The Roles of Expressivity and Interpersonal Judgment Accuracy in Dyadic Rapport across the Lifespan

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Abstract of Dissertation

Rapport is a term that describes interactions between people, whether they are meeting for the first time or are longtime friends. The experience of rapport is only measurable at the dyadic or group level because it is established via a perception-action feedback loop within a dyad, based on individuals’ sending and interpreting each other’s nonverbal signals as intentions to affiliate (Tickle-Degnen, 2006). Therefore, the experience of rapport is molded by characteristics of the interacting partners, especially by their expressivity (i.e., how much they reveal their feelings through observable expressions, such as smiling and gesturing) as well as by interpersonal judgment accuracy (i.e., the ability to correctly perceive a social partners’ characteristics such as personality traits). Because of the importance of individuals’ social skills in establishing rapport, one particular individual characteristic of interest is age, because it denotes a level of expertise based on the accumulation of social experiences over time (Hess, Osowski, & Leclerc, 2005).

The two social qualities that have particular importance for rapport, expressivity and interpersonal judgment accuracy, may change as people get older. First, older adults may have a decreased tendency to express anger (Coats & Blanchard-Fields, 2008), potentially revealing a preference for passively handling emotional reactions in service of relationship maintenance (Blanchard-Fields, 1997). Second, older adults do well in judging traits from social partners that they are familiar with compared to judging the qualities of people they have never met (Stanley & Isaacowitz, 2015).

In this dissertation, two studies investigated how the experience of dyadic rapport is influenced by expressivity, interpersonal judgment accuracy, and the ages of interacting partners. In Study 1, 45 young adults (ages 18-24; $M_{age} = 19.75, SD = 1.59$) and 45 older adults (ages 61-
were randomly assigned to interact with a same aged partner or in a mixed-age dyad (i.e., a young adult paired with an older adult). There were 15 dyads of each type that engaged in a cooperative activity together. Expressivity (measured from video clips of the interaction) was related to rapport in young adult same-age dyads (replicating past research, Bernieri et al., 1996), but was not related to rapport in dyads with older adults. Furthermore, an individuals’ interpersonal judgment accuracy (measured as judgments of their partner’s personality traits) was significantly related to expressivity, but again only in young adults.

Study 2 extended these findings in a sample of 125 young adults (\(M_{age} = 18.82, SD = 1.21\), range 18-22) and 95 older adults (\(M_{age} = 69.88; SD = 6.69\), range 60-90). As in Study 1, participants were randomly assigned to interact with another participant of their own age or a different age group, but this time in two activities: one cooperative and one adversarial. Older adults’ expressive behaviors in the dyad were not representative of their typical expressivity (measured outside of the dyad), but rather older adults were more expressive while engaging in the interaction compared to young adults. Young adults’ expressive behaviors were lower in mixed-age dyads. Furthermore, a multiple regression on dyad rapport indicated that the interpersonal skills of individuals and the number of older adults in a dyad predicted dyad rapport. Therefore, dyadic experiences of rapport may be strengthened by individuals who are skilled in perceiving the qualities of their social partner, which may be a skill that improves in older age. Understanding these social changes with age may be helpful for informing strategies for effective communication and building relationship with individuals of different ages.
# Table of Contents

Abstract 2

Table of Contents 4

List of Tables and Figures 5

Chapter 1: Introduction 6

Chapter 2: Age and the Ecology of Rapport 25

Chapter 3: Differential Impact of Age, Expressivity, and Interpersonal Accuracy on Rapport 41

Chapter 4: General Discussion 63

References 70

Tables and Figures 86

Appendix 106
List of Tables and Figures

Table 1: Study 1: Means and standard deviations for background measures  86
Table 2: Study 1, Mean participant rapport ratings 87
Table 3: Study 1, Dyad rapport 88
Table 4: Study 1, Inter rater reliability for behavioral cues 89
Table 5: Study 1, Intercue correlations for individual cues 90
Table 6: Study 1: Intercue correlations for dyad cues 91
Table 7: Study 1, Correlations between individual cues and dyad rapport 92
Table 8: Study 1, Correlations between dyad cues and dyad rapport 93
Table 9: Study 1, Means and standard deviations of coded expressivity 94
Table 10: Study 1, Means and standard deviations of interpersonal accuracy 95
Table 11: Study 2, Means and standard deviations for background measures 96
Table 12: Study 2, Measurements of dispositional expressivity 97
Table 13: Study 2, Intercorrelations of dispositional expressivity measures 98
Table 14: Study 2, Conversational expressivity 99
Table 15: Study 2, Computer-based interpersonal judgment accuracy 100
Table 16: Study 2, Personality self-other agreement 101
Table 17: Study 2, Rapport judgment differences 102
Table 18: Study 2, Linear regression model predicting dyad rapport 103
Figure 1: Study 1, Average rapport by dyad type 104
Figure 2: Study 2, Change in conversational from dispositional expressivity 105
Chapter 1: Introduction

Rapport is a term that describes interactions between people, whether they are new acquaintances or longtime friends. Experiences that are high in rapport are not only satisfying and enjoyable, but also serve an instrumental role in fostering cooperation, promoting learning, resolving conflicts, and in accomplishing the interpersonal goals of one or both interacting partners (LaFrance, 1990; Drolet & Morris, 2000; Nguyen, 2007; Tickle-Degnen & Gavett, 2003). Because rapport is comprised of the feelings and expressive behaviors that emerge from the individuals involved, characteristics of the individuals themselves may be influential in how rapport is established. One particular individual characteristic of interest is age, because it denotes a level of expertise based on the accumulation of social experiences over time (Hess, Osowski, & Leclerc, 2005). Additionally, socioemotional selectivity theory (SST) predicts that the social lives of older adults are structured in order to maximize emotional benefits (Carstensen, 1993). Specifically, older adults’ social interactions are guided more by emotion regulation goals, as opposed to information-seeking goals of younger adults, which has implications for how they approach relationships and communicate with others. Thus, an aging perspective may reveal individual differences in the theoretical and empirical assumptions about the nature of rapport.

Individuals experience non-kin social interactions with same-aged peers as well as younger and older adults throughout their lives (e.g., student-teacher, doctor-patient, workplace colleagues, etc.), and these particular age dynamics may affect how rapport is established. Additionally, healthy aging is associated with various transitions, and in the case of psychological processes, many occur in the social domain (e.g., family dynamics, dealing with loss, etc.). Thus, while studying individual-level changes (i.e., memory, etc.) may provide some
insight into understanding aging and psychological development, studying interpersonal
processes, such as rapport, are crucial for understanding the broader context of older adults’
socioemotional functioning. The following literature review summarizes the current research on
rapport in initial interactions, with an emphasis on the roles of expression and detection of
nonverbal behaviors in establishing rapport. Additionally, relevant research on socioemotional
changes associated with aging is highlighted, specifically in terms of interpersonal judgments
and expressiveness, which has implications for understanding how rapport is established in
same- and mixed-age interactions. Next is an an empirical approach that is aimed at evaluating
the experience of rapport through the lens of socioemotional changes in healthy adult aging, with
the goal of elucidating how social experiences and skills develop with age.

The Rapport Construct: Definition and Measurement

A general understanding of the term “rapport” is achieved through such phrases as
“clicking” or “having chemistry”. It is the experience that clinicians aim to have with their
patients, salespeople with prospective clients, etc. Regardless of the context, rapport appears to
be the first step necessary to achieve some broader positive outcomes, such as medical adherence
or landing a sale. However, despite the ubiquity of the phrase in a variety of fields, little research
has focused on operationalizing this construct. In fact, Jorgensen (1992) described rapport as “a
term that resists precise definition” (p. 148). One of the particular difficulties in defining rapport
lies in its dyadic nature, or the fact that it is built upon the feelings and behaviors of interacting
partners. Therefore, rapport is not measurable at an individual level as would be an emotional
state or personality trait.

Tickle-Degnen and Rosenthal (1990) were the first to introduce a theoretical model of
rapport, and to date it is the only theoretical model on rapport in the psychology literature.
According to this model, rapport is not only an emergent property of an interaction, but it also has measurable behavioral manifestations. Rapport among interacting partners is established via a perception-action feedback loop within a dyad, based on individuals’ sending and interpreting each other’s nonverbal signals as intentions to affiliate (Tickle-Degnen, 2006). For example, a dyad may not experience rapport if one person felt positive and attentive feelings for their partner, but these feelings were not reciprocated, or at least not visibly reciprocated in their partner’s nonverbal expressions. Conversely, rapport may be felt by an individual whose partner exhibited nonverbal behaviors indicating positivity (for cultural norms or other reasons), but did not actually feel interest or warmth towards them (Tickle-Degnen & Rosenthal, 1990). These examples highlight two main points about rapport: 1) paying close attention to a partner’s nonverbal behaviors is essential in order to interpret them correctly as well as to appropriately respond to them (Buck, 1990) and 2) rapport is the combined experience of a dyad, and does not lie within one individual’s self report.

Importantly, Tickle-Degnen and Rosenthal (1990) propose that rapport is not measurable at the individual level, as one would measure an affective state or a personality trait, although some individuals may be “particularly adept at developing rapport in certain situations” (p. 286). Therefore, the experience of rapport is only measurable at the dyadic or group level; if one person experiences feelings of rapport while their interaction partner doesn’t, by definition the dyadic experience of rapport would suffer. In dyadic contexts, the experience of rapport may take one of three forms: 1) reciprocal rapport, in which both participants agree on having experienced rapport, 2) unilateral rapport, in which only one individual experiences rapport, or 3) no rapport, where neither participant experiences rapport (Cordella & Kokubu, 2016). This
perspective underscores the contributions of both actors in a dyadic interaction, such that rapport emerges through the dynamic interplay of expressing and decoding different expressive cues.

According to Tickle-Degnen and Rosenthal (1990), nonverbal signals related to the behavioral manifestation of rapport broadly fall under three fundamental components of the rapport construct: mutual attention, positivity, and coordination. Mutual attentiveness refers to a high degree of involvement, cohesiveness, and unity, and is reflected through body postures that represent openness to communication. Positivity, defined as mutual feelings of caring and friendliness, is expressed through smiling and head nodding, which indicate liking and approval. Coordination, which refers to harmony, balance, and being in sync, is represented nonverbally through postural mimicry and interactional synchrony. Although positivity is similar to mutual attentiveness, the latter is not valenced; for example, two individuals may be highly attentive to each other during a pleasant conversation as well as an aggressive confrontation. Similarly, although coordinated behavior may be associated with positive feelings, coordination does not require positive valence, such as when people are walking in sync with strangers at a busy crosswalk. Tickle-Degnen and Rosenthal (1990) suggest that these three components emerge throughout an interaction, although they may be weighted differently at different time points.

In order to investigate potential correlates and outcomes of rapport, some studies have utilized third-party judgments of rapport in place of ratings from the interacting partners themselves in instances when targets’ self-reports are unavailable. For example, observer-rated judgments of rapport were correlated with behavioral cues (e.g., anger, warmth) present during medical students’ interactions with patients (Hall, Roter, Blanch, & Frankel 2009). Additionally, extraverts were judged by third-party observers as being more effective in building rapport, but only in the presence of an affiliation goal (Duffy & Chartrand, 2015). However, the few studies
have looked at the accuracy of rapport judgments based on the targets’ self reported experiences have revealed that context plays an important role in perceiver accuracy in judging rapport. In young adult same-aged dyads, observers’ rapport judgments made from excerpts of an interaction 50 seconds long were significantly correlated with the targets’ self-reported experience of rapport (Bernieri, Gillis, Davis, & Grahe, 1996), but the accuracy of these judgments was higher when observers judged rapport in a cooperative context (planning a trip) versus an adversarial one (a debate). Therefore, observer-rater rapport may be an incomplete measurement of the dyad’s true experience.

Observer judgments are probabilistically related to the existence of certain behavioral cues in the context they are judging (called “vicarious mediation”, Brunswik, 1955). This process is akin to when a doctor makes a diagnosis based on the presence of symptoms (fever, chills, etc). In terms of rapport, the relationships between observable cues (e.g., smiling, head nodding) and perceivers’ judgments of whether a dyad is experiencing rapport may vary as a function of the interaction context (i.e., cooperative versus adversarial; Bernieri et al. 1996). Additionally, observers may not only pay attention to different cues depending on the context, but observers’ accuracy may vary as a function of attention to valid versus invalid cues in their relationship to the to-be-judged criterion. For example, individuals are less accurate in judging the rapport experienced by targets that were engaged in an adversarial activity versus a cooperative one, perhaps because of over-reliance on invalid cues (Bernieri et al., 1996). In other words, observers may be attuned to some cues more than others, which in turn influences their judgments; this would suggest that observers’ consensus may not be a good criterion for rapport because it is defined through the targets’ experiences. For example, the measurement of physical pain is independent of what observers think, and is defined as a targets’ self report. In contrast, a
socially defined variable like expressed hostility or aggression, may be appropriately assessed through consensus judgments (Hall, Bernieri, & Carney, 2005). In the case of rapport, obtaining the experiences of interacting partners themselves is perhaps the best method for appropriately measuring the rapport construct.

**Correlates of Rapport**

Dyads experiencing high rapport exhibit distinctive nonverbal behaviors from those who do not (Bernieri, 2005; Bernieri et al., 1996), but the particular behaviors may be context-dependent. For example, when young adult mixed-gender dyads engaged in a debate, high rapport was associated with interpersonal proximity, back-channel responses (e.g., head nods and uh-hums), and female gesturing. When the same individuals planned a trip together, high rapport was associated with proximity, synchrony, and expressivity (animated behavioral expressions); individual cues were averaged between dyad members in order to demonstrate that highly expressive dyads were rated as having more rapport than less expressive dyads (Bernieri et al., 1996). Additionally, ratings of higher “coordinated expressivity”, or high levels of activity and synchrony, was predictive of higher dyadic rapport in two different contexts, one in which young adult partners had to design a menu together and one in which they discussed “near misses” and potentially dangerous scenarios (Nelson, Grahe, & Ramsayer, 2016). Thus, the social context may determine the particular expressive behaviors that will be relevant for individuals to communicate their intentions to affiliate with their partner. It may be the case that individuals attend to the facial cues of their social partners more when they are working together towards a common goal, in contrast to when they are in opposition.

Additionally, not only do different expressive cues emerge based on the interaction context, but also perceivers’ reliance on some cues over others may vary as a function of
perceiver characteristics, such as age (Bernieri et al., 1996; Vicaria, Bernieri, & Isaacowitz, 2015). Judgment accuracy between age groups did not differ, but older adults’ judgments were more sophisticated in differentiating between valid cues (i.e., predictive of target experiences, such as interpersonal synchrony) from invalid cues (i.e. not predictive of target experiences, such as attractiveness). Because a study involving young adults receiving immediate performance feedback (i.e., whether an observer was right or wrong) demonstrated that feedback improved accuracy in judging rapport (Gillis, Bernieri, & Wooten, 1995), it was expected that older adults, through a lifetime of experience with social interactions, would be more accurate observers. Therefore, taking individual characteristics, such as age, into account may reveal important aspects of how individuals use expressive signals when judging and experiencing rapport with others.

Who Builds Rapport? Individual Differences in Expression and Perception

Aside from differences in situational context, differences in the attributes, roles, and motivations of interacting partners may affect the expression and interpretation of certain nonverbal behaviors related to their rapport experiences. For example, an individual may behave differently during a job interview than when waiting in line to renew a passport due to differences in particular states, such as nervousness in the interview or frustration over the length of the estimated wait time. Similarly, characteristics of a social partner, especially their role or status (such as an authority figure or technical expert), may influence the types of expressive behaviors displayed in a social interaction, both in terms of verbal and nonverbal cues.

One particularly important individual attribute in building rapport is a person’s dispositional level of expressivity. Nonverbal expressiveness has been theorized to be an important predictor of positive successful social interactions (Friedman, Prince, Riggio, &
DiMatteo, 1980). People who gesture and talk a lot are judged by others to be socially skilled, charismatic, dominant, and genuine (Gifford, 1994). Expressive people encourage others to be expressive, and the more emotional information that is transmitted in an interaction by both individuals, the better for achieving rapport (Buck, 1990). In dyads where high and low expressive people were paired together, expressive individuals had more of an influence on the unexpressive individuals’ mood than vice versa (Sullins, 1991). However, in dyads where the more expressive individual had a higher disposition of negative emotionality, both dyad members reacted with less positive feelings and nonverbal behaviors (Tickle-Degnen & Puccinelli, 1999). Expressivity may even generate an interpersonal perception halo, such that “what is expressive is good” (Bernieri et al., 1996). Relatedly, suppression of emotional expressions leads to negative outcomes at the individual and dyad-level, including rapport (Butler et al., 2003). Thus, it appears that expressivity, particularly of positive feelings, leads to higher rapport, while suppression may dampen rapport.

Furthermore, differences in status and roles may contribute to the interaction dynamics. In order to evaluate the function of roles in establishing rapport, Grahe and Sherman (2007) randomly assigned participants to be either a worker who solved a puzzle while blindfolded, or an instructor who gave directions. The behaviors that were most predictive of rapport were related to the instructor’s involvement and communication: more effective instructors promoted higher rapport.

Additionally, in conversations between medical students and patients, dyads were rated as higher in rapport when medical students used more verbal cues (more positive statements, less medical information) and appeared more warm and respectful and less anxious and dominant with their patients. Rapport was also related to medical students’ level of interpersonal sensitivity.
as measured through standardized tests of interpersonal accuracy (Profile of Nonverbal Sensitivity (PONS) and Diagnostic Analysis of Nonverbal Accuracy (DANVA); Hall et al., 2009). The expressive behaviors, communicative processes, and interpersonal competence of individuals are also predictors of important outcomes such as patient satisfaction and adherence to medical regimens (Hall, Roter, & Katz, 1988).

Individual attributes that facilitate rapport building, such as expressivity and sensitivity to nonverbal behaviors, may be affected by age. For example, older spouses express less negativity and more affection towards each other compared to younger spouses (Carstensen, Gottman, & Levenson, 1995). And older adults outperform young adults in judging the valence interactions within married couples (Sze, Goodkind, Gyurak, & Levenson, 2012). Thus, rapport building may be influenced by the interacting partners’ ages, due to changes in the way that older adults approach, interpret, and navigate social and emotional experiences.

**Socioemotional Changes with Age: Implications for Rapport Building**

Healthy adult aging is associated with changes in social and emotional experiences, priorities, and goals, which in turn have implications for the development of skills necessary for social functioning, such as in establishing rapport. Much research on socioemotional aging has been guided by the theoretical framework of SST, which highlights age-related differences in emotional goals, and outcomes associated with pursuing those goals (Carstensen, Isaacowitz, & Charles, 1999; Carstensen, 2006). In particular, as people get older and are more in tune with limited time remaining in life, they exhibit an enhanced selectivity for their social partners, choosing to build and maintain emotionally rewarding relationships (Carstensen, et al., 1999). Young adults, on the other hand, are more focused on gaining new information and experiences (for example, building networks for career opportunities), which implies that their social
motivations are less driven by emotional value compared to those of older adults. SST has been associated with various findings where older adults “accentuate the positive” by focusing on positive over negative or neutral information, such as looking towards happy and away from sad faces (Mather & Carstensen, 2003), which in turn promotes maintaining positive moods (Noh, Lohani, & Isaacowitz, 2011). Older adults’ preference for positive information is called the age-related positivity effect, and has been consistently demonstrated in their attention and memory (see Reed, Chan, & Mikels, 2014 for a meta-analysis), and is generally considered an effect of shifts in emotional goals.

Older adults have higher satisfaction with social relationships (Lansford, Sherman, & Antonucci, 1998), and when recalling social interactions with family members, older adults report higher levels of positive and lower levels of negative affect than their younger counterparts (Charles & Piazza, 2007). Additionally, older adults are known to use various strategies to effectively maintain emotional stability (Blanchard-Fields, 2007). In particular, whereas young people often using active, direct confrontation strategies such as arguing in response to a social conflict (Birditt & Fingerman, 2005; Blanchard-Fields, Mienaltowski & Seay, 2007), older adults report disengaging from familial confrontations, preferring instead to use passive strategies, such as ignoring or walking away from a situation, which may lead them to experience less negative affect (Birditt & Fingerman, 2003; Charles, Piazza, Luong, & Almeida, 2009; Sorkin & Rook, 2006). A recent study empirically tested older adults’ reduced negativity to unpleasant social encounters by pairing young and older adults with a disagreeable confederate, and found that more positive appraisals of the task and of the disagreeable confederate, and greater use of self-distraction helped older adults maintain positive moods.
(Luong & Charles, 2014). Thus, older adults’ positive social experiences may be partly explained by the ways in which they approach and interpret their social environments.

**Age-related shifts in interpersonal perception.** In order to make predictions about how the ages of interacting partners may affect the establishment of rapport, we may turn towards research on the development of other social skills with age, and how the ages of social partners affect the social judgments of others. Because rapport is built upon the detecting and responding to others’ expressive (animated) cues, age-related changes in social perception may influence how older adults establish rapport with others.

**Older adults as perceivers.** In terms of emotion recognition, study paradigms that involve labeling emotional expressions typically show age deficits (Ruffman, Henry, Livingstone, & Phillips, 2008). However, these tasks generally involve posed, static stimuli, which researchers have argued lack ecological validity (Isaacowitz & Stanley, 2011). In fact, studies that diverge from the traditional emotion perception task in favor of more dynamic and age-relevant stimuli reveal a different story of social perception skills in older age. For example, older adults achieve the same or even greater level of accuracy as younger adults in recognizing Duchenne versus non-Duchenne dynamic smiles (Murphy, Lehrfeld, & Isaacowitz, 2010), and researchers find no age differences on judging short video clips of affective information (Krendl & Ambady, 2010). Studies that have used stimuli of unrehearsed, real-time conversations find that older adults are better than younger adults in judging levels of marital satisfaction (Ebling & Levenson, 2003), and in making continuous valence judgments of interactions within married couples (Sze et al., 2012). Additionally, studies that ask participants to make diagnostic judgments about traits based on behavioral information show that older adults perform better than younger adults (Hess &
Auman, 2001) and make sophisticated and complex trait judgments in a variety of social contexts (Hess et al., 2005).

A selective engagement hypothesis (Hess, Leclerc, Swaim, & Weatherbee, 2009) suggests that older people prefer to invest cognitive resources in tasks that hold more meaning and relevance to them, which helps explain older adults’ better performance on these tasks. For example, a study that investigated empathic accuracy, which was defined as the cognitive understanding of what another person is feeling, showed age similarities when judging young and older adult targets describing a topic relevant to older adults (e.g., loss of a loved one), but showed age differences when targets talked about topics more relevant to younger adults (e.g., moving away to start a new life; Richter & Kunzmann, 2011).

In addition to finding age similarities or improvements in ecologically valid tasks, eye-tracking studies have revealed that older adults focus attention differently than young adults. Older adults have difficulty processing information related to eye gaze (Slessor, Phillips, & Bull, 2007), and several studies have demonstrated that older adults focus more on the lower half of emotional facial expressions than young adults (Firestone, Turk-Browne, & Ryan, 2007; Sullivan, Ruffman, & Hutton, 2007; Wong, Cronin-Golombm, & Neargarder, 2005; although see Ebner, He, & Johnson, 2011 who found no age differences in a similar task). For example, Murphy & Isaacowitz (2010) found a positive correlation between older adults’ accurate labeling of angry faces with looking at the mouth of the face; young adults, on the other hand, generally spent more time looking at the eyes of expressive faces, regardless of the emotion expressed.

Differences in looking patterns may reflect differences in judgment strategies. For example, Sullivan, Campbell, Hutton, and Ruffman (2017) found age and gender differences in gaze patterns to middle-aged emotional facial expressions: looking more at the eyes of a face
was related to young and older females’ emotion recognition of “eyes emotions” (anger, sadness, and fear), and looking more at the mouth of the face benefitted young and older adult males’ emotion recognition of “mouth emotions” (happiness and disgust). Vicaria et al. (2015) found that older adults’ gaze patterns were more focused on targets’ bodies than heads, suggesting that they may be de-emphasizing facial cues in favor of body cues, despite reaching the same level of accuracy as young adults when judging rapport in young adult dyads. These findings collectively point towards the notion that individual differences in accuracy may be related to differences in attention to nonverbal cues, which implies that the perceivers obtain and interpret different information about a target’s inner thoughts and feelings.

Aside from methodological influences on older adults’ social and emotional perception, older adults’ chronically activated emotion goals may be demonstrated in a general positivity bias in their judgments of others. For example, in a study on age-varied dyadic interactions, older adults were only worse in empathic accuracy (defined here as judging what their partner was thinking and feeling), when their interaction partner’s thoughts and feelings were negative, but there were no age differences in making accurate judgments of positive thoughts and feelings (Blanke, Rauers, & Riediger, 2015). In terms of perceiving traits, older adults achieved similar agreement as younger adults in judging competence, health, hostility, and trustworthiness of faces, but the judgments of older adults were consistently more positive (Zebrowitz, Franklin, Hillman, & Boc, 2013). Thus, older adults may be selectively attending and focusing on positive aspects of their interacting partners, which will affect how they interpret and respond to their nonverbal behaviors.

**Older adults as targets.** In addition to age-related changes in social perception on the part of the perceiver, differences in social judgments are found based on the ages of the targets.
Several studies have indicated that young perceivers rate older adults differently than their same-aged peers. For example, young adults judge older faces as depicting more “mixed” and less intense emotions, which may indicate that they are perceived as less affiliative (Hess, Adams, Simard, Stevenson, & Kleck, 2012). Young emotional faces are also detected more quickly by a diverse age group of perceivers than emotional old faces, which corroborates the idea that older faces lack the “signal clarity” that younger ones have (Freudenberg, Adams, Kleck, & Hess, 2015). When young and older adults were asked to detect deceivers versus truthtellers, all participants found college students’ spontaneous lies were easier to detect than older adults’, especially those of older men (Sweeney & Ceci, 2014, but see Ruffman et al. 2012 who found the opposite effect for lies about opinions). Older emotional facial expressions were mislabeled more often, particularly for male targets, by young, middle-aged, and older perceivers (Riediger, Voelkle, Ebner & Lindenberger, 2011). Furthermore, older faces are detected as happier and less angry than young faces (Hass, Schneider, & Lim, 2015). The reasons for different judgments of age-varied targets has been attributed to the physical changes of older faces (folds and wrinkles), their presumed lower expressivity, and the possibility that older people’s expressions do not fit people’s general schemas for emotional targets (Fölster, Hess, & Werheid, 2014).

Some studies have demonstrated an own-age advantage, where perceivers of one age group are more accurate at judging attributes of targets from their age group, or even show a bias in their judgments (Bäckman, 1991; Lamont, Stewart-Williams, & Podd, 2005, but see Ebner & Johnson, 2009). For example, when judging traits from young and older faces, older adults demonstrated a slight in-group favoritism, by rating older faces less hostile than young faces; however, their ratings of competence, health, trustworthiness, and aggressiveness were similar.
for young and old faces (Zebrowitz et al., 2013). Moreover, younger, but not older, participants show an own-age effect in gaze following, or the ability to detect where someone else is looking (Slessor, Laird, Phillips, Bull, & Filippou, 2010). Therefore, the in-group advantage has contextual limitations, as it has not been consistently found for all social judgment tasks.

Another cue that may aid older adults’ interpersonal judgment accuracy is familiarity. For example, older adults’ performance in judging a romantic partner’s emotional expressions is higher than when judging a stranger’s (Stanley & Isaacowitz, 2015). In one of the only studies that investigated accuracy of personality judgments in older perceivers, older married couples had high accuracy in judging personality traits from photographs of their spouses, but accuracy was much lower when judging strangers (Petrican, Todorov, & Grady, 2014). One caveat from that study, however, is that there was no age group perceiver accuracy comparison (i.e., young versus older perceivers), and the judgments of personality traits were made based on photographs. However, it remains to be seen whether this familiarity effect extends beyond couples. As discussed above, using dynamic stimuli and interaction contexts in perception tasks aids older adults’ performance. Therefore, it may be the case that older adults do well in judging traits from social partners when they’ve previously met and interacted with them.

Changes in expressivity with age. While research on social judgments and person perception provide a framework for understanding age-related shifts in attention to social information, age-related changes in the expressions (outward display) of inner thoughts and feelings are also important for understanding how older adults establish rapport. Because expressivity may predict success in social interactions (Friedman et al., 1980), understanding age differences in expressivity is important for understanding how people of different age groups interact and get along with each other.
Similar to the literature on age differences in socioemotional perception, the literature on aging and nonverbal expressivity yields mixed results based on the task that is given (Vicaria, Castro, & Isaacowitz, in preparation). In particular, a meta-analysis on over 40 empirical studies on young-old age differences in expressivity found that older adults are less expressive on both subjective measures (such as the Berkeley Expressivity Questionnaire (BEQ; Gross & John, 1995)) and measurements of automatic facial muscle movements in emotion-eliciting situations (Vicaria et al., in preparation). Although no age differences emerged for studies reporting behavioral coding, an interaction between age and valence emerged when effects were collapsed across method: older adults were not less expressive of positive emotions, but were more expressive of sadness compared to young adults.

Older adults may have a decreased tendency to express anger (Coats & Blanchard-Fields, 2008), potentially revealing a preference for passively handling emotional reactions in service of relationship maintenance (Blanchard-Fields, 1997). However, a recent study suggests that older adults’ preserved emotion regulation abilities are aided by having less physiological reactivity (measured by facial EMG) than younger adults to begin with (Pedder, Terrett, Bailey, Henry, Ruffman, & Rendell, 2016). However, it remains to be seen whether older adults’ expressive behaviors are uniformly different than those of younger adults, or whether they change in response to certain social contexts and partners.

**Rapport in Same-and Mixed-Aged Interactions**

Extensive social psychological research has corroborated the notion that “similarity breeds connection”, in that members within a social network tend to be similar in terms of ethnic background, age, gender, religion, education, and occupation (McPherson, Smith-Lovin, & Cook, 2001, p. 415). This applies not only to already existing networks, but also in people’s
desire to affiliate with others. For example, Mackinnon, Jordan, and Wilson (2011) observed that people would choose to sit in closer proximity to other people that were physically similar to themselves across a variety of characteristics: race, physical attractiveness, and even hair length and hair color and wearing of glasses. Because of the role of certain individual dispositions in establishing rapport (such as expressivity in young adult same aged dyads; Bernieri et al., 1996), similarity among interacting partners on certain characteristics, such as age, may be especially important in determining the success of an interaction.

Although similarity does generally promote affiliation, there are instances in which highlighting differences between people is actually preferred. For example, people tend to respond to dominance or submissiveness from an interacting partner with complementary nonverbal behaviors, such as displaying increased postural stance (demonstrating dominance) when interacting with a submissive confederate, and vice versa. These complementary behaviors in turn promote feelings of comfort and likability ratings for their partner (Tiedens & Fragale, 2003). Therefore, building rapport is facilitated when social partners differ in status and act in complementary roles. Varying the ages of interacting partners provides a compelling paradigm for understanding the contributions of similarity and status to the establishment of rapport.

Similar to the notion that rapport is established by a perception-action feedback loop (Tickle Degnen, 2006), Berger, Cohen, and Zelditch (1972) proposed that status characteristics (including age, sex, and race) influence social interactions, such that it determines evaluations of group members, and sets performance-expectations for them, which then leads to the distribution of participation, influence, and prestige within the group. Two models have been developed independently to describe the ways in which people’s automatic evaluations of older adults influences intergenerational interactions.
The Social Input Model (Fingerman & Pitzer, 2007) suggests that social partners are nicer to older adults, leading to an “upward spiral” of positivity in older age based on having more satisfying social experiences (Luong, Charles, & Fingerman, 2010, p 7). The positive treatment of older people is exemplified in three ways: 1) older adults are treated more kindly, 2) older adults are forgiven more and blamed less for social transgressions, and 3) preferential treatment of older adults is promoted by stereotypes about aging. For example, young and older adults reported the strategies they use in a hypothetical interaction with a younger or older close social partner; both young and older people were more likely to report using aggressive confrontational behaviors with younger social partners and to use avoidant strategies with older ones (Fingerman, Miller, & Charles, 2008). Therefore, older adults benefit from their social partners’ tendency to reduce tensions in favor of maintaining positive relationships with them.

Similarly, the Communication Predicament of Aging Model (Ryan, Giles, Bartolucci, & Henwood, 1986) also describes how characteristics of older age may trigger age stereotypes and expectations, but particularly in how it leads to communication patterns that may negatively impact the possibilities for developing relationships. One communication pattern is overaccommodation, in which older adults are spoken to with basic vocabulary and grammar, overstated intonation, and inappropriate terms of endearment in a way that is considered patronizing and demeaning (Ryan et al., 1986, Coupland, Coupland, Giles, & Henwood, 1988, Harwood, McKee, & Lin, 2000). This has also been revealed in instances of baby talk or ‘elderspeak’ with older people in nursing homes (Kemper et al., 1998). The other problematic communication pattern is underaccommodation, which is denoted through interruptions, inattentiveness, and lack of interest revealing the speaker’s underestimation of an older person’s capacity to converse (Williams, 1996).
However, age and status appear to have a much more nuanced relationship, which is especially evident in mixed-age interactions. In one study, female age-heterogeneous groups tended to be “status incongruent” with regard to group influence because the youngest member held the key power position, as opposed to male age-heterogeneous groups where the older man held more power (Ziller & Exline, 1958). In contrast, Cordell and Kokubu (2016) recently highlighted two conversational practices made by older adults that may hinder positivity. In mixed-age dyads, older Spanish-speaking women gave language lessons to younger non-native speakers and exhibited the following communication patterns: 1) taking over her partner’s turn and articulating an answer for her, and 2) disregarded her partner’s feelings in order to proceed with the lesson. Although the participants did not provide self-reported ratings of the interaction, these communication patterns revealed an imbalance of influence in the conversation, which could have implications for the experience of rapport.

Although the particular contribution of age to status differentials in social interactions is unclear, it appears that intergenerational interactions generally foster positive outcomes. A recent systematic review summarized findings on nonfamilial intergenerational interactions as leading to increases in positivity, less stereotyping toward the other generation, reduced depression, increased feelings of social connectedness, and increased hope for the future for both young and older adults (Knight, Skouteris, Townsend, & Hooley, 2014). Therefore, an investigation on rapport may reveal possible avenues for attenuating some of the challenges associated with intergenerational communication.

**The present studies.** In sum, underlying motivational changes in healthy adult aging have widespread influences on the social and emotional lives of older adults both in terms of how they express emotions and how accurately they judge characteristics of social partners.
These socioemotional effects of aging have particular implications for the establishment of rapport, because rapport is achieved through the mutual expression and detection of feelings and behaviors -- if the expression and detection of these behaviors changes with age, then the experience of rapport in young and older adults will be influenced by the ages of interacting partners.

The current pair of studies is aimed at evaluating the experience of rapport in young and older adults. The aim of Study 1 was to evaluate the experiences of rapport in same-age and mixed-age dyads. These results were extended in Study 2, which investigated age differences in the predictors of rapport in two different social contexts.

Chapter 2 – Age and the Ecology of Rapport

The first objective for Study 1 was to investigate potential age differences in the ecology of rapport, which refers to both how rapport is rated differently through self reports as well as through the expressive behaviors that emerge during interactions that vary in rapport. In terms of rapport ratings, one possible outcome could be that the ratings made by older adults are more positive than those of young adults regardless of the age of their interaction partner. Theoretically, this age difference in rapport could be brought about by one or more factors, including a) older adults’ preference and attention to positive information (Reed et al., 2014) and b) a result from being treated more positively by social partners as posited by the Social Input Model (Fingerman & Pitzer, 2007). Because there is no generally accepted “gold standard” for measuring rapport, rapport was measured in this study both at the individual level (in order to measure age differences in valence of ratings) as well as different dyad-level measurements (in order to measure rapport in line with its definition as a dyadic construct).
It could also be the case that rapport experiences of age-matched dyads have more reciprocal rapport than mixed-age dyads, which would be in line with studies that show that similarity, especially on demographic variables, engenders affiliation (McPherson et al., 2001). Also, mixed-age interactions may inherently face challenges in establishing rapport, such as over- or under-accommodation in communication styles or an imbalance in status (i.e., one dyad member having more influence than the other).

Another component of the ecology of rapport involves the behavioral manifestations of rapport. Past research identified expressivity, or the extent to which an individual’s total behavior was active, animated, and exaggerated during a social interaction, as a characteristic of young adult dyads experiencing high rapport in a cooperative context. In fact, expressivity correlated significantly with 12 other coded nonverbal behaviors (e.g., smiling, talking, eye contact) in a cooperative context, which was three times the number of its correlates in a debate context (Bernieri et al., 1996). However, because older adults may be less expressive (especially of positive emotions) than young adults (Vicaria et al., in preparation), individuals interacting with an older adult may find it difficult to discern their feelings about the interaction.

Individuals use their observations of outwardly expressed behavior to make judgments about social partners’ thoughts, intentions, needs, physical states, and (with particular relevance to rapport) likely future behavior (Bernieri, 2001). Consequently, interpersonal judgment accuracy, or accurately judging whether an interaction partner will respond well to your suggestions and actions, has particular relevance for establishing rapport. Additionally, the cognitive and motivational processes that naturally arise during social interactions are difficult (or perhaps impossible) to replicate in a standardized computer-based perception task (Hall et al., 2005). Therefore, a interaction-based task that measures individuals’ accurate perception of their
partners’ traits is well suited to capture the relevant judgments made in establishing rapport. Furthermore, in light of research demonstrating that increasing the familiarity of the target reduces age differences in judging emotion (Stanley & Isaacowitz, 2015) and personality traits (Petrican et al., 2014), older adults may be able to pick up on their interaction partner’s feelings and respond appropriately in order to establish rapport with them, regardless of their age.

Study 1 Method

Participants

Ninety females were recruited for a two hour lab study¹. Forty-five young adults (YAs) were recruited from the Northeastern University undergraduate participant pool and the Boston area (ages 18-24; $M_{age} = 19.75$, $SD = 1.59$). Forty-five older adults (OAs) were recruited via a database of 600+ names and phone numbers of adults ages 60+ that live in the Greater Boston Area that have expressed interest in participating in studies at the Lifespan Emotional Development lab (ages 61-85; $M_{age} = 71.09$, $SD = 6.50$). The recruitment script stated, “the purpose of this study is to examine perceptions of social cues”. Participants were remunerated with course credit or $10/per hour.

Sixty-four percent of the YAs identified as White, 16% as Asian American, 0% African American, 4% Hispanic, 7% East Asian, and 9% as Other (or more than one option). Ninety-one percent of the OAs identified as White, 0% as Asian American, 2% as African American, 2% as Hispanic, 0% as East Asian, and 4% as Other (or more than one option).

¹ The sample was recruited in tangent with another lab study (Vicaria, et al., 2015) that investigated perceiver’s judgments of rapport from the young adult same-aged dyads in Bernieri et al., (1996). The original study recruited 93 participants. Forty-two individuals per age group were determined sufficient for detecting age differences with 80% power based on the effect size from Ebner & Johnson (2009). An additional 2 YA and 1 OA were recruited for the original study but were not included in the current sample because they did not have a partner for the dyadic interaction due to scheduling conflicts.
Participants were randomly assigned to three dyad types: young/young (YY), old/old (OO), and young/old (YO), with 15 dyads in each type.

**Background Measures**

All participants completed a series of background measures to ensure that both age groups were matched for cognitive ability and mood. The following questionnaires were administered to all participants: Shipley vocabulary test (Zachary & Shipley, 1986), the digit span task from the Wechsler Adult Intelligence Scale-Revised (WAIS-R; Wechsler, 1981), emotional mindset scale (EMS; Livingstone, 2012), Emotional Self-Efficacy Scale (ESES; Kirk, Schutte, & Hine, 2008), Positive and Negative Affective Scale (PANAS; Watson, Clark, & Tellegen; 1988), Life Orientation Test (LOT; Scheier & Carver, 1985), Midlife Sense of Control Scale (MIDI; Lachman & Weaver, 1998), Emotion Regulation Questionnaire (ERQ; Gross & John 2003), Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), and the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003) with an added item for Optimism². Older adults completed the Folstein Mini Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) to screen for dementia.

**Materials and Procedure**

Participants provided informed consent to be videotaped. Each dyad was briefly introduced and taken to a room where they were seated at a table with a map and play money. They were given instructions (See Appendix A) and spent 15 minutes planning a hypothetical dream vacation around the world together; this procedure was adapted from Bernieri et al (1996). All dyads were videotaped during their interaction. Afterwards, participants were given a post-

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² Optimism was added to TIPI because of its importance in older age and relevance to the current study subject matter. Older adults have more optimistic explanatory styles (i.e., more external, temporary, and specific causal explanations for negative events) than do young adults specifically regarding interpersonal events (Isaacowitz, 2005).
interaction questionnaire (see Appendix B). The first questions were a series of 18 Likert scales from 0 (not at all) to 8 (extremely) with different adjectives that may be used to describe the interaction (e.g., slow, friendly) obtained from Bernieri, Davis, Rosenthal & Knee (1994). Then participants read a short definition of rapport: “Rapport is a term used to describe the combination of qualities that emerge from an interaction. These interactions are characterized by such statements as “we really clicked” or “we experienced real chemistry.” Afterwards they rated the level of rapport they felt with their partner on one Likert scale from 1 (no rapport) to 8 (high rapport). Then they rated their interaction partner’s personality traits on the TIPI (with an added item for Optimism; see Appendix B).

Study 1 Results

Background Measures

OA scored significantly higher on the Shipley vocabulary test, ESES, PANAS positive, and two personality traits (TIPI Agreeableness and Conscientiousness). OA scored significantly lower on TIPI Openness to Experiences and marginally higher on Emotional Stability; see Table 1 for all means and standard deviations. All older adults scored above a screening threshold on the Mini Mental State exam (cutoff is for no cognitive impairment is 24; \( M = 28.56, SD = 1.59 \), range 25-30).

Measurement of Rapport - Individual Level

For the following analyses, the individual (N=90) is the unit of analysis in order to measure age differences in rapport ratings (i.e., valence).

18-item questionnaire. The 18 item rapport scale developed by Bernieri et al. (1994) was designed to assess the three components of rapport outlined by Tickle-Degnen and Rosenthal (1990; positivity, mutual attention, and coordination). Although the factor loadings of
the items did not replicate the three theorized components of rapport, the internal consistency (Cronbach’s alpha) for the 18 items was high: .88 across all participants (.79 for YA, .91 for OA).

In a Principal Components Analysis (PCA), the first component accounted for 38.95% of the variance among the 18 items in the Rapport Questionnaire. The following nine items loaded negatively on the first unrotated principal component and were therefore reverse coded: Boring, Unsatisfying, Uncomfortably Paced, Cold, Awkward, Unfocused, Unfriendly, Dull, and Slow. The remaining nine items (Well-Coordinated, Cooperative, Harmonious, Engrossing, Involving, Intense, Active, Positive, and Worthwhile) loaded positively on the first unrotated principal component. All 18 items were z-scored and then averaged per participant to create a composite rapport variable.

A 2 (participant age group) x 2 (partner age group) ANOVA on the composite rapport variable was performed in order to test the hypothesis that older adults experience higher rapport than younger adults, and whether this varied with the age of their interaction partner. The unit of analysis is individual participants. The ANOVA revealed main effects of both participant age and partner age: OAs rated higher rapport than YA across all dyad types \( F(1, 86) = 12.19, p = .001, \eta^2_p = .12 \), and all participants rated having higher rapport when their partner was young \( F(1, 86) = 4.45, p = .04, \eta^2_p = .05 \). There was no significant interaction between participant and partner age.

**Single item.** The single rapport variable was answered directly after the 18-item questionnaire.

A 2 (participant age) x 2 (partner age) ANOVA on the single rapport variable revealed a main effect of participant age, \( F(1, 86) = 8.83, p = .004, \eta^2_p = .09 \). Older adults \( (M = 7.09, SD = \)
1.72) rated significantly higher rapport across all dyad types than did YA (\(M = 6.31, SD = 1.72\)), 
\(t(88) = 2.57, p = .012\). The effect of partner age, \(F(1, 86) = 2.61, p = .110\), \(\eta_p^2 = .03\) and the 
interaction between participant and partner age were not significant, \(F(1, 86) = .024, p = .88, \eta_p^2 = .00\); see Table 2\(^3\).

The single rapport variable was significantly correlated with the composite rapport 
variable across all participants, \(r(90) = .84, p < .001\). The relationship between these two 
variables may demonstrate that the composite rapport variable reveals a latent rapport factor, 
despite not revealing three distinct factors for the theorized components of rapport. For YA 
\(r(45) = .65, p < .001\), the relationship between the composite and single rapport variables was 
weaker than in OA \(r(45) = .90, p < .001\); these two correlations statistically differed from each 
other: \(Z = 3.19, p = .001\), indicating a stronger overlap between the latent rapport variable 
captured by the 18 items and the single rating of rapport among OA. This finding is consistent 
with the above mentioned Cronbach’s alpha for the 18 items, which was higher (.91) for OA than 
YA (.79).

**Measurement of Rapport - Dyad Level**

Because rapport is theorized as an interaction-based variable, self-reported ratings are an 
incomplete measurement of rapport. Therefore, several methods were used to investigate rapport 
in order to capture its dyadic nature. For the following analyses, the dyad (N=45) is the unit of 
analysis.

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\(^3\) In a separate analysis, z-scores were computed within age groups (young and old) for the single rapport variable. In 
OA, three participants’ rapport ratings were more than one SD below the mean. The remaining 42 participants’ 
rapport ratings were within 1 SD above/below the mean, most likely because 26 of the OA participants endorsed “8” 
(the highest possible value) for their rapport rating. In YA, on the other hand, eight participants’ rapport ratings were 
more than 1 SD below the mean (range 3-5 from original non-z score rating); four participants’ ratings were 1 SD 
above the mean (original score of 8), and the remaining 33 participants’ ratings were within 1 SD above/below the 
mean.
Average of ratings per dyad. The first method for analyzing dyad rapport was created to capture the valence of dyad ratings, or how high or low was the average rapport by dyad type. The average was computed between each participant’s self-reported rapport (single rapport Likert scale) for each dyad. Although a One-Way ANOVA revealed no significant differences between the three dyad types (YY, OO, and YO), $F(2, 44) = .82, p = .45$, this dyadic rapport variable was bimodally distributed in OO dyads and not in the other two dyad types. OO dyads’ average dyadic rapport also had a higher standard deviation than the other two dyad types; see Table 3 and Figure 1. This could indicate that OO dyads’ rapport was more extreme – either high or low – compared to the other dyad types. However, one limitation of using the average as the dyadic measurement of rapport is that it washes out unilateral ratings of rapport (i.e., when dyad members’ ratings are on the opposite ends of the likert scale, their average would look like moderate rapport).

Correlation of ratings per dyad. Second, an agreement coefficient was computed per dyad in order to measure how close together were dyad partners’ ratings. Agreement was computed as a correlation within each dyad across the raw ratings on the 18-item post-interaction questionnaire. A correlation was computed between the two members of each dyad, and each correlation was Fisher Z transformed for statistical analysis. A One-Way ANOVA with dyad type (YY, OO, YO) as the independent variable revealed no significant differences between the three dyad types, $F(2, 42) = .05, p = .95$, but OO was the only dyad type to have negative correlations; see Table 3.

Sum of difference scores per dyad. Next, the absolute value of a difference score between each dyad member was computed for each of the 18 raw questionnaire items. These scores were summed to create one sum of differences per dyad. Because the highest possible sum
of differences is 144 (i.e., both partners rating opposite ends of the Likert scale across all items),
the sum of difference scores were divided by 144. A value of 1 was subtracted from this
proportion to create a dyad rapport score that ranged from 0-1 and represented more rapport with
higher values. A One-Way ANOVA with dyad type (YY, OO, YO) as the independent variable
revealed no significant differences between the three dyad types, $F(2, 42) = .45, p = .64$; see
Table 3. This difference score revealed a clearer picture on within-dyad ratings than the other
two dyad rapport variables (average and correlation) because it demonstrates that OO dyads
experience both highest (.97) and lowest (.35) rapport compared to the other two dyad types.

**Relationship between continuous dyad rapport variables.** The three dyad rapport
analyses revealed similar information: OO dyads’ ratings were more extreme (high and low)
compared to the other two dyad types. The three continuous dyad rapport measurements were
highly correlated with each other. In YY ($N = 14$), the average and sum of differences were
correlated at $r = .55$, average and correlation were correlated at $r = .79$, and sum of differences
and correlation were correlated at $r = .71$. In OO ($N=15$) the average and sum of differences
were correlated at $r = .90$, average and correlation were correlated at $r = .94$, and sum of
differences and correlation were correlated at $r = .96$. In YO ($N=15$), the average and sum of
differences were correlated at $r = -.39$, average and correlation were correlated at $r = .42$, and
sum of differences and correlation were correlated at $r = .86$. Although all correlations were
significant ($p > .05$), the relationships between the dyad rapport measurements in OO were much
stronger, indicating that in that dyad type, the measurements of rapport have a high degree of
overlap among each other.

**Matching ratings per dyad.** The final method for measuring rapport captured dyad type
differences in reciprocal (i.e., both dyad partners rating high rapport) and unilateral (i.e., dyad
partners giving opposite ratings) rapport. This analysis was performed on the single rapport Likert scale per dyad.

Each single rapport variable per participant was recoded as follows: a rating from 6-8 was recoded as “high rapport”, a rating of 4-5 was coded as “neutral”, and a rating of 1-3 was coded as “low rapport”. Seventy-nine out of the 90 participants’ ratings were recoded as “high rapport”, seven were “neutral” (all YA), and only four were “low rapport” (three OA and one YA).

Reciprocal rapport was defined as both participants rating high rapport. Unilateral rapport was defined as one high and one low rapport rating. No rapport was defined as both participants rating low rapport. Moderate rapport was defined as one high and one neutral, one low and one neutral, or both neutral.

There were no dyads reporting no rapport. In YY dyads, 11 (73%) reported reciprocal rapport, one (6.7%) reported unilateral rapport and three (20%) reported moderate rapport. In OO dyads, 12 (80%) reported reciprocal rapport and three (20%) reported unilateral rapport. There was no unilateral rapport among YO dyads, but 11 (73.3%) reported reciprocal rapport and four (26.7%) reported moderate rapport.

**Behavioral Coding**

The objective for behavioral coding was to determine whether nonverbal cues (expressivity in particular) that were related to rapport in previous research (Bernieri et al., 1996) would also be related to rapport in dyads with older adults. Therefore, undergraduate research assistants were trained to code the behavioral cues originally investigated by Bernieri et al. (1996). Each 15-minute videorecorded interaction was thin sliced (i.e., trimmed) into three 30-
second segments: one from the beginning, one from the middle, and one from the end\textsuperscript{4}. Coded behavioral cues from all three time points were highly correlated with each other and were therefore averaged\textsuperscript{5}. One YY video was lost due to a technical problem, resulting in a sample of 44 dyads. Cues were coded at the individual and dyadic level\textsuperscript{6}; see the list of cues, inter-coder reliability, and comparisons to Bernieri et al. (1996) in Tables 4-6 and cue definitions in Appendix F.

Because expressivity is theorized to be an important component of rapport, particular attention was paid to age differences in this cue in the current study. Two undergraduate research assistants (one male, one female) were trained to code expressivity at the individual level (i.e., obscuring the partner and focusing on each participant individual). Coders used one Likert scale with zero indicating “no expressivity” and five indicating “high expressivity”. The training definition of expressivity was taken from Bernieri et al. (1996): “the extent to which an individual’s total behavior was active, animated, and exaggerated. People who are expressive show their emotions quite readily, whereas those who are not tend to have “poker faces” and

\textsuperscript{4}Ambady and Rosenthal (1992) suggest that 30 second thin sliced videos depict equally diagnostic amounts of behavior as five minute clips in predicting a variety of social constructs such as job performance and deception.

\textsuperscript{5}A separate analysis tested for age x time effects: a series of 3 (time point: beginning, middle, end) x 3 (dyad type: YY, OO, YO) ANOVAs revealed no main effect of time point or interaction between dyad type and time point for Mutual Gaze, Simultaneous Speech, Mutual Attention, Synchrony, Closest distance, Regulators, Gestures, Expressivity, Nervousness, or Dominance, all ps > .05. There were significant main effects of time point for Suggestions, across all dyad types, $F(2, 255) = 5.41, p = .005$, with fewer suggestions being made over time ($M_{\text{beginning}} = 1.67, SD = 1.47$, $M_{\text{middle}} = 1.50, SD = 1.25$, $M_{\text{end}} = 1.05, SD = 1.17$), and Facial Positivity, $F(2, 240) = 3.44, p = .034$, with the most facial positivity in the beginning clips ($M_{\text{beginning}} = 2.37, SD = 2.18$, $M_{\text{middle}} = 2.18$, $M_{\text{end}} = 1.68, SD = 1.82$).

\textsuperscript{6}Objective cues were coded with an interval coding method, such that each one-minute clip was divided into 12 five-second intervals and research assistants coded for the presence of one cue at a time. For example, when coding Facial Positivity, a check mark would be placed at each five-second interval wherein that cue was observed. The highest possible value for each clip is 12, which would indicate that the cue was present at least once throughout each of the 12 give-second intervals that divide the whole clip. A total score of 0 indicates absence of the cue for the entire clip. Subjective cues were coded with one Likert scale with 0 being absence of the cue and 5 being the highest value of the cue. Proximity was coded in two variables: the distance between heads and the closest distance between them. Synchrony was an average of five variables related to the tempo and coordination of behavior that were all highly correlated with each other (gestural mimicry, posture similarity/mirroring, simultaneous movements, temp similarity, and behavioral meshing).
gesticulate very little” (p. 126). Inter-rater reliability with the two coders (who each rated all of the clips) reached a Cronbach’s alpha of .74 (the average of the three alphas for coders’ ratings of beginning middle and end clips).

**Age differences in expressivity.** Mean differences in expressivity was measured at the individual level by participant age and partner age. A 2 (participant age) x 2 (partner age) ANOVA was computed on expressivity ratings. There were no significant main effects or interaction (all \( p > .05 \)). Although the effect of partner age was not significant, \( F(1, 84) = 2.64, p = .11, \eta^2_p = .03 \), there appeared to be a trend for participants to be rated as more expressive if they interacted with a young adult compared to an older adult; see Table 9 for means and standard deviations by participant and partner age.

**Expressivity and rapport.** Expressivity was averaged between dyad members per dyad. The average expressivity per dyad was correlated with the sum of differences dyad rapport variable. The relationship between expressivity and dyad rapport was greater in YY dyads (\( r = .49 \)) compared to OO dyads (\( r = -.16 \)). In order to test the difference in these relationships by dyad type, the correlations were Fisher z transformed and a one-tailed Z test was performed (Howell, 2012). The difference between YY and OO dyads was \( Z = 1.67, p = 05 \). The effect size estimate (the absolute difference between the Fisher z transformed \( r \) values; Cohen, 1988) was \( q = .70 \).

**Interpersonal Judgment Accuracy**

Interpersonal judgment accuracy is an important component of rapport building because individuals must accurately sense their interaction partners’ intentions in order to respond in a

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7 see Table 7 for individual cues and Table 8 for dyad cues. In YO dyads, the cues for the YA partner and OA partner were correlated separately with dyad rapport.
way that avoids miscommunication. The measurement of interpersonal accuracy per participant was a self-other agreement in personality ratings. In order to compute accuracy in personality judgment, each participants’ judgments of their partner’s personality on the TIPI were correlated with the partners’ self report of their own personality on the TIPI. Each participant received an $r$ value for accuracy, which was Fisher $z$-transformed for statistical analysis.

**Age differences in interpersonal accuracy.** An independent samples $t$-test revealed no age difference in personality judgment accuracy: $t(87) = .91, p = .37, \text{cohen’s } d = .19$. A 2 (participant age) x 2 (partner age) ANOVA revealed no main effects or interaction (all $p$s $>.05$), indicating that participants’ accuracy did not vary by dyad type; see Table 10.

**Relationship between interpersonal judgment accuracy and partner expressivity.** A correlation was computed between each participants’ interpersonal judgment accuracy and their partner’s expressivity; the individual is the unit of analysis. Interpersonal judgment accuracy and expressivity were significantly correlated in YY, $r(28) = .66, p < .001$, but not in OO, $r(30) = .08, p > .05$, or YO dyads $r(30) = .05, p > .05$.

**Study 1 Discussion**

The purpose of Study 1 was to evaluate the ecology of rapport in same- and mixed-aged dyads in terms of 1) their ratings of rapport and 2) two major factors of rapport (expressivity and interpersonal judgment accuracy). Older adults reported the highest rapport overall, and individuals paired with young adults rated higher rapport than individuals paired with older adults. These findings could be interpreted in line with research in other domains (e.g., memory) that suggest that older adults have strong preferences for positive over negative information (Reed et al., 2014). In other words, older adults may reflect more positively on their interactions with others. Therefore, older adults’ preferences for positive information could extend to the
context of establishing rapport with an interaction partner after engaging in a cooperative activity (in this case, planning a hypothetical dream vacation).

Additionally, young adults who were paired with older adults rated lower rapport and were less expressive compared to those who were paired with other young adults. These results are not supportive of the Social Input Model (Fingerman & Pitzer, 2007), which posits that older adults’ increased experiences of positivity may be due to being treated more kindly and with less confrontation than young adults. Furthermore, while most dyads exhibited reciprocal rapport, 20% of the OO dyads were unilateral (i.e., one person rated high rapport and the other rated low rapport), which was a larger percentage than the YY (6%) and YO (13%) dyads. While YY dyads did experience high rapport, the current results do not support the hypothesis that all age-matched dyads get along better than mixed-age dyads. It could be the case that the effect of higher rapport ratings attributed to interactions with young adult partners is driven by the reciprocal rapport in YY dyads, as well as positive evaluations of younger adults given by older adults in YO dyads. However, the low base rate of low rapport ratings (79 out of 90 total participants rated experiencing high rapport) leaves an open question as to the influence of the ages of interacting partners on rapport.

The different rapport measurements demonstrated the importance of selecting an appropriate rapport criterion that reflects both dyad members’ experiences. The PCA computed on the 18 item post-interaction questionnaire revealed a latent rapport factor. This finding is in line with Bernieri et al. (1994), who found that interactants evaluated their rapport in a unidimensional fashion, even when they had the opportunity to evaluate 29 different aspects of their interaction. Thus, it is reasonable to consider self-reports of rapport to be roughly unidimensional in nature.
Several methods were employed to measure rapport at the dyad level. The match variable was useful for identifying the proportion of reciprocal versus unilateral rapport per dyad type, but it is not a continuous variable, which is a limitation for investigating continuous predictors (such as mean levels of expressivity) on rapport. While the three continuous dyad rapport measurements (average, correlation, and sum of differences) were highly correlated with each other, they revealed important differences in the variability of ratings by dyad type. In particular, OO dyads had the highest average (mean of one Likert scale from each partner), but they were also the only dyads to have negative correlations (between the 18 Likert scales from each partner) and the largest range using the sum of difference scores (also computed from 18 items). Whereas a correlation coefficient computed between each dyad partners’ ratings is useful in determining how much dyads’ ratings rise and fall together, it is not helpful in demonstrating the valence of the ratings. Therefore, the sum of difference scores may be the best measurement for dyad rapport out of the different analyses that were performed. Because the sum of difference scores was computed as a proportion of highest possible difference scores, it provides a measurement of dyad members’ ratings in terms of agreement (how close together are the ratings) as well as valence (larger differences indicate lower valence).

Even though most dyads experienced reciprocal rapport, there were age differences in the predictors of rapport. Expressivity is an important predictor of successful social interactions (Friedman et al., 1980), and young adults’ experience of rapport was significantly related to their nonverbal expressivity, which is in line with previous findings (Bernieri et al., 1996). However, this was not the case with older adults – the relationship between dyadic rapport and nonverbal expressivity was significantly higher when two young adults interacted together versus two older adults, even though there were no significant age differences in expressivity.
One caveat, though, is that the expressivity measured in this study is confounded by the fact that it is not independent of the dyad, which means that each individual’s partner invariably influenced their expressive responses to them. It could be the case that some individuals are influenced by a partner’s expressivity more than others. There was a trend for participants paired with young partners to have higher expressivity, which could also be related to the positive ratings of young interaction partners overall.

Possible explanations for the significant relationship between expressivity and rapport in YY dyads (as opposed to dyads with older adults) could be that 1) the presence of expressive behaviors is a result of high feelings of rapport in young adult dyads, or 2) feelings of similarity contribute to young adults’ experiencing high levels of both expressivity and rapport. However, it may also be the case that the YY relationship between rapport and expressivity is limited to cooperative contexts.

Because young and older adults’ performance in interpersonal judgment accuracy were not significantly different from each other, both age groups may be equally able to pick up on the nonverbal expressive signals of their interaction partners. However, young adults’ expressivity was significantly related to their partners’ expressivity, but this was not the case in dyads with older adults. One possibility for this discrepancy is that older adults’ high ratings of rapport may have influenced their interpersonal judgment accuracy. This would be in line with a previous study in age-varied dyads that showed that older adults performed similarly to young adults when they judged whether the interaction partner was feeling positively, but were inaccurate when judging their partner’s negative feelings (Blanke et al., 2015). However, in a similar vein as the caveat for expressivity, interpersonal judgment accuracy was only measured
in the dyad context, and it is unclear whether it is related to a trait-level skill or results from the experiences of the interaction.

Furthermore, rapport in the current study may have been related to the cooperative nature of the task. Planning a dream vacation carries with it relatively few task demands, other than recalling and sharing one’s travel-related desires and experiences. Individuals who did not enjoy the interaction may have been passive, withdrawn, less expressive, and let their partner do much of the decision-making for the trip. In contrast, a debate context (such as in Bernieri et al., 1996) requires both parties’ involvement and may pull for animated, talkative behavior from participants. One would not expect affiliation and rapport to be the default interaction goal in a debate. Instead, a debate context may activate other goals (e.g., self-presentations of competency and intelligence, competitiveness, etc.) that were not as apparent in the current study’s trip activity.

Therefore, Study 2 builds on Study 1’s findings in the following ways: 1) evaluating rapport in two contexts (cooperative and adversarial), 2) gathering baseline expressive behavior to determine whether individuals’ expressivity is influenced by being in a dyad context, and 3) comparing interpersonal judgment accuracy tasks to determine whether the judgments individuals make of their interaction partner are reflective of an underlying social skill in perceiving others accurately.

Chapter 3 -- Differential Impact of Age, Expressivity, and Interpersonal Accuracy on Rapport

Study 1 replicated a previous finding in the literature: expressivity and rapport are highly correlated in young adult dyads (Bernieri et al., 1996). However, this pattern did not extend to dyads that included one or both older adult participants. Interestingly, expressivity of one’s
interaction partner was significantly related to interpersonal accuracy (in judging an interaction partner’s personality traits) in young adults dyads, but not in dyads with older adults, as well. Additionally, age effects emerged in the experience of rapport, such that older adults, and individuals paired with younger adults, rated having high rapport. These results indicate that the social experience and behavioral manifestations of rapport may differ based on the ages of interacting partners.

The various methods for measuring rapport in Study 1 revealed that a sum of difference scores across interaction items is preferable to taking an average or computing a correlation between dyad members. Dyads with two older adults had the largest range (the highest and the lowest) of dyad rapport ratings compared to the other dyad types. Older adults’ high rapport ratings may have been related to one or more factors: 1) their preference for positive information, or 2) the cooperative nature of the task. Therefore, in Study 2, dyad rapport was investigated in two contexts, one cooperative (trip, same as Study 1) and one adversarial (debate). The addition of a second, dissimilar interaction context allowed for the activation of different interaction-based goals (e.g., working together with a partner versus highlighting differences in opinions) in order to determine whether the experience of rapport in same- and mixed age dyads extends beyond a cooperative context. In particular, because a debate context should not activate cooperation as much as the trip planning task, older adults’ rapport ratings may be lower in Study 2.

*Hypothesis 1: Age differences in rapport ratings will be attenuated in an adversarial context compared to a cooperative context.*

Whereas expressivity in Bernieri et al. (1996) and in Study 1 was related to rapport, its measurement was limited to the interaction context (i.e., coded from the videotaped interactions).
Consequently, the direction of the relationship between expressivity and rapport is unclear. Is expressivity high in people who are experiencing rapport? Or does an individual’s dispositional level of expressivity create the experience of rapport? Therefore, in order to test whether older and younger adults’ dispositional level of expressivity predicts their experience of rapport, Study 2 first evaluated whether there are age difference in dispositional versus conversational (i.e., within the dyad) expressivity.

*Hypothesis 2a: Older adults will be less expressive on self-report, but not behavior coding compared to young adults.*

*Hypothesis 2b: Older adults will be more expressive in a dyad context (conversational expressivity) compared to young adults.*

Study 1 found no age difference in accurately judging an interaction partner’s personality traits. However, to date, no studies have directly compared age differences on computer-based tasks, which typically show age-related deficits in performance, and interaction-based interpersonal accuracy tasks, which show more similar performance across age groups. Do older individuals who perform poorly on computer based tasks benefit from the real-world context of interaction-based tasks? It may be the case that older adults are skilled in judging social partners’ traits and intentions based on having more experience than young adults. Importantly, because interpersonal judgment accuracy is related to rapport, the critical examination of this relationship is by assessing dyad members’ judgments of each other’s rapport ratings. If age differences do not emerge in interaction-based tasks (as they did not in Study 1), then there should not be any age differences in judgments of and partner’s rapport rating.
Hypothesis 3: Age differences will emerge in traditional computer-based interpersonal judgment tasks, but not in interaction-based tasks.

Study 1 revealed that expressivity and interpersonal judgment accuracy are closely related in young adult dyads. In young adult dyads, it may be the case that the perception-action feedback loop works well in establishing rapport because of clear expressive signals emerging from each interaction partner, leading to accurate ratings made by perceivers, thereby facilitating ratings of high rapport. In dyads with older adult partners, perhaps rapport is dampened in part because their lower levels of expressivity make it difficult for interaction partners to accurately perceive and respond to their intentions.

Study 1 also found that young adults, and individuals paired with a young adult partner, were more expressive than older adults and individuals paired with older adult partners. However, it may be the case that individual differences in dispositional expressivity (regardless of age) are related to rapport. If a high level of expressivity is uniquely important for young adults to establish rapport, then older adults’ dispositional level of expressiveness will not be related to their experience of rapport.

The relationships between expressivity and interpersonal accuracy may be two sides of the same coin within a dyad: there needs to be either an expressive person so that their partner can read them, or an accurate partner who can interpret even low level of expressiveness. In this model, expressivity and accuracy are precursors to rapport.

Hypothesis 4a: Dyads with individuals high in dispositional expressivity will be higher in rapport compared to dyads with individuals whose dispositional expressivity is lower.

Hypothesis 4b: If a dyad has neither an expressive person nor an interpersonally sensitive person then, and only then, will there be rapport.
Study 2 Method

Participants

A priori determination of sample size. Study 1 investigated 30 young and 30 older adults in same-aged dyads, and the effect size for the YY and OO dyad differences in the relationship between expressivity and rapport was $q = .70$

Final sample size. 247 participants were recruited using the same method at Study 1. Older participants were remunerated with $10/\text{per hour}$ and young participants received course credit.

Eleven YA and eight OA participants were excluded from analyses for not having a dyad partner (due to scheduling conflicts). One YO dyad was excluded due to the OA not passing the screening threshold for the MMSE. An additional two OA (including an OA and a YA who were partnered with them) were excluded because they did not comply with study protocol. One additional YY dyad was excluded because the partners knew each other before the study.

The final sample consists of 125 YA ($M_{age} = 18.82; SD = 1.21$, range 18-22) and 95 OA ($M_{age} = 69.88; SD = 6.69$, range 60-90) women. As in Study 1, participants were randomly assigned to interact with another participant of their age or a different age group. There were a total of 38 YY dyads, 23 OO dyads, and 49 YO dyads.

Forty-seven percent of the YAs identified as White, 34% as Asian, 5% Black, 6% Hispanic, 1% as Other and 7% selected more than one option. Twenty-one percent indicated their health was “Excellent”, 40% indicated “Very Good”, 32% indicated “Good”, 5% indicated “Fair” and 2% indicated “Poor”. Six percent reported their religion as Agnostic, 24% as Atheist, 7% as Buddhist, 3% as Catholic, 3% as Muslim, 7% Jewish, 6% as Protestant, as 21% Other and 22% as None.
Sixty-two percent of the OAs identified as White, 4% as Asian, 25% as Black, 2% as Hispanic, 5% as Other, and 2% selected more than one option. Fifteen percent indicated their health was “Excellent”, 38% indicated “Very Good”, 32% indicated “Good”, 14% indicated “Fair” and 1% indicated “Poor”. Fourteen percent reported their religion as Agnostic, 22% as Atheist, 21% as Buddhist, 1% as Catholic, 5% as Muslim, 6% Jewish, 1% as Protestant, as 23% Other and 7% as None. Eleven percent reported their highest level of education as High School, 16% had some college, 10% had an Associate’s Degree, 22% had a Bachelor’s Degree, 30% had a Masters Degree, 6% had a Doctorate, and 5% reported having other degrees.

**Materials**

**Background measures.** All participants completed the following background measures to ensure similar cognitive and affective states/abilities between the age groups: Shipley vocabulary test (Zachary & Shipley, 1986), the digit span task from the WAIS-R (Wechsler, 1981), PANAS (Watson, Clark, & Tellegen; 1988), CESD-R (Van Dam & Earleywine, 2011), Interpersonal Reactivity Index (IRI; Davis, 1983), and the TIPI (Gosling et al., 2003; with added items for Optimism, Selfishness, Stubbornness, and Politeness).

**Expressivity.**

**Dispositional expressivity.** Participants’ trait level expressiveness was measured through self-report using the Berkeley Expressivity Questionnaire (BEQ; Gross & John, 1995; Appendix G) and through coding of video recorded monologues.

The BEQ consists of three subscales: Positive Expressivity, Negative Expressivity, and Impulse Strength. These three subscales are averaged to form an Emotional Expressivity score. All three subscales were significantly correlated (Gross & John, 1997).
For the monologues, participants were videotaped as they followed instructions provided on a survey hosted on Qualtrics (Appendix F) to verbally provide three short (one minute) monologues: 1) reflect on an uplifting event in the last week, then 2) reflect on a hassle from the last week, and 3) reinterpret the hassle as an uplifting event.

A separate video clip was created for each monologue. Three undergraduate research assistants (two female, one male) were trained to code the videotaped uplift, hassle, and reinterpret monologues using the same coding criteria as the dyad expressivity ratings (used in Study 1 and the current study). Reliability for the three undergraduate coders (who each coded all available video clips) was .82 for the uplift videos, .79 for the hassle videos, and .78 for the reinterpret videos.

Conversational expressivity. Videos from the two dyad activities were separated and trimmed into one-minute segments from the last minute of each interaction. Twelve YY dyad videos were lost due to a technical error. Seven (one male) trained undergraduate research assistants who did not code the monologues coded each interaction member’s expressivity during

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8 After the monologues, each participant read aloud The Rainbow Passage (Fairbanks, 1960), which has been used extensively to measure differences in dialect and articulation (Ramig et al., 2001), and copied a series of geometric designs. The purpose of adding these two tasks to the end were to serve as distraction from the experiences just described so the participants’ emotional reaction would not influence the rest of the study.

9 Although participants were instructed to speak for 1-minute, the average video length for the uplift was \( M = 51.70, SD = 12.63 \), for the hassle was \( M = 56.20, SD = 9.21 \), and for the reinterpret was \( M = 55.14, SD = 9.11 \). A 2 (age) x 3 (type) ANOVA revealed a main effect of type, \( F(2,599) = 10.18, p < .001 \), and a Tukey HSD revealed that the uplift videos were significantly shorter than the other two types. There was no effect of age or age x type interaction.

10 One older woman (who did not participate in Study 2 but was recruited from the same lab database) also coded expressivity from all of the hassle monologues; chronbach’s alpha including the OA and three YA coders’ ratings was .73. Including the OAs’ rating with the three YA coders’ ratings in a computed average expressivity score for the hassle videos also yielded a significant age difference in average expressivity, \( t(201) = 2.20, p = .03 \), indicating the the OAs’ ratings lowered the average OA expressivity \( (M = 1.75, SD = .93) \) and raised the average YA expressivity \( (M = 2.08, SD = 1.08) \) compared to a computed average comprised of only YAs’ coders ratings of the hassle monologues (listed in Table 12; \( M = 1.79, SD = 1.03 \) for OA and \( M = 1.93, SD = 1.10 \) for YA). However, because the OA only coded one set of dispositional expressivity task videos and none of the dyad videos, average ratings including the OA coder were not included in analyses.

11 Reliability was the same for all combinations of tasks and coders both including and excluding the dyads excluded from analyses.
both interaction tasks separately; coders provided a separate rating for each interaction partner used the same coding definition used Study 1 and in the trait expressivity ratings (chronbach’s alpha across all dyads and raters = .84).

**Interpersonal judgment accuracy.**

*Computer tasks.* Participants completed two emotion perception tasks on a computer, one with photographs of posed facial expressions of emotion, and the other with short videos of actors expressing emotions.

For the static photographs task, participants verbally labeled the emotion of 20 middle aged expressive faces; four target faces (2 male and 2 female) for each of five emotion expressions from the FACES database (Ebner, Riediger, & Lindenberger, 2010), a database of validated and normed photographs of posed facial expressions of emotion. For counterbalancing, the order of the 20 target faces was randomly sorted into five different presentations and each participant viewed a randomly selection version. The faces were be presented one at a time for four seconds each on a computer screen with a black background with a response slide between each face. Each participant viewed the same two faces (not among the 20 targets) for practice. The stimuli were presented through GazeTracker eye-tracking software (EyeTellect, LLC, Charlottesville, VA). After each face, the response slide had three questions: 1) which emotion is expressed on the face (there was a list of possible options -- happy sad, angry, disgusted, fearful, and neutral), 2) how confident they were in choosing the correct label (0-100%) and 3) how likely they would be to remember the identity of the target (0-100%). Participants made all of their responses out loud while the experimenter recorded on paper from a separate room.

The other emotion perception task was the Geneva Emotion Recognition Test (GERT; Schlegel, Grandjean, & Scherer, 2014), which involves labeling 14 different emotions from
targets of different ages; stimuli are short video clips with unintelligible language and include six positive emotions (amusement, pride, interest, joy, pleasure, relief) and eight negative ones (anger, disgust, despair, anxiety, irritation, fear, sadness). Surprise is considered neither positive nor negative.

**Interaction tasks.** Participants judged their interaction partner’s personality traits using the same procedure as Study 1. In addition, after rating their own experience of rapport, participants judged the level of rapport they believed their partner would have rated (“Please rate the level of rapport you think your partner would give the interaction”), using the same single rapport variable Likert scale from zero (no rapport) to eight (high rapport) (see Appendix C).

**Dyadic Activity**

The same map and play money as Study 1 was used for the trip-planning activity. The instructions in Appendix A were adjusted to indicate that participants had 10 minutes (instead of 15) to plan a dream vacation. Additionally, participants used the instructions in Appendix F for the debate activity, which also indicates that participants have 10 minutes for the activity.

**Procedure**

Participants provided informed consent to be videotaped for three activities: two activities with another participant and one series of monologues presented on a computer.

Participants were randomly assigned to a dyad partner and planned a dream vacation around the world together (same procedure as Study 1). Then, they separately answered questions about their experience of rapport using the 18-item interaction questionnaire (See Appendix C). Afterwards, the participants were given a list of debate topics (Appendix E) and asked to select a topic that they could debate with each other for 10 minutes, with the goal of convincing their partner that their own view is more correct. After the 10 minutes, the video
camera was turned off and participants again rated their experience of rapport and completed the interaction-based interpersonal accuracy measures (Appendices C and D).

Participants’ arrival in the laboratory was staggered in order to allow them to complete all of the measures without meeting before the interaction. The first participant to arrive for the experiment completed tasks in the following order: 1) behavioral measure of expressivity (the three monologues) 2) surveys (including BEQ) 3) GERT 4) FACES emotion perception task and finally 5) trip planning and debate with the other participant. The second participant did the trip planning activity and debate first, followed by the FACES emotion perception task, GERT, background measures, and finally the behavioral measure of expressivity.

**Study 2 Results**

**Background Measures**

OA scored significantly higher on the Shipley vocabulary test, PANAS positive, and three TIPI traits (Agreeableness, Emotional Stablility, and Optimism). OA scored marginally higher on Extraversion. YA scored significantly higher on PANAS negative, CESD, IRI Fantasy Scale, and a few individual TIPI items (Stubborn). YA scored marginally higher on the Selfish item. All older adults scored above a screening threshold on the Mini Mental State exam (cutoff for no cognitive impairment is 24; $M = 29.01$, $SD = 1.20$, range 25-30). These results suggest that the current sample of YA and OA are largely similar to the Study 1 sample. Descriptive statistics and age differences (determined with independent samples t-tests) are presented in Table 11.

**Hypothesis 1:** *Age differences in rapport ratings will be attenuated in an adversarial compared to a cooperative context.*
**Sum of difference scores.** This measurement was the best for measuring dyad rapport from Study 1 because it reflects both valence and agreement of ratings within each dyad.

A 2 x 3 Repeated Measures ANOVA with activity type (trip, debate) as a within subjects variable and dyad type (YY, OO, YO) as a between subjects variable revealed two main effects and no interaction. Rapport was rated lower in the debate task ($M = .79, SD = .11$) compared to the trip task ($M = .82, SD = .10$) across all dyad types, $F(1, 107) = 8.31, p < .01, \eta^2_p = .09$. Rapport ratings differed significantly by dyad type, $F(2, 107) = 4.66, p < .05, \eta^2_p = .08$. Because of the relevance of the task for observing age differences in rapport, the effect of dyad type was explored separately by activity type (trip planning and debate).

**Trip planning.** A One-Way ANOVA revealed a marginal difference among the three dyad types (YY, OO, YO), $F(2, 107) = 4.98, p < .01$. A Tukey HSD indicated that OO rapport ratings ($M = .87, SD = .10$) significantly differed from YO ($M = .79, SD = .10$) dyads, but not YY dyads ($M = .83, SD = .07$). An independent samples $t$ test performed exclusively on YO dyads revealed no age differences in rapport ratings between the young and older members of YO dyads, $t(96) = .50, p > .05$.

**Debate.** A One-Way ANOVA revealed a marginal difference among the three dyad types (YY, OO, YO), $F(2, 107) = 2.72, p = .07$. Similar to the trip activity, OO dyads’ rapport ratings ($M = .84, SD = .13$) were marginally higher than YO ($M = .77, SD = .12$) dyads, but not YY dyads ($M = .79, SD = .08$). An independent samples $t$ test performed exclusively on YO dyads revealed no age differences in rapport ratings between the young and older members of YO dyads, $t(96) = .64, p > .05$.

**Relationship between trip and debate.** Furthermore, the trip and debate dyad rapport ratings were significantly correlated in OO dyads, $r(23) = .76$ and YO dyads, $r(49) = .57$. Ratings
for the two activities were not significantly correlated in YY dyads, \( r(38) = .23 \). The correlations between trip and debate activities did not significantly differ between OO and YO \((p > .05)\), but the correlation between trip and debate in YY dyads was significantly lower than in YO \((Z=1.84, p = 03)\) and in OO \((Z = 2.72, p < .01)\) dyads. Therefore, it appears that YA felt more impacted by the type of activity than did OA.

**Matching ratings per dyad.** As in Study 1, each single rapport variable per participant (rated only once, after the trip and debate activities concluded was recoded as follows: a rating from 6-8 was recoded as “high rapport”, a rating of 4-5 was coded as “neutral”, and a rating of 1-3 was coded as “low rapport”. Reciprocal rapport was defined as both participants rating high rapport. Unilateral rapport was defined as one high and one low rapport rating. No rapport was defined as both participants rating low rapport. Average rapport was defined as one high and one neutral, one low and one neutral, or both neutral.

In YY dyads, one (2.6%) reported no rapport, 22 (57.9%) reported reciprocal rapport, two (5.3%) reported unilateral rapport, and 13 (34.2%) reported average rapport. In OO dyads, 14 (66.7%) reported reciprocal rapport one (4.8%) reported unilateral rapport, and six (28.6%) reported average rapport. In YO dyads, 30 (61.2%) reported reciprocal rapport, six (12.2%) reported unilateral rapport, and 13 (26.5%) reported average rapport.

**Hypothesis 2a:** Older adults will be less expressive on self-report, but not behavioral coding of dispositional expressivity compared to young adults.

**Dispositional expressivity.** Because Study 1 demonstrated age differences in expressivity in an interaction context, expressivity was measured at the individual level two ways (self report and rated by coders) in Study 2.
**BEQ.** The BEQ consists of three subscales: Positive Expressivity, Negative Expressivity, and Impulse Strength. These three subscales are averaged to form an Emotional Expressivity score. The three subscales were correlated separately by age group (Tables 13a and b). All three subscales were significantly correlated in the YA and in OA, which is consistent with the original BEQ validation paper (Gross & John, 1997).

There were no age differences in Positive Expressivity \(t(216) = .16, p > .05\). For Negative Expressivity, a Mann-Whitney test was performed because Levene’s test for equality of variances was significant, indicating the age groups had unequal variances \((p = .03\); Negative Expressivity was also not significantly different between YA (Mdn = 4.00) and OA (Mdn = 4.00), \(U = 5274.00, p = .24, r = .08\). There was a significant age difference in Impulse Strength, such that YA had higher scores than OA, \(t(215) = 2.99, p < .01\). There were no age differences in the average Emotional Expressivity score, \(t(215) = .77, p > .05\); see Table 12 for descriptive statistics.

**Monologues.** In order to test differences between age groups and type of monologue (hassle, uplift, reinterpret) on dispositional expressivity, a Repeated Measures ANOVA with age (young, old) as a between subjects factor and type (hassle, uplift, reinterpret) as a within subjects factor was performed on coded expressivity. There were main effects of age, \(F(1,196) = 5.16, p = .02\), and type, \(F(2,392) = 41.38, p < .001\). There was an Age x Type interaction, \(F(2,392) = 5.57, p < .01\). Young adults were rated as more expressive across the monologue types compared to older adults; see Table 12.

In order to understand the interaction, separate One-Way ANOVAs were computed by age group with monologue type as the independent variable. For YA, there was a marginal effect of monologue type, which suggests that they were similarly expressive in each monologue type,
For OA, however, there was a significant effect of monologue type on expressivity, \( F(2, 247) = 8.13, p < .001 \). A Tukey HSD showed that older adults were more expressive in the hassle monologues compared to the uplift and reinterpret monologues.

Independent sample t-tests with age as the independent variable were also performed separately by monologue type. There were no age differences in the hassle or reinterpret (\( p > .05 \)), but there were age differences in the uplifts, such that young adults (\( M = 1.68, SD = 1.11 \)) were rated as more expressive than older adults (\( M = 1.19, SD = .95 \)), \( t(198) = 3.31, p < .01 \).

**Correlation between dispositional measures.** In order to determine whether individuals were rated similarly expressive across the monologue types, the three types of monologues were correlated with each other separately by age group. Coder-rated expressivity on all three types of monologues were highly correlated with each other in both YA and OA (Tables 13a and b).

If the self report and coded expressivity tasks measured dispositional expressivity in the same way, then they would be highly correlated. Therefore, in order to observe whether the dispositional measures of expressivity were related to each other in both age groups, Pearson correlation coefficients were computed separately by each age group between each of the self- and other-rated dispositional expressivity measures. Older adults’ self-reported expressivity on the Negative Expressivity subscale was significantly correlated with how the trained coders rated expressiveness in each of the monologues, but there were no significant relationships between self and other-rated expressivity in YA; see Tables 13a and b. Consequently, the dispositional measures cannot be combined to form one composite score.

**Hypothesis 2b:** Older adults will be more expressive in a dyad context (conversational expressivity) compared to young adults.
**Conversational expressivity.** Each participant received an expressivity rating from their ratings of their expressive behaviors in both interaction contexts using the same rating method as Study 1 (and same definition used on coding the monologues), which was obtained by trained raters who focused separately on each interacting partner in each dyad.

**Mean age differences.** All coders’ ratings were averaged to create an overall expressivity score per participant for each activity (see Table 14). In order to determine whether expressivity varied by participant age, interaction partner age, and the two interaction tasks, a Repeated Measures ANOVA with participant age and partner age as between subjects factors and task as a within subjects factor was performed; the main effects of participant age and partner age were significant. Older adults were rated higher in expressivity ($M = 2.83, SD = .93$) than YA ($M = 2.44, SD = .97$) across dyad types, $t(213) = -2.98, p < .01$.

Because the interaction between participant and partner age was marginal $F(1,171) = 3.01, p = .08$, independent samples $t$ tests were performed separately per age group in order to determine whether age differences in expressivity would emerge by interaction partner age and type of activity. Older adults paired with other older adults ($M = 2.87, SD = .84$) were not significantly more expressive than older adults paired with young adult partners ($M = 3.03, SD = .79$), $t(84) = .95, p > .05$. However, young adults’ expressivity was significantly lower if their partner was old ($M = 2.41, SD = .85$) versus young ($M = 2.90, SD = .79$), $t(87) = 2.78, p < .01$; see Table 14.

There was no main effect of task, nor interactions with age and task. Additionally, expressivity in the trip versus dyad were significantly correlated in both YA $r(89) = .89, p < .001$ and OA participants $r(87) = .84, p < .001$ across dyads. Therefore, expressivity in trip and debate were averaged per individual for subsequent analyses.
**Change in expressivity.** Z scores were created for the various measurements of expressivity for each participant: average conversational expressivity, the average of monologue-coded expressivity, and the average of BEQ subscales. Then, two unique difference scores were computed per participant in order to measure their change in expressiveness from self reported and conversational expressivity and from monologue-coded and conversational expressivity. Participants’ dispositional measures (BEQ and monologue averages) were each subtracted from their average conversational expressivity. Therefore, someone who was more expressive in the interaction contexts compared to their dispositional expressivity (self report and monologue-coded) would have a positive score, but individuals who were less expressive in the dyad contexts would have negative difference scores. A Repeated Measures ANOVA with type of difference score (from self report versus monologue) as a within subjects factor and participant age and partner age as between subjects factors revealed main effects of participant age, $F(1, 158) = 13.53, p < .001 \quad \eta^2_p = .08$ and partner age, $F(1, 158) = 8.24, p < .01 \quad \eta^2_p = .05$. There was no effect of type of difference score nor any interactions ($p_s > .05$). For the main effect of age, OA were significantly more expressive in the dyad relative to their self report ($M = .24, SD =1.24$) compared to YA ($M = -.34, SD = 1.39$), and relative to their monologue-coded expressivity ($M = .33= SD = 1.00$) compared to YA ($M = -.22, SD = 1.14$).

Because Study 1 found a relationship between expressivity and rapport in young adult dyads only, independent samples t-tests were performed separately by participant age group with participant age as the independent variable. Older adult participants’ change in expressivity between dispositional (both self report and monologue-coded) and conversational expressivity was not significantly different depending on their partner age ($p > .05$); older adults were more expressive in all interactions compared to their dispositional levels YA, on the other hand, were
significantly less expressive when paired with an older partner compared to a same-aged partner relative to their dispositional expressivity; this was true for both types of change scores in YA, self-report $t(87) = 2.98, p < .01$, and monologue-coded expressivity, $t(84) = 2.28, p < .05$; see Figure 2a and b.

**Hypothesis 3:** Age differences will emerge in traditional computer-based interpersonal judgment tasks, but not in interaction-based tasks.

There were no age differences in interpersonal judgment accuracy in Study 1, but accuracy was related to expressivity in YY dyads in Study 1. Because accuracy was limited to one task in Study 1, Study 2 investigated age differences in interpersonal accuracy in several methods.

**Computer-based tasks.** Two different tasks used standardized computer-based interpersonal judgment accuracy tasks for measuring emotion recognition accuracy.

**FACES.** Accuracy is determined as the proportion of correct responses (out of 20) as determined by the original database validation; the highest possible score is 1.00. A Mann-Whitney test indicated that scores were significantly higher in YA (Mdn = .90) than in OA (Mdn = .85), $U = 2389.00, p < .05, r = .19$; see Table 15.

**GERT.** Accuracy is determined as the proportion of correct responses out of the total score (42). Levene’s test for equality of variances was significant ($p = .03$). A Mann-Whitney test indicated that GERT scores were significantly higher in YA (Mdn = .64) than in OA (Mdn = .46), $U = 1624.50, p < .001, r = .58$. There were no outliers per age group; see Table 15.

**Interaction-based tasks.** Participants rated their interaction partner on two different variables, personality traits and rapport.

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12 Outliers were determined separately by age group with the built-in test in SPSS (starred values; Hoaglin & Iglewitz, 1987). Two OA scored below .50 accuracy and were removed for this analysis only.
**Personality judgment.** Using the procedure from Study 1, self-reported TIPI scores were correlated with partners’ TIPI judgments across all items. Each participant received an r value for accuracy, which was Fisher z-transformed for statistical analysis.

As in Study 1, an independent samples t-test revealed no age difference in personality judgment accuracy across dyad types: \( t(200) = .625, p = .533, \text{cohen’s } d = .08 \). A 2 (participant age) x 2 (partner age) between subjects ANOVA tested whether personality judgment accuracy differed between young and older adults paired with someone of their own or other age group; there were no main effects nor an interaction (all ps >.05; see Table 1). 

**Rapport judgment differences.** After both activities concluded and participants rated their experience of rapport, they also provided a rating of what they thought their partner rated, “Please rate the level of rapport you think your partner would give the interaction”, using the same 1-8 Likert scale as their own rapport ratings. In order to evaluate participants’ judgments of their partner’s rapport rating, two types of analyses were performed. First, difference scores were computed at the individual level both within-subjects (i.e., how a participant estimated their partner’s rating relative to their own rating) and between-subjects (i.e., how a participant estimated their partner’s rating relative to the partner’s actual rating). Additionally, correlations at the dyad type level tested whether the between-subjects rapport judgments differed by dyad type.

**Within-subjects judgment of partner rapport.** Each participant rated the level of rapport they thought their partner would give the interaction using the same Likert scale as the one used to measure their self-reported rapport (single item). Because these ratings are within-subjects, paired samples t-test revealed that across all dyads, participants underestimated their partner’s
self report rapport rating \((M = 6.24, SD = 1.56)\) compared their own self report of rapport \((M = 6.46, SD = 1.50)\), \(t(216) = 3.29, p = .001\).

*Between-subjects judgment of rapport.* In order to compare how close individuals’ judgments were to the actual rating of their partner, a difference score was computed between participants’ judgments of their partners’ rapport rating and their partner’s actual self report. Partners’ self reports were subtracted from participants’ judgments. Negative numbers are representative of underestimation (e.g., if a participant judged their partner’s rating as 5 but the partner’s self rating was 8, the participant’s difference score would be -3, representing underestimation). In order to determine if these judgments differed by age, a 2 (participant age) x 2 (partner age) between subjects ANOVA was performed. The main effect of participant age, \(F(1, 210) = 12.40, p < .01 \eta_p^2 = .06\) and partner age, \(F(1, 210) = 9.15, p < .01 \eta_p^2 = .04\) were significant. The participant x partner age interaction was not significant \((\eta_p^2 = .01)\). Independent samples t tests revealed that young adults’ rapport judgment difference scores were significantly lower \((M = -.58, SD = 1.66)\) than those of older adults \((M = .28, SD = 1.94)\), indicating that young adults were more likely to underestimate their partner’s rapport rating. However, individuals with older adult partners \((M = -.59, SD = 1.96)\) had significantly lower difference scores than individuals paired with individuals with young adult partners \((M = .05, SD = 1.69)\), indicating that individuals with older partners were more likely to underestimate their partners’ rapport rating than individuals paired with young adults. Although the interaction was not

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13 Z-scores were computed within age groups (young and old). In OA, 14 participants’ rapport ratings were more than one SD below the mean. The remaining 79 participants’ rapport ratings were within 1 SD above/below the mean (two were missing). In YA, 16 participants’ rapport ratings were more than 1 SD below the mean, 23 participants’ ratings were more than one SD above the mean, and the remaining 85 participants’ ratings were within 1 SD above/below the mean (one was missing). In the original (un-z scored) ratings, 48 (50.5%) of the OA and 23 (18.4%) YA participants endorsed “8” (the highest possible value) for their rapport rating.
significant, an independent samples t-test revealed that older adults were less likely to underestimate the rapport rating of a young adult partner \((M = .81\ SD = 1.68)\) compared to an older adult partner \((M = -.33, SD = 2.06)\). Young adults, on the other hand, underestimated partners’ rapport ratings regardless of their partners’ age; see Table 17.

*Rapport judgment across dyads.* In order to test whether between-subject rapport judgments differed at the dyad type level (aggregate level), a correlation coefficient was computed between individuals’ judgment of their partner’s rapport rating and their partner’s self report across the different dyad types (YY, OO, YO). Rapport judgments and partners’ self reports were highly correlated among young adults rating young partners, \(r(76) = .42, p < .001\); older adults rating young partners [marginally] \(r(48) = .28, p = .06\); and older adults with older partners \(r(42) = .31, p < .05\), except in young adults rating older adult partners, \(r(48) = .17, p = .24\). However, these correlations were not significantly different from each other \((p > .05)\). This demonstrates that the correspondence between how participants’ judged their partner’s experience and the partners’ actual self reports was high in most age combinations, except for young participants’ judgments of an older adult partners’ rapport (compared to the older adult partners’ own self report).

**Hypothesis 4a:** *Dyads with individuals high in dispositional expressivity will be higher in rapport compared to dyads with individuals whose dispositional expressivity is lower.*

**Hypothesis 4b:** *If a dyad has neither an expressive person nor an interpersonally sensitive person, then there will be no rapport.*

Because age differences in dispostional to conversational expressivity were smaller in the self-report, the average BEQ expressivity scores were used rather than the coded monologues to test whether individual differences in dispositional expressivity predict changes in rapport
Because there were age differences on computer-based tasks but not personality judgment accuracy, the Fisher-z transformed value of personality judgment accuracy was used. The rationale for using predictors with fewer age differences is to avoid interactions between the predictors and age before they are entered into the model.

A multiple regression measured the relative influence of dispositional expressivity, interpersonal accuracy, and dyad type on dyad rapport (Kenny, personal communication). This was performed with the dyad as the unit of analysis.

\[ Y = b_0 + b_1A + b_2B + b_3C + b_4D + b_5E \]

The dependent variable (dyad rapport; Y) was the sum of differences dyad rapport variable averaged across the two tasks. A dummy coded variable (A) was designed to test the effect of the number of older adults in a dyad. Expressivity (B) was the sum of BEQ scores of each dyad member (partner 1 + partner 2). An interaction term (C) between the dummy coded variable (A) and expressivity (B) was computed. Interpersonal judgment accuracy (D) was the sum of personality judgment accuracy of each dyad member (partner 1 + partner 2). An interaction term (E) between the dummy coded variable (A) and interpersonal judgment accuracy (D) was computed.

The model marginally predicted rapport, \( F(5, 91) = 2.21, p = .06, R^2 = .11 \). Only dyad level interpersonal judgment accuracy added statistically significantly to the prediction \( (p=.01) \); though the number of older adults in the dyad marginally predicted change in rapport as well \( (p=.07) \). These modest results suggest that increases in interpersonal judgment accuracy at the dyad level contribute to higher levels of rapport as the number of older adults in the dyad increase (i.e., from none to both); see Table 18.
Study 2 Discussion

Study 1 investigated age differences in rapport, and found that older adults rated higher rapport than young adults, and individuals with young partners rated higher rapport than individuals paired with older partners. In the current study, mixed age dyads had the lowest dyad rapport in both tasks. The hypothesis that there would be fewer age differences in rapport ratings in an adversarial compared to a cooperative context (Hypothesis 1) was partially supported because rapport ratings went down in the debate context, and neither young nor older adults’ ratings within mixed dyads were responsible for pulling the average down (i.e., no age differences in rapport ratings within mixed-age dyads).

Bernieri et al. (1996) found that dyad rapport ratings were highest after dyads engaged in a cooperative (trip-planning) task first, followed by an adversarial (debate) task, compared to the first task by itself, perhaps due to the “added amount of social interaction and experience” (p. 11). However, in the current study, the opposite was found: the debate context lowered rapport for all dyad types. The adversarial task may have been successful in activating different affiliation-related goals from the cooperative task (i.e., working together on selecting a travel destination versus revealing potentially controversial personal views).

Even though the adversarial task lowered rapport, it is important to note that only one out of 110 dyads reported no rapport (i.e., both partners agreeing the interaction was bad). The discrepancy between Bernieri et al. (1996) and the current research may lie in the fact that the current study solely investigated same-gender dyads (as opposed to mixed-gender dyads). The fact that mixed-age dyads had the lowest rapport may also emphasize the fact that similarity may in fact promote rapport (McPherson et al., 2001).
The second set of hypotheses focused on the measurement of expressivity. First, it was predicted that older adults’ dispositional expressivity would be lower than that of young adults in self reports, but not in behavior coding. This hypothesis was partially supported. Although there were no age differences in the Positive or Negative subscales of the BEQ, there were large age differences in Impulse Strength, which measures the strength of emotional experiences. A sample item of the Impulse Strength subscale is “I experience my emotions very strongly” (see Appendix G). Young adults were also more expressive in the coded monologues, specifically when they gave a brief statement about a recent positive experience.

The fact that the self reports and behavioral coding of the monologues were not significantly correlated suggests that the ways in which individuals see themselves as expressive of emotions is not in line with the way that trained coders rate them. The one exception from the current study was that the relationship between self reported Negative Expressivity (BEQ subscale) and coder-rated expressivity from the monologues (all three) was significantly higher in older than younger adults. It could be the case that older adults are more self aware of their expressiveness, but this argument remains speculative. Nonetheless, the current research suggests that when investigating expressivity as an individual predictor in a social outcome, like rapport, it is important to measure the difference between self-reports and coded expressive behavior. In the context of aging, the current study demonstrated that older adults’ expressivity is greater when they are interaction with somebody compared to when they are alone or answering a questionnaire about their tendency to express themselves in emotional situations. Therefore, future studies that aim to investigate the role of expressivity in aging must operationally define expressivity appropriately. For example, if one is interested in the role of expressive behavior in
doctor-patient communication, then the best measurement of expressivity will be directly from the context of the dyadic interaction.

In terms of an individual’s expressiveness in a dyadic interaction compared to their expressiveness when alone or rating their expressive tendencies, the current study revealed that older adults were significantly more expressive in the dyad relative to their self report and relative to their monologue-coded expressivity. The change in expressivity self report and monologue-coded expressivity to conversational expressivity was significantly lower when young adults were paired with an older interaction partner. This significant drop in expressivity in mixed-age dyads may provide an explanation for the lower rapport ratings in that dyad type. If expressivity is a signal of affiliation for social partners, then young adults’ drastic lessening of their expressions when interacting with and older adult may have hampered rapport.

Hypothesis 3 was supported in the current study because older adults’ accuracy in judging social qualities was different from young adults on computer-based tasks, but not within a social interaction context when judging an interaction partner’s personality traits. Interestingly, although young adults were less expressive with older partners, there were no age differences in personality judgment accuracy. This may be indicative that older adults are skilled in social judgments even without the aid of a partners’ nonverbal expressive signals. Perhaps cues at other levels, such as verbal disclosure, give older adults’ enough information to accurate judgments of social partners.

The regression model predicting dyad rapport (Hypotheses 4a and b) indicated that dyads with interpersonally skilled individuals were higher in rapport. Because the model was not successful in predicting a significant amount of variance in dyad rapport, there are likely numerous additional factors that influence the dyadic experience of rapport. Because expressive
behavior was not a significant predictor of rapport, but personality judgment accuracy was related to dyad rapport, it may be the case that the impressions the interaction partners have of each other has a more meaningful predictor of whether they will get along.

Chapter 4: General Discussion

The aim of this dissertation was to investigate how the experience of dyadic rapport is influenced by the ages of interacting partners. Study 1 measured expressivity and interpersonal judgment accuracy in same- and mixed-age dyads, and found that expressivity was related to dyad rapport in young adult same-age dyads, but not in dyads with older adults. Study 2 extended these findings by revealing that older adults’ expressive behaviors in the dyad were not representative of their typical expressivity, but rather engaging in the interaction brought about more expressivity in older adults compared to young adults, especially with a young adult partner. Although young adults’ ratings of rapport and expressive behaviors were lower in mixed-age dyads, older adults were able to calibrate their ratings of rapport depending on the feedback they received from their interaction partner because they rated higher rapport when interacting with a similarly aged partner compared to interacting with a young adult.

Previous research has demonstrated that older adults report experiencing more positive relative to negative affect compared to younger adults (Charles & Piazza, 2007). Several factors have been proposed as mechanisms for this age-related difference in affective experience. Socioemotional selectivity theory (Carstensen, 1993) suggests that older adults may be motivated to structure social environments that promote positivity, focusing more on positive aspects of their environments compared to young adults. In line with this view, older adults may engage in more passive strategies for dealing with confrontations with family members compared to young adults (Birditt & Fingerman, 2003; Charles, Piazza, Luong, & Almeida, 2009; Sorkin & Rook,
2006). Older adults may also appraise negative tasks (including interacting with an unpleasant confederate) more positively in order to maintain positive moods (Luong & Charles, 2014).

Another hypothesis in the socioemotional aging literature is that older adults’ positive experiences are not wholly attributable to their own motivation and use of strategies for focusing on positive information, but rather their social environments (specifically, being treated more positively by social partners) also influences their affective experiences (Social Input Model; Fingerman & Pitzer, 2007). For example, both young and older people report using less aggressive and confrontational behaviors and more avoidant strategies during conflict with older adults (Fingerman, Miller, & Charles, 2008). However, in the current study, mixed-age dyads were lower in rapport, and young adults were less expressive with an older partner. These results are more in line with the Communication Predicament of Aging Model (Ryan, Giles, Bartolucci, & Henwood, 1986), which suggests that characteristics of older age may trigger age stereotypes and expectations, leading to communication patterns that may negatively impact intergenerational relationships.

Furthermore, the current research supports the idea that older adults are not just passive recipients of a positive social environment in all social contexts, nor do they appraise all social environments equally positive; instead, older adults actively construct their experiences of rapport to be in line with the feedback from (i.e., expressive behaviors) from their social partner. This finding is complementary to socioemotional selectivity theory, and is consistent with the view that older adults are active participants in constructing their affective experience, which may be structured to maximize emotional benefits based on limited time remaining in life (Carstensen, 1993).
Across both studies, ratings of dyad rapport were highest when older adults interacted with a partner of their own age group. This novel finding contributes to research that links perceived similarity with affiliation (McPherson et al., 2001). For older adults, interacting with a same-aged partner may have activated positive stereotypes of aging (e.g., being well-traveled, having various interesting life experiences and stories to tell), which may be indicative of an underlying motivation to preserve a positive self-view. For example, in a study where older adults were asked to indicate the perceived age similarity between themselves and an unfamiliar person of their age group, older adults perceived greater similarity after exposure positive age stereotypes (e.g., increasing wisdom in old age) compared to negative age stereotypes (e.g., risk for dementia in old age; Weiss & Freund, 2012). Similarly, a recent study found that older adults rated greater similarity between their own personality and the typical personality traits of other older people in relation to positive (e.g., funny) compared to negative (e.g., materialistic) traits (Lin, Ankudowich, & Ebner, 2017). Additionally, the fact that the current study activated interaction-based goals of cooperation, disclosure, and sharing of experiences, coupled with the suggestion that older adults may be more motivated to perform well in laboratory tasks and are conscientious about performing those tasks well (Frank, Nara, Zavanin, Touron, & Kane, 2015), the high rapport among older adult dyad partners maybe indicative of a strategy to maintain a positive self view with a similarly aged social partner (relative to a younger partner).

Accuracy in interpersonal judgments (made on personality traits) was related to rapport in all dyads, but may be even more relevant for dyads with older adults. This finding is in parallel with the fact that older adults were just as accurate at perceiving a social partner’s personality traits (compared to young adults’ accuracy) even with less expressive behavior to judge from young adult partners. Furthermore, because older adults in same-aged dyads rated rapport higher
than those in mixed-aged dyads (young and older adults’ ratings did not significantly differ in these dyads), older adults were not oblivious to the younger adults’ relative lack of enjoyment with them (young adults were more expressive and rated higher rapport with another young adult partner). Therefore, it may be the case that older adults’ are socially skilled enough to differentiate between interactions that are going better than others, which is in line with the suggestion that older adults are “social experts” based on their accumulation of experiences over their lifetime (Hess, Osowski, & Leclerc, 2005).

Whereas past research has suggested that an individual’s trait level of interpersonal judgment accuracy is an important predictor for various positive social outcomes (e.g., Hall et al., 2009), the current research adds to this body of work by demonstrating with the same group of people that age differences emerge in computer based tasks, but not when young and older adults make ratings of an interaction partner. The current study also extended work that found reduced age differences in social perception when the targets were couples (Petrican et al., 2014; Stanley & Isaacowitz, 2015) to include contexts at zero-acquaintance with a randomly assigned interaction partner. Studies that rely less on static, posed stimuli find more similarities than differences (Freund & Isaacowitz, 2014), but studies using computer-based tasks have found age differences in older adults’ ability to accurately label facial expressions (especially of negative expressions; Ruffman et al., 2008). One hypothesis of this difference in method may be because valence is easier to differentiate than specific emotion categories (Barrett, 2006), and in standard emotion perception tasks there are many choices, which could lead to more errors. Similarly, a lack of non-negative response options (mostly happy and/or neutral) coupled with a tendency to avoid negative information in older age (Mather & Carstensen, 2005) may lead to worse performance by older adults on these tasks. It may also be the case that age differences in social
judgment skills are task-specific (Murry & Isaacowitz, in press), which is in line with the present findings of age differences on emotion perception but not personality judgment.

Moreover, the current research suggests that social interactions elicit more expressive behavior from older adults compared to younger adults. Older adults’ were more expressive in a dyad context relative to their self reports as well as their expressive behavior when alone (i.e., providing short monologues about recent experiences) compared to young adults. This finding speaks to the importance of identifying independent variables that conceptually align with the respective outcome. This suggestion is in line with previous research that revealed an effect of interview context on facial masking (a symptom of individuals with facial muscle impairments such as Parkinson’s Disease), such that facial masking was greater when individuals talked about a frustrating versus an enjoyable recent experience (Takahashi, Tickle-Degnen, Coster, & Latham, 2010). Therefore, awareness of the different contexts in which older adults exhibit more or less expressive behavior may be important for various social contexts, from getting along with a new acquaintance to speaking to a physician about health concerns.

Researchers interested in studying rapport have acknowledged the difficulty in nailing down a precise definition (Jorgensen, 1992). Whereas Tickle-Degnen and Rosenthal (1990) theorized that positive experiences of rapport at the dyad level reflect three fundamental components (positivity, mutual attention, and coordination), the results from this dissertation do not find that these three components are evident in participants’ self reports. Instead, rapport may be a latent factor that is related to both positivity and agreement of dyad partners’ ratings, perhaps best captured as a sum of difference scores within a dyad across multiple items that assess interaction qualities such as friendliness and warmth. Future research will need to
disentangle the unique contribution of rapport to interactions apart from general positivity in ratings.

Several limitations of the current research are worth noting. First, expressivity ratings of videorecorded behavior were made on a global scale that captured individuals’ overall level of animated behavior. However, expressivity can be positive or negative (Gross & John, 1995). The current research did not capture the existence of negatively valenced nonverbal expressivity (e.g., frowning, negative tone of voice), which would presumably dampen rapport. A meta-analysis of age differences in expressivity revealed that older adults report being less expressive on self report measures relative to young adults (Vicaria et al., in preparation). An investigation on the overlap between coded, behavioral expressions, informant ratings, and self ratings over time (such as in experience sampling) would be useful in disentangling age differences in self versus observer rated expressivity.

Future research should investigate other communicative acts at the nonverbal and verbal level that may be especially well suited for fostering harmonious relationships, and in helping perceivers decode the psychological experiences of others. Previous research has shown that same-gender dyads that were randomly assigned to self-disclose were judged to be more behaviorally coordinated, which in turn predicted higher ratings of positivity, mutuality, and vitality (Vacharkulksemsuk & Fredrickson, 2012). Because the current study demonstrated similarity in age (and gender) may promote rapport, it could be the case that one mechanism for establishing rapport is through inviting a social partner to get to know them better.

An additional limitation is that the interpersonal judgment accuracy tasks in Study 2 all measured different things: emotion, personality traits, and rapport. Relying on individuals’ self reports as a judgment criterion has limitations, such as self-presentation bias and assumptions of
the targets’ self knowledge (Hall et al., 2005). Also, the task of judging multiple traits from a single target may draw more on holistic style of processing (in contrast to an analytical style where specific features are considered in turn), whereby the targets’ behavior is considered simultaneously (Hall et al., 2017). A recent study on the relative contributions of perceiver and target characteristics on trait impressions (e.g., warmth, trustworthiness) from faces demonstrated that stimuli high in emotional intensity reduced the variability attributable to the perceiver (Hehmen, Sutherland, Glake, & Slepian, 2017). Therefore, although Study 2 provided evidence for method-based moderators of social perception accuracy, more research is needed to elucidate the respective contributions of perceiver and target in the context of aging.

In sum, older adults experience various changes cognitively, physically, and emotionally. The ways in which they establish rapport may be indicative of their motivation to maintain emotional well-being, especially because positivity is one of the theorized components of rapport (Tickle-Degnen & Rosenthal, 1990). Dyadic experiences of rapport may be strengthened by individuals who are skilled at perceiving the qualities of their social partner, which may be a skill that improves in older age. Understanding social changes with age, such as the experience of rapport, is crucial for informing the ways that older adults may maintain well-being and successful relationships with others. Future research may build from these findings to inform practices for building and maintaining relationships for individuals of all ages, both within and outside of a lab setting, such as health care providers and caregivers whose ability to build rapport with others is essential. The results from these studies will make a significant impact in the way psychologists approach their understanding of social behavior across the lifespan, especially in regards to building and maintaining relationships.

References


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Vicaria, Castro, & Isaacowitz (in preparation) Are there age differences in Expressivity? A meta-analysis on positive and negative expressivity measures and outcomes.


Table 1. Study 1, Means and standard deviations for background measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>YA N= 45</th>
<th>OA N = 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipley Vocabulary**</td>
<td>64.76 (13.33)</td>
<td>80.32 (12.29)</td>
</tr>
<tr>
<td>EMS</td>
<td>49.53 (6.57)</td>
<td>50.83 (8.72)</td>
</tr>
<tr>
<td>ESES*</td>
<td>17.93 (2.90)</td>
<td>19.60 (3.69)</td>
</tr>
<tr>
<td>PANAS Positive***</td>
<td>28.89 (7.17)</td>
<td>37.14 (6.49)</td>
</tr>
<tr>
<td>PANAS Negative</td>
<td>15.60 (4.26)</td>
<td>13.87 (6.19)</td>
</tr>
<tr>
<td>LOT</td>
<td>21.29 (6.82)</td>
<td>23.36 (6.18)</td>
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<tr>
<td>MIDI</td>
<td>46.18 (5.18)</td>
<td>47.78 (8.31)</td>
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<td>34.14 (7.34)</td>
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<td>12.15 (5.70)</td>
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<tr>
<td>CESD</td>
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</tr>
<tr>
<td>Trait</td>
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<td>Group 2 Mean (SD)</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>TIPI Extraversion</td>
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<td>4.94 (1.69)</td>
</tr>
<tr>
<td>TIPI Agreeableness***</td>
<td>5.26 (1.11)</td>
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<td>Digit Span Backward</td>
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</table>

*Note.* + p <.10  * p<.05. ** p<.01. ***p<.001; significance levels for independent samples t-tests between age groups.
Table 2. Study 1, Mean participant rapport ratings (single item of rapport) by participant and partner age. Standard deviation is in parenthesis.

<table>
<thead>
<tr>
<th>Participant Age</th>
<th>Partner Age</th>
<th>Young</th>
<th>Old</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Young</td>
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<td>6.00 (1.13)</td>
<td>6.31 (1.08)</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>7.47 (.74)</td>
<td>6.90 (2.02)</td>
<td>7.09 (1.72)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6.80 (1.06)</td>
<td>6.60 (1.81)</td>
<td>---</td>
</tr>
</tbody>
</table>
Table 3. Study 1, Dyad rapport: average, agreement, and sum of difference scores per dyad across dyad types

<table>
<thead>
<tr>
<th>Dyad Type</th>
<th>Average (single item) Mean (SD)</th>
<th>Range</th>
<th>Correlation (across 18 items) Mean (SD)</th>
<th>Range</th>
<th>Sum of Difference scores (across 18 items) Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>YY N=15</td>
<td>6.47 (.81)</td>
<td>5.00 – 7.50</td>
<td>.76 (.12)</td>
<td>.45 -.91</td>
<td>.81 (.06)</td>
<td>.67-.90</td>
</tr>
<tr>
<td>YO N=15</td>
<td>6.73 (.70)</td>
<td>5.50 – 8.00</td>
<td>.72 (.17)</td>
<td>.38 -.96</td>
<td>.79 (.07)</td>
<td>.67-.90</td>
</tr>
<tr>
<td>OO N=15</td>
<td>6.90 (1.2)</td>
<td>4.50 – 8.00</td>
<td>.60 (.51)</td>
<td>-.39 -.98</td>
<td>.76 (.21)</td>
<td>.35-.97</td>
</tr>
</tbody>
</table>

Note: Dyad rapport was measured as 1) an average between interaction partners’ self reports on the single rapport variable within each dyad collapsed across dyad type (one likert scale; left side of table) 2) agreement correlations between interaction partners’ self reports on the 18 item post-interaction questionnaire within each dyad collapsed across dyad type (right side of table) and 3) a proportion (out of 144) of the sum of absolute difference scores computed across the 18 post-interaction questions. Pearson r values are in the table but fisher-z transformed scores were used for analyses.
Table 4. Study 1, Inter rater reliability for behavioral cues

<table>
<thead>
<tr>
<th>Bernieri et al. (1996) cues</th>
<th>Bernieri 1996# of coders</th>
<th>Bernieri 1996 Reliability r&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Current Study cues</th>
<th>Current Study Coders</th>
<th>Current Study Reliability r&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective Individual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptor frequency</td>
<td>2</td>
<td>.85</td>
<td>Adaptors</td>
<td>2</td>
<td>.90</td>
</tr>
<tr>
<td>Adaptor duration</td>
<td>3</td>
<td>.86</td>
<td>Regulators</td>
<td>2</td>
<td>.83</td>
</tr>
<tr>
<td>Back-channel responses</td>
<td>3</td>
<td>.76</td>
<td>Facial positivity</td>
<td>2</td>
<td>.90</td>
</tr>
<tr>
<td>Smile frequency</td>
<td>2</td>
<td>.76</td>
<td>Gestures</td>
<td>2</td>
<td>.96</td>
</tr>
<tr>
<td>Smile duration</td>
<td>2</td>
<td>.96</td>
<td>Suggestions</td>
<td>2</td>
<td>.80</td>
</tr>
<tr>
<td>Money spending suggestions</td>
<td>2</td>
<td>.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective Dyad</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual eye-contact duration</td>
<td>2</td>
<td>.92</td>
<td>Mutual Gaze</td>
<td>3</td>
<td>.92</td>
</tr>
<tr>
<td><strong>Subjective Individual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressivity rating</td>
<td>22</td>
<td>.54</td>
<td>Expressivity</td>
<td>2</td>
<td>.74&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Nervousness rating</td>
<td>22</td>
<td>.33</td>
<td>Nervousness</td>
<td>2</td>
<td>.13</td>
</tr>
<tr>
<td><strong>Subjective Dyad</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posture mimicry rating</td>
<td>20</td>
<td>.25</td>
<td>Synchrony</td>
<td>9</td>
<td>.91</td>
</tr>
<tr>
<td>Movement synchrony rating</td>
<td>12</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nose-to-nose proximity</td>
<td>2</td>
<td>.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chair-to-chair proximity</td>
<td>2</td>
<td>.96</td>
<td>Proximity</td>
<td>4</td>
<td>.94</td>
</tr>
<tr>
<td>Closest knee-to-knee proximity</td>
<td>2</td>
<td>.97</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> these alphas are the average for male and female targets for individual cues

<sup>b</sup> the alphas reported in this table are the average of the alphas for beginning middle and end clips.

<sup>c</sup> was coded on 30 sec clips, not 1 min clips like the others
Table 5. Study 1, Intercue correlations for individual cues across all 88 participants

<table>
<thead>
<tr>
<th>Cue</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptors</td>
<td>--</td>
<td>.11</td>
<td>-.02</td>
<td>.16</td>
<td>.08</td>
<td>-.05</td>
<td>.31*</td>
</tr>
<tr>
<td>Regulators</td>
<td>--</td>
<td>--</td>
<td>-.02</td>
<td>-.07</td>
<td>-.08</td>
<td>.06</td>
<td>.03</td>
</tr>
<tr>
<td>Facial positivity</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.07</td>
<td>.13</td>
<td>.41</td>
<td>.05</td>
</tr>
<tr>
<td>Gestures</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.43*</td>
<td>.49</td>
<td>.01</td>
</tr>
<tr>
<td>Suggestions</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.27*</td>
<td>-.14</td>
</tr>
<tr>
<td>Expressivity</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.01</td>
</tr>
<tr>
<td>Nervousness</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
Table 6. Study 1, Intercue correlations for dyad cues across all 44 dyads

<table>
<thead>
<tr>
<th>Cue</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mutual Gaze</td>
<td>--</td>
<td>--</td>
<td>.01</td>
<td>.04</td>
<td>.13</td>
<td>.12</td>
</tr>
<tr>
<td>2. Simultaneous Speech</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-.07</td>
<td>.17</td>
<td>-.05</td>
</tr>
<tr>
<td>3. Mutual Attention</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.49**</td>
<td>-.40**</td>
</tr>
<tr>
<td>4. Synchrony</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-.13</td>
</tr>
<tr>
<td>5. Head-to-head distance</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>6. Closeness</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
Table 7. Study 1, Correlations between individual participant cues and dyad rapport by participant and partner age

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YY N = 14</td>
<td>YO&lt;sup&gt;b&lt;/sup&gt; N = 15</td>
</tr>
<tr>
<td><strong>Objective Individual</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptors (female)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.16</td>
<td>-.20</td>
</tr>
<tr>
<td>Back channel responses/Regulators (female)</td>
<td>-.01</td>
<td>-.17</td>
</tr>
<tr>
<td>Smiling&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.13</td>
<td>.48</td>
</tr>
<tr>
<td>Gestures (female)</td>
<td>.22</td>
<td>.22</td>
</tr>
<tr>
<td>Money suggestions (female)</td>
<td>.21</td>
<td>.06</td>
</tr>
<tr>
<td><strong>Subjective Individual</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressivity</td>
<td>.26&lt;sup&gt;+&lt;/sup&gt;</td>
<td>.45</td>
</tr>
<tr>
<td>Nervous behavior</td>
<td>-.19</td>
<td>-.40</td>
</tr>
</tbody>
</table>

<sup>a</sup> Bernieri et al. (1996) had 60 male-female unacquainted dyads. Some cues were reported individually while others were averaged across the male and female in the dyad.

<sup>b</sup> YO and OY refer to mixed-age dyads, where YO measures the relationship between dyad rapport and the young adult’s cue and OY measures relationship between dyad rapport and the older adult’s cue.

<sup>c</sup> Facial Positivity was coded instead of Smiling in the current study.

Note. Dyad rapport was measured in the current study as the average of both partners’ single item rapport self-report.

** Forward Lean, Orientation, Posture shifts, money monopolization, pointing frequency, map focus were coded in Bernieri 1996 but not in this study because the setup was different.
Table 8. Study 1, Correlations between dyad cues and dyad rapport (average of both partners’ single item rapport self-report) by participant and partner age

<table>
<thead>
<tr>
<th>Bernieri 1996 cues</th>
<th>Bernieri et al. (1996) correlated with rapport</th>
<th>Current Study correlated with dyad rapport</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>YY N=14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OO N=15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>YO N=15</td>
</tr>
<tr>
<td><strong>Objective Dyadic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye contact</td>
<td>.06</td>
<td>.26</td>
</tr>
<tr>
<td><strong>Subjective Dyadic</strong></td>
<td></td>
<td>.36</td>
</tr>
<tr>
<td>Synchrony</td>
<td>.40**</td>
<td>-.04</td>
</tr>
<tr>
<td>Proximity</td>
<td>.32*</td>
<td>-.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.07</td>
</tr>
</tbody>
</table>
Table 9. Study 1, Means and standard deviations of coded expressivity by participant and partner age (scale is from 0 “no expressivity” to 5 “high expressivity”).

<table>
<thead>
<tr>
<th>Participant Age</th>
<th>Young</th>
<th>Old</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>2.65 (.80)</td>
<td>2.33 (.60)</td>
<td>2.54 (.75)</td>
</tr>
<tr>
<td>Old</td>
<td>2.70 (1.13)</td>
<td>2.37 (.94)</td>
<td>2.48 (1.01)</td>
</tr>
<tr>
<td>Total</td>
<td>2.67 (.92)</td>
<td>2.36 (.84)</td>
<td>---</td>
</tr>
</tbody>
</table>
Table 10. Study 1, Interpersonal accuracy (personality self-other agreement represented as Pearson r values) by participant and partner age

<table>
<thead>
<tr>
<th>Participant Age</th>
<th>Partner Age</th>
<th>Young (r)</th>
<th>Old (r)</th>
<th>Total (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>Young</td>
<td>.55 (.31)</td>
<td>.56 (.26)</td>
<td>.55 (.29)</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>.49 (.38)</td>
<td>.64 (.26)</td>
<td>.59 (.32)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>.53 (.33)</td>
<td>.61 (.26)</td>
<td>---</td>
</tr>
</tbody>
</table>

Note: personality self-other agreement is the correlation between participants’ judgments of their partner’s personality traits (using TIPI) and the partner’s self reported ratings on the same scale.
<table>
<thead>
<tr>
<th>Measure</th>
<th>YA M (SD)</th>
<th>YA N</th>
<th>OA M (SD)</th>
<th>OA N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipley</td>
<td>13.67 (2.52)</td>
<td>125</td>
<td>15.55 (3.08)</td>
<td>95</td>
</tr>
<tr>
<td>Vocabulary***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANAS Positive***</td>
<td>28.39 (7.05)</td>
<td>125</td>
<td>35.432 (6.83)</td>
<td>95</td>
</tr>
<tr>
<td>PANAS</td>
<td>17.38 (6.49)</td>
<td>125</td>
<td>12.66 (4.50)</td>
<td>95</td>
</tr>
<tr>
<td>CESD ***</td>
<td>13.38 (8.94)</td>
<td>125</td>
<td>7.51 (5.79)</td>
<td>93</td>
</tr>
<tr>
<td>TIPI Extraversion+</td>
<td>4.31 (1.68)</td>
<td>120</td>
<td>4.74 (1.48)</td>
<td>87</td>
</tr>
<tr>
<td>TIPI Agreeableness*</td>
<td>5.16 (1.20)</td>
<td>120</td>
<td>5.54 (1.18)</td>
<td>87</td>
</tr>
<tr>
<td>TIPI</td>
<td>5.27 (1.38)</td>
<td>120</td>
<td>5.50 (1.48)</td>
<td>86</td>
</tr>
<tr>
<td>TIPI Emotional</td>
<td>4.32 (1.40)</td>
<td>119</td>
<td>5.31 (1.34)</td>
<td>87</td>
</tr>
<tr>
<td>TIPI Conscientiousness</td>
<td>5.27 (1.38)</td>
<td>120</td>
<td>5.50 (1.48)</td>
<td>86</td>
</tr>
<tr>
<td>TIPI Emotional Stability***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIPI Openness to Experiences</td>
<td>5.59 (1.02)</td>
<td>120</td>
<td>5.54 (1.15)</td>
<td>86</td>
</tr>
<tr>
<td>Optimism*</td>
<td>5.21 (1.43)</td>
<td>120</td>
<td>5.64 (1.43)</td>
<td>87</td>
</tr>
<tr>
<td>Selfish+</td>
<td>2.69 (1.53)</td>
<td>107</td>
<td>2.25 (1.53)</td>
<td>55</td>
</tr>
<tr>
<td>Stubborn**</td>
<td>3.14 (1.66)</td>
<td>107</td>
<td>2.27 (1.50)</td>
<td>55</td>
</tr>
<tr>
<td>Polite</td>
<td>6.30 (0.77)</td>
<td>107</td>
<td>6.42 (0.94)</td>
<td>55</td>
</tr>
<tr>
<td>IRI Perspective</td>
<td>17.64 (5.23)</td>
<td>125</td>
<td>17.79 (5.76)</td>
<td>92</td>
</tr>
<tr>
<td>IRI Empathic</td>
<td>20.23 (4.79)</td>
<td>125</td>
<td>20.33 (4.40)</td>
<td>92</td>
</tr>
<tr>
<td>IRI Perspective Taking</td>
<td>17.49 (5.42)</td>
<td>125</td>
<td>14.40 (5.56)</td>
<td>92</td>
</tr>
<tr>
<td>IRI Fantasy Scale***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digit Span Forward</td>
<td>7.38 (1.22)</td>
<td>125</td>
<td>7.21 (1.46)</td>
<td>94</td>
</tr>
<tr>
<td>Digit Span Backward</td>
<td>5.21 (1.44)</td>
<td>124</td>
<td>5.12 (1.52)</td>
<td>94</td>
</tr>
</tbody>
</table>

*Note.* + p < .10 * p < .05. ** p < .01. *** p < .001; significance levels for independent samples t-tests between age groups
Table 12. Study 2, Measurements of dispositional expressivity

<table>
<thead>
<tr>
<th>Measure</th>
<th>YA M (SD)</th>
<th>YA N</th>
<th>OA M (SD)</th>
<th>OA N</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEQ Positive</td>
<td>5.64 (0.89)</td>
<td>125</td>
<td>5.62 (0.81)</td>
<td>93</td>
<td>.02</td>
</tr>
<tr>
<td>BEQ Negative</td>
<td>3.81 (1.05)</td>
<td>125</td>
<td>4.01 (0.76)</td>
<td>93</td>
<td>.22</td>
</tr>
<tr>
<td>BEQ Impulse Strength**</td>
<td>4.96 (1.13)</td>
<td>125</td>
<td>4.52 (1.02)</td>
<td>92</td>
<td>.41</td>
</tr>
<tr>
<td>Exmotional Expressivity</td>
<td>4.80 (0.84)</td>
<td>125</td>
<td>4.72 (0.70)</td>
<td>92</td>
<td>.10</td>
</tr>
<tr>
<td>(Average of 3 BEQ subscales)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coded Monologue – Uplift***</td>
<td>1.68 (1.11)</td>
<td>117</td>
<td>1.19 (0.95)</td>
<td>83</td>
<td>.47</td>
</tr>
<tr>
<td>Coded Monologue – Hassle</td>
<td>1.93 (1.11)</td>
<td>119</td>
<td>1.79 (1.03)</td>
<td>84</td>
<td>.13</td>
</tr>
<tr>
<td>Coded Monologue – Reinterpret</td>
<td>1.61 (1.00)</td>
<td>119</td>
<td>1.41 (1.00)</td>
<td>83</td>
<td>.20</td>
</tr>
<tr>
<td>Average Coded Expressivity+</td>
<td>1.73 (0.99)</td>
<td>120</td>
<td>1.46 (0.89)</td>
<td>84</td>
<td>.29</td>
</tr>
</tbody>
</table>

*Note. + p < .10 * p < .05. ** p < .01. *** p < .001; significance levels for independent samples t-tests between age groups.
Table 13a. Study 2, Intercorrelations of trait expressivity measures in YA (N=120)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BEQ Positive</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. BEQ Negative</td>
<td>.55**</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3. BEQ Impulse Strength</td>
<td>.48**</td>
<td>.52**</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4. Emotional Expressivity (Average of 3 BEQ subscales)</td>
<td>.79**</td>
<td>.84**</td>
<td>.83**</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>5. Coded Monologue – Uplift</td>
<td>.16</td>
<td>.06</td>
<td>.11</td>
<td>.13</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>6. Coded Monologue – Hassle</td>
<td>.13</td>
<td>-.02</td>
<td>.12</td>
<td>.09</td>
<td>.77**</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>7. Coded Monologue – Reinterpret</td>
<td>.14</td>
<td>-.03</td>
<td>.14</td>
<td>.10</td>
<td>.79**</td>
<td>.85**</td>
<td>--</td>
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<tr>
<td>8. Average Coded Expressivity</td>
<td>.14</td>
<td>.00</td>
<td>.13</td>
<td>.11</td>
<td>.92**</td>
<td>.94**</td>
<td>.94**</td>
</tr>
</tbody>
</table>

Note: the difference between YA and OA on the relationships between Negative Expressivity and the monologues are: Hassle (z=1.66, p=.10), Uplift (z=2.52, p=.01), Reinterpret (z=2.17, p=.03), and the Average (z=1.98, p=.05)

Table 13b. Study 2, Intercorrelations of trait expressivity measures in OA (N=82)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BEQ Positive</td>
<td>--</td>
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<td>--</td>
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<td>2. BEQ Negative</td>
<td>.36**</td>
<td>--</td>
<td>--</td>
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<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3. BEQ Impulse Strength</td>
<td>.68**</td>
<td>.33**</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4. Emotional Expressivity (Average of 3 BEQ subscales)</td>
<td>.85**</td>
<td>.67**</td>
<td>.87**</td>
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</tr>
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<td>5. Coded Monologue – Uplift</td>
<td>.12</td>
<td>.30**</td>
<td>.01</td>
<td>.16</td>
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<td>6. Coded Monologue – Hassle</td>
<td>.02</td>
<td>.22**</td>
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<td>.06</td>
<td>.75**</td>
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<tr>
<td>7. Coded Monologue – Reinterpret</td>
<td>.09</td>
<td>.28*</td>
<td>-.06</td>
<td>.11</td>
<td>.70**</td>
<td>.76**</td>
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<td>8. Average Coded Expressivity</td>
<td>.07</td>
<td>.28*</td>
<td>-.04</td>
<td>.11</td>
<td>.90**</td>
<td>.92**</td>
<td>.90**</td>
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</table>
Table 14. Study 2, Conversational expressivity (averages from coded behavior across both trip and debate). Scale is 0-5.

<table>
<thead>
<tr>
<th>Partner Age</th>
<th>Young</th>
<th>Old</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Young</td>
<td>2.90 (.79)</td>
<td>2.41 (.85)</td>
<td>2.66 (.85)</td>
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<tr>
<td>Old</td>
<td>3.03 (.79)</td>
<td>2.87 (.84)</td>
<td>2.95 (.81)</td>
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<tr>
<td>Total</td>
<td>2.96 (.79)</td>
<td>2.64 (.87)</td>
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</table>
Table 15. Study 2, Age differences in computer-based interpersonal judgments

<table>
<thead>
<tr>
<th>Measure</th>
<th>YA M (SD)</th>
<th>YA N</th>
<th>Range</th>
<th>OA M (SD)</th>
<th>OA N</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERT</td>
<td>.65 (.11)</td>
<td>120</td>
<td>.36-.90</td>
<td>.47 (.14)</td>
<td>84</td>
<td>.14-.79</td>
</tr>
<tr>
<td>FACES</td>
<td>.88 (.07)</td>
<td>99</td>
<td>.70-1.00</td>
<td>.83 (.10)</td>
<td>62</td>
<td>.55-1.0</td>
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</table>
Table 16. Study 2, Interpersonal accuracy (personality self-other agreement represented as Pearson r values) by participant and partner age

<table>
<thead>
<tr>
<th>PartnerAgeGroup</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA</td>
<td>76</td>
<td>0.50</td>
<td>0.32</td>
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<tr>
<td>OA</td>
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<td>YA</td>
<td>43</td>
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<td>0.30</td>
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<tr>
<td>OA</td>
<td>43</td>
<td>0.60</td>
<td>0.31</td>
</tr>
<tr>
<td>OA</td>
<td>43</td>
<td>0.60</td>
<td>0.31</td>
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</tbody>
</table>
Table 17. Study 2, Rapport judgment difference scores (partner’s self rating of rapport subtracted from participants’ judgments) by participant and partner age

<table>
<thead>
<tr>
<th>Participant Age</th>
<th>Partner Age Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA</td>
<td>YA</td>
<td>76</td>
<td>-.43</td>
<td>1.52</td>
</tr>
<tr>
<td></td>
<td>OA</td>
<td>48</td>
<td>-.81</td>
<td>1.86</td>
</tr>
<tr>
<td>OA</td>
<td>YA</td>
<td>48</td>
<td>.81</td>
<td>1.68</td>
</tr>
<tr>
<td></td>
<td>OA</td>
<td>42</td>
<td>-.33</td>
<td>2.06</td>
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</table>
Table 18. Linear regression model predicting dyad rapport from within-dyad number of older adults, average interpersonal judgment accuracy (personality-self other agreement) and expressivity (average from self report).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>β</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of older adults</td>
<td>-.55</td>
<td>.53</td>
</tr>
<tr>
<td>Dyad average BEQ</td>
<td>.10</td>
<td>.35</td>
</tr>
<tr>
<td>Dyad average Accuracy</td>
<td>.27</td>
<td>.01</td>
</tr>
<tr>
<td>Number of older adults * Dyad average BEQ</td>
<td>.29</td>
<td>.73</td>
</tr>
<tr>
<td>Number of older adults * Dyad average Accuracy</td>
<td>.40</td>
<td>.07</td>
</tr>
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</table>
Figure 1. Study 1: Distributions of average rapport by dyad type (scale is 1 - 8 from “no rapport” to “high rapport”).
Figure 2a. Study 2, Change in expressivity (differences between z scores for BEQ average and conversational expressivity average) by participant and partner age

Figure 2b. Study 2, Change in expressivity (differences between z scores for monologue-coded average and conversational expressivity average) by participant and partner age
Congratulations!

You have received a travel award of $20,000 from the Department of Psychology. Use this map and your winnings to plan a dream vacation. Your only guidelines are that the two of you must travel together (i.e., arrive and leave the same city at the same time, using the same mode of transportation), and you may not exceed your budget. Estimate the costs of each leg of your journey, and be sure to plan your trip together. The experimenter will come back in the room after 15 minutes.
Your answers on the items below are completely confidential and will remain anonymous. Please be as frank as possible.

On a scale from 0 through 8, with 0 being “Not At All” and 8 being “Extremely”, rate the interaction between you and your partner on the following characteristics. Circle the number that you think best describes the quality of the interaction.

<table>
<thead>
<tr>
<th></th>
<th>NOT AT ALL</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>EXTREMELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELL-COORDINATED</td>
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<td>2</td>
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<tr>
<td>BORING</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td></td>
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<tr>
<td>COOPERATIVE</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>6</td>
<td>7</td>
<td>8</td>
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<tr>
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<td>4</td>
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<td>6</td>
<td>7</td>
<td>8</td>
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<tr>
<td>UNSATISFYING</td>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
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<tr>
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<td>2</td>
<td>3</td>
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<td>6</td>
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<tr>
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<td>3</td>
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<tr>
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<tr>
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<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
Rapport is a term used to describe the combination of qualities that emerge from an interaction. These interactions are characterized by such statements as “we really clicked” or “we experienced real chemistry.”

Please rate the **level of rapport** you felt between you and your partner.

<table>
<thead>
<tr>
<th>NO RAPPORT</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>HIGH RAPPORT</th>
</tr>
</thead>
</table>

Here are a number of personality traits that may or may not apply to **your partner**. Please write a number next to each statement to indicate the extent to which you agree or disagree that the statement describes your partner. You should rate the extent to which the pair of traits applies to your partner, even if one characteristic applies more strongly than the other.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
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<th>7</th>
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<tbody>
<tr>
<td>Disagree strongly</td>
<td>Disagree moderately</td>
<td>Disagree a little</td>
<td>Neither agree nor disagree</td>
<td>Agree a little</td>
<td>Agree moderately</td>
<td>Agree strongly</td>
</tr>
</tbody>
</table>

**I see my partner as:**

1. _____ Extraverted, enthusiastic.
2. _____ Critical, quarrelsome.
3. _____ Dependable, self-disciplined.
4. _____ Anxious, easily upset.
5. _____ Open to new experiences, complex.
6. _____ Reserved, quiet.
7. _____ Sympathetic, warm.
8. _____ Disorganized, careless.
9. _____ Calm, emotionally stable.
10. _____ Conventional, uncreative.
11. _____ Optimistic.
Did you know your partner before this interaction? Please check one of the following:

☐ Yes ☐ No

If yes, how well did you know your partner before this interaction? Circle one:

<table>
<thead>
<tr>
<th>NOT WELL AT ALL</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>7</th>
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<th>VERY WELL</th>
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</thead>
</table>

Appendix C

QUESTIONNAIRE #2

111
Your answers on the items below are completely confidential and will remain anonymous. Please be as frank as possible.

On a scale from 0 through 8, with 0 being “Not At All” and 8 being “Extremely”, rate the interaction between you and your partner on the following characteristics. Circle the number that you think best describes the quality of the interaction.

<table>
<thead>
<tr>
<th></th>
<th>NOT AT ALL</th>
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<td>4</td>
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<td>0</td>
<td>1</td>
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<td>3</td>
<td>4</td>
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<td>8</td>
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<tr>
<td>SLOW</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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<td>8</td>
</tr>
</tbody>
</table>

Rapport is a term used to describe the combination of qualities that emerge from an interaction. These interactions are characterized by such statements as “we really clicked” or “we experienced real chemistry.”
Please rate the **level of rapport you felt** between you and your partner.

<table>
<thead>
<tr>
<th>NO RAPPORT</th>
<th>HIGH RAPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 3 4 5 6 7 8</td>
</tr>
</tbody>
</table>

Please rate the **level of rapport you think your partner** would give the interaction

<table>
<thead>
<tr>
<th>NO RAPPORT</th>
<th>HIGH RAPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 3 4 5 6 7 8</td>
</tr>
</tbody>
</table>

How did the interaction with your partner **compare to interactions you have with close others** in your daily life (with friends, family, etc.?)

<table>
<thead>
<tr>
<th>WORSE</th>
<th>BETTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>5</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>DIFFERENT</th>
<th>TYPICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>5</td>
</tr>
</tbody>
</table>

Please **circle the picture below** that best describes your interaction with your partner, where “self” indicates you and “other” indicates your partner.
114

Please use the scale below to answer the following questions about the person with whom you interacted.

1 = Definitely Not 2 = Probably Not 3 = Maybe 4 = Probably 5 = Definitely

1. Would you seek advice from this person? _______
2. Would you sit next to this person on a three-hour bus ride? _______
3. Would you share an apartment with this person? _______
4. Would you invite this person to your home? _______
5. Would you approve if a relative married this person? _______
6. Would you work with this person? _______
7. Would you admit this person to your circle of friends? _______

Please use the scale below to answer the following questions about your satisfaction with the person with whom you interacted.

1 = Very dissatisfied
2 = Somewhat dissatisfied
3 = Neutral
4 = Somewhat satisfied
5 = Very satisfied

1. Her listening skills_______
2. Her respect for you and your values_______
3. Her understanding of your goals_______
4. Her empathy_______
5. Her warmth_______
6. Her level of interaction and engagement with you_______
7. Her humor_______
8. Degree to which she collaborated with you_______
9. Her level of responsiveness to your suggestions_______
10. Her attention to you when you were speaking_______
11. Her ability to understand what you meant whenever you said something_______
12. The importance she placed on the things you were telling her_______
Appendix D

- Now we’re going to do a different activity. I’m going to ask you to think and talk about a few different personal experiences. These experiences will be recorded for research purposes only and will remain confidential. There will be three different prompts, and you will have one minute to respond to each one. Please feel free to ask questions along the way. Are you ready to begin? On the next page you will see the first question. Please advance to the next slide when you are ready.

- I’d like you to think back to last week and reflect on an uplifting event that happened. An uplifting event is one that made you feel good, made you joyful, glad, or satisfied. When you are ready, please advance to the next slide and tell me about that experience. You will have one minute to describe your experience. On the next slide, please be sure to speak loudly and clearly.
  - Describe your uplifting event. Please try to use the whole minute [one minute countdown]

- Ok great. Now I’d like you to think about a hassle from the past week. A hassle is something that annoys or bothers you; it can also make you upset or angry. When you are ready, please advance to the next slide and tell me about that experience. You will have one minute to describe your experience. On the next slide, please be sure to speak loudly and clearly.
  - Describe your hassle. Please try to use the whole minute [one minute countdown]

- Ok great. Now, we have an interesting request for you. Please try to re-describe your hassle as an uplifting experience. How would you describe your hassle if it was actually an uplifting experience?
  - Turn your hassle into an uplifting event [one minute countdown]

- Finally, we would like for you to read the following passage aloud. When you are ready, please read the following paragraph. Remember to speak as clearly as possible:

  When the sunlight strikes raindrops in the air, they act as a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow. Throughout the centuries people have explained the rainbow in various ways. Some have accepted it as a miracle without physical explanation. To the Hebrews it was a token that there would be no more universal floods. The Greeks used to imagine that it was a sign from the gods to foretell war or heavy rain. The Norsemen considered the rainbow as a bridge over which the gods passed from earth to their home in the sky. Others have tried to explain the phenomenon physically. Aristotle thought that the rainbow was caused by reflection of the sun's rays by the rain. Since then physicists have found that it is not reflection, but refraction by the raindrops which causes the rainbows. Many complicated ideas about the rainbow have been formed. The difference in the rainbow depends considerably upon the size of the drops, and the width of the colored band increases as the size of the drops increases. The actual primary rainbow observed is said to be the effect of super-imposition of a number of bows. If the red of the second bow falls upon the green of the first, the result is to give a bow with an abnormally wide yellow band, since red and green light when mixed form yellow. This is a very common type of bow, one showing mainly red and yellow, with little or no green or blue.
Now we would like you to choose one (or more) of the following topics to discuss with each other. Please choose a topic for which you have strong opinions, and that you can try to convince your partner that your view is more correct.

The experimenter will come back in the room after 10 minutes.

1. Are gun control laws too relaxed in our country, and should our government reform them?
2. Should the government tax proportionally (all pay the same percentage) or progressively (the higher the income, the higher the percentage)?
3. Should the U.S. establish a universal healthcare system?
4. Is the legalization of marijuana a good idea?
5. What’s the correct parenting style -- strict or passive?
6. Is corporal punishment (i.e., spanking) an acceptable form of disciplining children?
7. Do you feel that police brutality is an issue in the U.S.?
8. Is it our responsibility as a country to deal with climate change?
9. Should the U.S. restrict the number of immigrants and refugees allowed into the country?
10. What is your opinion about the death penalty?
11. Should traditional gender roles be abolished (i.e., making all bathrooms gender neutral, not dividing sports team by gender, etc.)?
Appendix F

Adaptors the manipulations of one’s own body such as rubbing, scratching, preening, fidgeting, and rhythmically swiveling the chair back and forth. It is believed that these behaviors are indicators of anxiety. Preening is considered devoting effort to making oneself look attractive and can include playing with hair or touching one’s clothes.

Gestures nonverbal acts that have direct verbal translations (e.g. the “OK” sign) or are used to illustrate or punctuate speech (e.g. pointing and fist pounding)

Facial Positivity whether there was a positive facial expression (i.e. smile)

Regulators/Back-Channel Responses behaviors that maintain and regulate the flow of speech. These are only measured when the participant’s partner “has the floor”. They can influence the other speaker to speed up, elaborate, continue, or be silent. Head nods and “uh hmms” are common examples.

Interruptions verbal disruptions of one person’s speech by the other person who replaces the first’s with her own; an interruption is only successful if the other person stops talking.

Suggestions statements made that suggested how the money should be spent/where to go on the trip based on their own desires (e.g. “let’s save some money to come home through China” and “Let’s go to Paris”).

Mutual Gaze A best guess of whether the interactants were gazing into each other’s eyes when they look at each other’s faces.

Simultaneous Speech instances when both members of the dyad speak at the same time.

Mutual Laughter occurrences of simultaneous/overlapping laughter

Mutual Attention refers to participants’ focus on one another or on the same object or environmental feature. Behavioral attention demonstrates and affords interpersonal interest and engagement.

Expressivity the extent to which an individual’s total behavior was active, animated, and exaggerated. People who are expressive show their emotions quite readily, whereas those who are not tend to have “poker faces” and gesticulate very little.

Nervous Behavior any action or activity that suggested someone is scared, anxious, uncomfortable, or nervous (e.g. fidgeting, shaking, knees knocking, quivering voice, swallowing, and “freezing”).

Dominance the disposition of an individual to assert control in dealing with others; manifestations of dominance may present themselves in speech, volume, body language, etc.
Appendix G Berkeley Expressivity Questionnaire

For each statement below, please indicate your agreement or disagreement. Do so by filling in the blank in front of each item with the appropriate number from the following rating scale:

<table>
<thead>
<tr>
<th></th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly disagree</td>
<td>neutral</td>
<td>strongly agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Whenever I feel positive emotions, people can easily see exactly what I am feeling.
2. I sometimes cry during sad movies.
3. People often do not know what I am feeling.
4. I laugh out loud when someone tells me a joke that I think is funny.
5. It is difficult for me to hide my fear.
6. When I’m happy, my feelings show.
7. My body reacts very strongly to emotional situations.
8. I’ve learned it is better to suppress my anger than to show it.
9. No matter how nervous or upset I am, I tend to keep a calm exterior.
10. I am an emotionally expressive person.
11. I have strong emotions.
12. I am sometimes unable to hide my feelings, even though I would like to.
13. Whenever I feel negative emotions, people can easily see exactly what I am feeling.
14. There have been times when I have not been able to stop crying even though I tried to stop.
15. I experience my emotions very strongly.
16. What I’m feeling is written all over my face.

Items 3, 8, and 9 are reverse scored.
Items 3, 5, 8, 9, 13, 16 make up the Negative Emotionality facet
Items 1, 4, 6, 10 make up the Positive Emotionality facet
Items 2, 7, 11, 12, 14, 15 make up the Impulse Strength facet.