	2016/09/26
Other	Debriefing Form	2016/09/26
Other	Coder Confidentiality Agreement	2016/09/26

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

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

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

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

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

Ethics Officer, on behalf of Dr. Riley Hinson, NMREB Chair

Ethics Officer: Erika Basile ___ Nicole Kaniki ___ Grace Kelly ___ Katelyn Harris ✓ Vikki Tran ___ Karen Gopaul ___

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6G 1G9 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/ethics

Western

Project Title: The social signs of romantic attraction: A speed dating study

Document Title: Video Uses Consent Form

Principal Investigator: Dr Erin Heerey, PhD ()

As you know, the primary purpose for video recording the speed-dating sessions is so that we can answer research questions related to how people use and change their social cues in speed-dating contexts. You have agreed that we may use your video record for this purpose. However, we sometimes use videos for other purposes such as training other researchers in data analysis, demonstrating our experimental procedures in seminars and presenting our findings at conferences. Please decide which (if any) of the following possible uses of your video you consent to by placing your initials in the appropriate spaces. You may consent to as many or as few of these uses as you wish. We will only use your video recordings in ways that you have consented to. You may still participate in the speed dating study, even if you do not consent to any of these additional possible uses of your video. Note that consenting to these items does not guarantee that your videos will be used in these ways.

_____ My videos may be used by **the Social Behaviour Lab** (PI: Dr Erin Heerey) in **future studies** conducted in the lab. I understand that I will be given the opportunity to consent to these studies at later time points, should the lab decide to conduct additional research.

_____ My videos may be shown to other researchers at **conference/seminar presentations**.

_____ My videos (or still photos from them) may be included in **published articles and thesis materials**.

_____ My videos may be shown to other researchers at **training workshops**.

_____ My videos may be shown to the **general public** as part of research reports or media stories detailing our findings.

_____ My videos may be shown as part of demonstrations to **business people** interested in using the video decoding techniques we develop on their own data.

_____ My videos may be shown to interested **students at Western University** in the context of social psychology classes.

_____ My videos may be shown to interested **students at other universities** in the context of social psychology classes.

_____	_____	_____
Print Name	Signature	Date
_____	_____	_____
Experimenter's Printed Name	Experimenter's Signature	Date

Western

Project Title: The social signs of romantic attraction: A speed dating study

Document Title: Study Consent Form

Principal Investigator: Dr Erin Heerey, PhD ()

You have now had the opportunity to read the Letter of Information and ask questions about the study. If you choose to participate, please respond to the following items by placing your initials in the blank space before the item.

_____ I have read and understood the Letter of Information.

_____ Any questions I chose to ask have been answered to my satisfaction.

_____ I understand that I may withdraw from the study at any time and do not need to provide a reason for doing so.

_____ I understand that I am free to skip any questionnaire items that I do not wish to answer.

_____ I understand that I may end "dates" early if I wish by telling the experimenter.

_____ I understand that the speed-dating session will be video recorded and the data used for research purposes as stated in the Letter of Information.

_____ I understand the risks associated with the study and will take appropriate measures to avoid them (e.g., drinking responsibly on my dates, communicating clearly, meeting in public rather than secluded spaces, making sure that a trusted other knows where I am and when I expect to return, etc.).

_____ I consent to participate.

Please also choose ONE of the following options by placing your initials in the appropriate space.

_____ YES! Please contact me when future research opportunities arise.

_____ NO! Please DO NOT contact me when future research opportunities arise.

_____	_____	_____
Print Name	Signature	Date
_____	_____	_____
Experimenter's Printed Name	Experimenter's Signature	Date

Western

Project Title: The social signs of romantic attraction: A speed dating study

Document Title: Letter of information

Principal Investigator: Dr Erin Heerey, PhD ()

Invitation to Participate: You are being invited to participate in a research study investigating how people signal their romantic attraction. You are being invited to participate because you responded to an email or a poster directing you to the study website and clicked the link that brought you here. We are inviting 90 women and 90 men, age 18 to 21, to participate in one of six speed-dating events.

Why is this study being done? The purpose of this study is to understand how people alter their social behavior when they feel romantically attracted to someone. We are interested in learning 1) how people vary their social behaviour with different conversation partners; 2) which behavioural indicators of attraction correspond with self-reported liking measures; 3) how people guess when another person likes them; and 4) whether behaviour at an initial meeting predicts long-term relationship outcomes. In addition, many online dating services make claims that they can "scientifically match" people based on the profiles those people complete and what they say they are interested in when looking for a relationship. Although we will not be offering participants matches in this way, we intend to validate this claim by looking at the correspondence between profiles when participants actually do decide they like one another.

What are the study procedures? If you decide to participate, we will ask you to:

- Complete a personal profile (online) that asks about aspects of your personality and how you see yourself, your dating preferences, and some personal information about yourself (this is similar to a dating profile you might complete online at a dating website, even though the information you provide will remain private and will never be available to other study participants). We will also ask you to submit contact details (email address and mobile phone so that the study staff can contact you before the speed-dating session).
- Provide a first name (this might be a nickname you like to use), a photo (a selfie of you that you like) that will identify you to potential dates after the speed-dating session, and an email address at which you would like potential dates to contact you (this should be an email address that you wish only potential dates to use, rather than your personal or

official student email addresses). These are required for the purposes of the study procedures.

- Complete a speed-dating session in which you meet 12 – 15 potential partners of the opposite sex and have short (4-minute) "dates" with each of them. These conversations will be video recorded. The data from the sessions will be analyzed in the context of the study, to address the research questions above.
- After each "date" we will ask you to complete a quick questionnaire about your perceptions of the person you just met.
- After your speed-dating session, we will ask you decide which of your speed dates you'd like to go on a real date with. If the people you like also like you, we will provide you with their contact details and vice versa. This will happen online.
- Finally, if you match with one or more people in the study, we will ask you to complete a series of online follow-up questionnaires at several stages post-dating session that will tell us whether you have developed relationships with any of the people you met during the dating session. These will help us to make sense of our data and answer our research questions.

How long will you be in this study? Completing the questionnaire portion of the study will take you about an hour and you will do this online from any computer you choose. Participation in the actual speed-dating session takes about 1.5 hours and the session will take place in the Social Science Centre. The computer will give you some choices of study session times. Based on your selections, we will assign you to a study session. Once the speed-dating session has been scheduled, you will receive information about the room location via email and/or text message. The follow-up questionnaires will also be completed online. We anticipate that these will take 1 to 10 minutes to complete at each of six follow-up time-points.

If you opt in, we may also offer you the opportunity to participate in other studies conducted in our laboratory. Some of these may be paid studies and some may offer you course credit if you choose. We will offer you these research opportunities via email. If you opt in to receiving these emails, you are under no obligation to participate in any of these future studies.

What are the risks and harms of participating in this study? This study contains several potential risks. The main risks for the questionnaire portions of the study are that 1) you may feel uncomfortable answering some of the questions on the questionnaires. If you feel uncomfortable answering any items, you may skip them. Note that none of the experimenters or other participants will know how you respond on these questionnaires. This information is available to the research team only (the PI and PhD students in the Social Behaviour Lab) and will only be available after the speed dating session is complete. 2) You may feel bored when answering the questionnaires. We have designed the study to include as few questionnaires as possible. However, with a study of this scope, it is necessary to ask for more information than we would in a typical study. This should be no worse than sitting in a lecture or doing a short

assignment for a class. If you have questions about this, please contact the investigator to discuss (Dr Erin Heerey).

During the speed-dating session, there is a possibility that you might feel awkward or uncomfortable during the dates. You may talk about whatever you wish during your speed dates. If you are not sure what to talk about, you might try some typical conversation starters (e.g., "Where are you from?" "Do you enjoy living in London?" "What do you like to do for fun?"). These questions are designed to facilitate polite "small talk." You are free to choose whatever topics you want and you may lead the conversation in any direction you prefer. The interactions are only 4-minutes long, but please let one of the experimenters know if you feel uncomfortable at any point and you may stop the interaction or the study.

After the speed-dating session, the main study risks are that 1) you may not match with one or more of the people you hope to see again. Although it is common that you may not match with one or two of the people you like, it is rare but possible that you might not match anyone you like. This might make you feel upset or rejected. 2) You may match and have the opportunity to date someone you met during the study. Although we hope that this is a positive experience for you, relationships can fail for many reasons. This sometimes leads to upset feelings. If you are worried about social rejection you may have experienced or are feeling upset by some aspect of your relationship, please talk with someone who is qualified to help. You may make an individual counselling appointment by attending the walk in clinic at Western University Psychological Services (4100 Student Services Building) or by phoning a help line (e.g.). 3) Although all the people you will meet during the study are Western University students aged 18 to 21, you should be aware that they have not been screened prior to participation in any way. We know that abuse and assault within relationships occur on university campuses and are extremely traumatic to those that experience such outcomes. We have provided a series of tips and resources on our website (http://psychology.uwo.ca/faculty/socialbehaviourlab/SpeedDate /Safety.html) designed to help you stay safe from such events. These include following common-sense advice when you go out on dates with unfamiliar others, such as limiting your drinking/substance use to ensure that you remain in control of your own behavior; ensuring that trusted others know your whereabouts and when you expect to return; establishing your limits for intimacy before you go out so that you can communicate your intentions clearly; meeting in public rather than secluded places, etc. We strongly encourage both men and women to follow these tips to keep themselves safe. In the event that abuse or assault does occur, please contact one of the available crisis centres (]; the Sexual Assault Centre Crisis Line []) or the Western University Crisis Centre ().

What are the benefits of participating in this study? Other than that you might find it interesting and enjoyable, there is no direct benefit to you for participating in this study. However, your participation might help us to make sense of how people use social cues and alter their behaviour in different types of social settings.

How will participants' information be kept confidential? All information that we obtain from you is confidential with the exception of the information you specifically state we may provide to potential dates if you match (your first name, photograph and dating email address as noted

above). All data will be collected using a unique participant code. These data will be collected electronically and stored in password-protected, encrypted files for a minimum of 5 years. Identifying information such as your name, email, gender, age and photo will be stored securely and separately from the main study information and only linked via a unique participant ID. Recordings of the social interactions will be coded first by a computer program and then verified by trained human coders. The coders work under strict confidentiality guidelines and will never be people you personally know. While we do our best to protect your information there is no guarantee that we will be able to do so. The inclusion of your video record may allow someone to identify you. To minimize this possibility, we do not transport data off campus and all video/audio data are confined to campus servers/hard-drives protected by the UWO firewall and building security protocols.

Usually it is only the research staff that will have access to the data. However, representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. If study results are published, no information that identifies you will be included.

Please also note that even though we will not reveal what you specifically talk about to others, the people you meet in the study may do so. We encourage all participants to use their discretion in terms of what they reveal to their dates. We also encourage all participants to respect the people they meet by refraining from discussing individual conversations after the study session.

Can participants choose to leave the study? Participation in this study is voluntary. You are free to withdraw from the study at any time and without penalty, even after the research has concluded. You do not need to provide a reason. You may withdraw from the study during the speed-dating session by telling an experimenter. Alternately, you may contact Dr. Erin Heerey () and request the removal of your data. All data associated with your ID code will then be removed from analyses and destroyed.

Are participants compensated to be in this study? Unlike private speed-dating companies, who charge $50 to $100 for a speed-dating session, we offer our speed-dating sessions at no cost. Thus, the speed-dating session is free. However, we will compensate participants for the time they spend completing follow-up questionnaires. We will pay you $3 for each of the six online follow-up questionnaires you complete ($18 total). To incentivize participation, participants who complete all six follow-up questionnaires will receive an extra $7 bonus (for a grand total of $25). If you only complete some of the follow-up questionnaires, you will not receive the bonus. All participants who make at least one match in the speed-dating portion of the study will be included in the follow-up portion of the study.

What are the rights of participants? Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions and to withdraw from the study at any time.

If you choose not to participate or choose to leave the study at any time it will have no effect on your academic standing. We will give you new information that is learned during the study

that might affect your decision to stay in the study. You do not waive any legal right by consenting to this study.

Whom do participants contact for questions? If you would like more information, please contact Dr Erin Heerey ().

If you have any questions about your rights as a research participant or concerns about the conduct of this study, you may contact The Office of Research Ethics, email: .

Because the initial questionnaire takes place online, we will ask you to complete an electronic version of the consent form before you participate. You will receive a PDF of this letter via email when you finish completing the online consent form. You may also download a copy by clicking the link below. We will also ask you to sign a formal consent form (the same one you complete online) and a specific video consent form when you arrive for the speed-dating session (You may download a copy of both consent forms by clicking the link below).

When you click the <Next Page> button, you will be asked to consent to the following items:

- I have read and understood the Letter of Information.
- Any questions I chose to ask have been answered to my satisfaction.
- I understand that I may withdraw from the study at any time and do not need to provide a reason for doing so.
- I understand that I am free to skip any questionnaire items that I do not wish to answer.
- I understand that I may end “dates” early if I wish by telling the experimenter.
- I understand that the speed-dating session will be video recorded and the data used for research purposes as stated above.
- I understand the risks associated with the study and will take appropriate measures to avoid them (e.g., drinking responsibly on my dates, communicating clearly, meeting in public rather than secluded spaces, making sure that a trusted other knows where I am and when I expect to return, etc.).
- I consent to participate.

Affirming (saying “yes” to) these items indicates that you consent to participate.

You will also be asked whether you “opt in” to receiving emails about other studies our laboratory is conducting. These will be relatively infrequent (one to two per year). You may choose whether you want to participate in these studies independently. Your decision to opt in/out of receiving these emails will not affect participation in the current study and you may choose to discontinue receiving these emails at any time by simply replying to the email you receive with a message indicating that you wish to opt out of receiving them.

You will be asked to respond to ONE of the following items:

- YES! Please contact me when future research opportunities arise.
- NO! Please DO NOT contact me when future research opportunities arise.

This letter is yours to keep for future reference.

Appendix B: Demographics, Factors in Choosing a Mate, Rosenberg Self-Esteem Scale (RSE), Big Five Inventory, Experiences in Close Relationships – Revised ECR-R, and Post-date Questionnaires

Demographic Questions

Age: _____(this question is mandatory)

Sex: _____(this question is mandatory)

Religion:_____

Class or year: _____

What is your major or intended major: _____

What province (or country and province if foreign) are you from: _____

Factors in Choosing a Mate

Please answer the following questions. If you wish to skip an item, please leave it blank.

At what age would you prefer to marry? _____

What age difference would you prefer between you and your spouse? _____ years

Whom would you prefer to be older (please choose): self spouse

Please evaluate the following factors in choosing a mate using the scale below.

0	**1**	**2**	**3**
Indispensable	Important, but not indispensible	Desirable, but not very important	Irrelevant or unimportant

1. Good cook and housekeeper
2. Pleasing disposition
3. Sociability
4. Similar educational background
5. Refinement, neatness
6. Good financial prospect
7. Chastity (no previous experience in sexual intercourse)
8. Dependable character
9. Emotional stability & maturity
10. Desire for home and children
11. Favourable social status or rating
12. Good looks
13. Similar religious background
14. Ambition & industriousness
15. Similar political background
16. Mutual attraction—love
17. Good health
18. Education & intelligence

Below is a set of characteristics that might be present in a potential marriage partner. Please categorize them on their desirability in someone you might marry. Give a "1" to your highest priority characteristics in a potential mate, a "2" to your medium priority characteristics in a potential mate, a "3" to the lowest priority characteristics.

1. Kind & understanding
2. Religious
3. Exciting personality
4. Creative & artistic
5. Good housekeeper
6. Intelligent
7. Good earning capacity
8. Wants children
9. Easygoing
10. Good heredity
11. College graduate
12. Physically attractive
13. Healthy
14. Good sense of humour

Rosenberg Self-Esteem Scale (RSE)

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.

Strongly Agree Agree Disagree Strongly Disagree

2. At times I think I am no good at all.

Strongly Agree Agree Disagree Strongly Disagree

3. I feel that I have a number of good qualities.

Strongly Agree Agree Disagree Strongly Disagree

4. I am able to do things as well as most other people.

Strongly Agree Agree Disagree Strongly Disagree

5. I feel I do not have much to be proud of.

Strongly Agree Agree Disagree Strongly Disagree

6. I certainly feel useless at times.

Strongly Agree Agree Disagree Strongly Disagree

7. I feel that I'm a person of worth, at least on an equal plane with others.

Strongly Agree Agree Disagree Strongly Disagree

8. I wish I could have more respect for myself.

Strongly Agree Agree Disagree Strongly Disagree

9. All in all, I am inclined to feel that I am a failure.

Strongly Agree Agree Disagree Strongly Disagree

10. I take a positive attitude toward myself.

Strongly Agree Agree Disagree Strongly Disagree

Scoring:

Items 2, 5, 6, 8, 9 are reverse scored. Give “Strongly Disagree” 1 point, “Disagree” 2 points, “Agree” 3 points, and “Strongly Agree” 4 points. Sum scores for all ten items. Keep scores on a continuous scale. Higher scores indicate higher self-esteem.

Big Five Inventory

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree Strongly
1	2	3	4	5

I see Myself as Someone Who...

____1. Is talkative	____23. Tends to be lazy
____2. Tends to find fault with others	____24. Is emotionally stable, not easily upset
____3. Does a thorough job	____25. Is inventive
____4. Is depressed, blue	____26. Has an assertive personality
____5. Is original, comes up with new ideas	____27. Can be cold and aloof
____6. Is reserved	____28. Perseveres until the task is finished
____7. Is helpful and unselfish with others	____29. Can be moody
____8. Can be somewhat careless	____30. Values artistic, aesthetic experiences
____9. Is relaxed, handles stress well	____31. Is sometimes shy, inhibited
____10. Is curious about many different things	____32. Is considerate and kind to almost everyone
____11. Is full of energy	____33. Does things efficiently
____12. Starts quarrels with others	____34. Remains calm in tense situations
____13. Is a reliable worker	____35. Prefers work that is routine
____14. Can be tense	____36. Is outgoing, sociable
____15. Is ingenious, a deep thinker	____37. Is sometimes rude to others
____16. Generates a lot of enthusiasm	____38. Makes plans and follows through with them
____17. Has a forgiving nature	____39. Gets nervous easily
____18. Tends to be disorganized	____40. Likes to reflect, play with ideas
____19. Worries a lot	____41. Has few artistic interests

____20. Has an active imagination

____21. Tends to be quiet

____22. Is generally trusting

____42. Likes to cooperate with others

____43. Is easily distracted

____44. Is sophisticated in art, music, or literature

Scoring:

BFI scale scoring ("R" denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

Experiences in Close Relationships – Revised ECR-R

The statements below concern how you feel in emotionally intimate relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by circling a number to indicate how much you agree or disagree with the statement.

	QUESTION	1=Strongly Disagree.....7=Strong Agree						
1.	I'm afraid that I will lose my partner's love.	1	2	3	4	5	6	7
2.	I often worry that my partner will not want to stay with me.	1	2	3	4	5	6	7
3.	I often worry that my partner doesn't really love me.	1	2	3	4	5	6	7
4.	I worry that romantic partners won't care about me as much as I care about them.	1	2	3	4	5	6	7
5.	I often wish that my partner's feelings for me were as strong as my feelings for him or her.	1	2	3	4	5	6	7
6.	I worry a lot about my relationships.	1	2	3	4	5	6	7
7.	When my partner is out of sight, I worry that he or she might become interested in someone else.	1	2	3	4	5	6	7
8.	When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.	1	2	3	4	5	6	7
9.	I rarely worry about my partner leaving me.	1	2	3	4	5	6	7
10.	My romantic partner makes me doubt myself.	1	2	3	4	5	6	7
11.	I do not often worry about being abandoned.	1	2	3	4	5	6	7
12.	I find that my partner(s) don't want to get as close as I would like.	1	2	3	4	5	6	7
13.	Sometimes romantic partners change their feelings about me for no apparent reason.	1	2	3	4	5	6	7
14.	My desire to be very close sometimes scares people away.	1	2	3	4	5	6	7
15.	I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.	1	2	3	4	5	6	7
16.	It makes me mad that I don't get the affection and support I need from my partner.	1	2	3	4	5	6	7
17.	I worry that I won't measure up to other people.	1	2	3	4	5	6	7
18.	My partner only seems to notice me when I'm angry.	1	2	3	4	5	6	7
19.	I prefer not to show a partner how I feel deep down.	1	2	3	4	5	6	7
20.	I feel comfortable sharing my private thoughts and feelings	1	2	3	4	5	6	7

	with my partner.							
21.	I find it difficult to allow myself to depend on romantic partners.	1	2	3	4	5	6	7
22.	I am very comfortable being close to romantic partners.	1	2	3	4	5	6	7
23.	I don't feel comfortable opening up to romantic partners.	1	2	3	4	5	6	7
24.	I prefer not to be too close to romantic partners.	1	2	3	4	5	6	7
25.	I get uncomfortable when a romantic partner wants to be very close.	1	2	3	4	5	6	7
26.	I find it relatively easy to get close to my partner.	1	2	3	4	5	6	7
27.	It's not difficult for me to get close to my partner.	1	2	3	4	5	6	7
28.	I usually discuss my problems and concerns with my partner.	1	2	3	4	5	6	7
29.	It helps to turn to my romantic partner in times of need.	1	2	3	4	5	6	7
30.	I tell my partner just about everything.	1	2	3	4	5	6	7
31.	I talk things over with my partner.	1	2	3	4	5	6	7
32.	I am nervous when partners get too close to me.	1	2	3	4	5	6	7
33.	I feel comfortable depending on romantic partners.	1	2	3	4	5	6	7
34.	I find it easy to depend on romantic partners.	1	2	3	4	5	6	7
35.	It's easy for me to be affectionate with my partner.	1	2	3	4	5	6	7
36.	My partner really understands me and my needs.	1	2	3	4	5	6	7

Scoring:

Scoring Information: The first 18 items above comprise the attachment-related anxiety scale. Items 19 – 36 comprise the attachment-related avoidance scale. In real research, the order in which these items are presented should be randomized. To obtain a score for attachment-related anxiety, please average a person's responses to items 1 – 18. However, because items 9 and 11 are "reverse keyed" (i.e., high numbers represent low anxiety rather than high anxiety), you'll need to reverse the answers to those questions before averaging the responses. (If someone answers with a "6" to item 9, you'll need to re-key it as a 2 before averaging.) To obtain a score for attachment-related avoidance, please average a person's responses to items 19 – 36. Items 20, 22, 26, 27, 28, 29, 30, 31, 33, 34, 35, and 36 will need to be reverse keyed before you compute this average.

Post Date Questionnaire

Think about the date you just finished.

How do you see your date? Draw a "|" on the line to indicate your rating.

I see my date as...	**Rating**
physically attractive	Strongly Disagree ——— Strongly Agree
sexy/hot	Strongly Disagree ——— Strongly Agree
good career prospects	Strongly Disagree ——— Strongly Agree
ambitious/driven	Strongly Disagree ——— Strongly Agree
fun/exciting	Strongly Disagree ——— Strongly Agree
funny	Strongly Disagree ——— Strongly Agree
responsive	Strongly Disagree ——— Strongly Agree
dependable/ trustworthy	Strongly Disagree ——— Strongly Agree
friendly/nice	Strongly Disagree ——— Strongly Agree
charismatic	Strongly Disagree ——— Strongly Agree
confident	Strongly Disagree ——— Strongly Agree
assertive	Strongly Disagree ——— Strongly Agree
smart	Strongly Disagree ——— Strongly Agree
intellectually sharp	Strongly Disagree ——— Strongly Agree

Please rate the extent to which you agree with each of the items below.

Item	**Rating**
My date and I seemed to have a lot in common.	Strongly Disagree ——— Strongly Agree
My date and I seemed to have similar personalities.	Strongly Disagree ——— Strongly Agree
I really liked my date.	Strongly Disagree ——— Strongly Agree
I was attracted to my date.	Strongly Disagree ——— Strongly Agree
My date and I had a real connection.	Strongly Disagree ——— Strongly Agree
I am likely to say 'yes' to my date.	Strongly Disagree ——— Strongly Agree
My date is likely to say 'yes' to me.	Strongly Disagree ——— Strongly Agree

Partner ID:_____

Curriculum Vitae

Name:	Negar Mohammad Vali Samani
Post-secondary Degrees:	The University of Western Ontario London, Ontario, Canada 2014-2018 B.A. The University of Western Ontario London, Ontario, Canada 2018-2020 M.Sc. Candidate.
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