

SEARCHING FOR THE OPEN BOOK:  
EXPLORING PREDICTORS OF TARGET READABILITY  
IN INTERPERSONAL ACCURACY

by

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## DISSERTATION ABSTRACT

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Title: Searching for the Open Book: Exploring Predictors of Target Readability in Interpersonal Accuracy

Interpersonal perception research has disproportionately focused on perceivers (who make judgments), while largely ignoring targets (who are judged). This study explored the role target characteristics play as perceivers judge their thoughts, emotions, and personality traits in brief get-to-know-you interactions between unacquainted college students. Funder's Realistic Accuracy Model suggests that in order for a target to be readable that person must emit relevant cues that are made available to perceivers; thus, individual differences that are likely to be related to cue relevance and availability were investigated. Because looking for more or less readable targets presumes individual differences in readability, this project also examined how variance in interpersonal accuracy was distributed across levels (i.e., how variance associated with differences among targets compares to variance associated with differences among perceivers). The results suggest some targets are more readable than others, but there is no evidence that readability is a general characteristic as readability did not correlate across three commonly used interpersonal accuracy measures. However, several correlates of target readability were identified, and overall the good target was someone who was less

sensitive to social threats, less likely to mask their inner experiences, and higher in psychological adjustment.

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## CHAPTER I

### INTRODUCTION

As the saying goes, “it takes two to tango,” and interpersonal perception might be considered the social-cognitive equivalent of such a complex dance between perceivers (who make interpersonal judgments) and targets (who are judged). Even very brief interpersonal interactions are rich exchanges where targets emit behavior and cues via numerous channels. Thus it follows that perceivers can and do form perceptions on a range of dimensions, varying from fleeting judgments about discrete and context-specific thoughts or feelings, to snapshot judgments that regard more global and enduring characteristics. For example, empathic accuracy researchers examine the accuracy of perceivers’ judgments of targets’ specific thoughts and feelings (Ickes, Stinson, Bissonette, & Garcia, 1990) or changes in ongoing affective states (Levenson & Ruef, 1992). Personality researchers examine the accuracy of perceivers’ judgments of targets’ traits (Funder & Colvin, 1997), as well as the accuracy of perceptions about how others judge one’s own traits (i.e., meta-perceptions; Kenny & DePaulo, 1993).

Common sense suggests that navigating our complex social environment requires at least a basic competency at making accurate judgments of others as well as making oneself readable to others. However, one common theme across domains of interpersonal perception research has been a disproportionate focus on perceivers, emphasizing traits, motivations, and biases that allow perceivers to accurately understand targets (for reviews see Davis & Kraus, 1997; Hall & Bernieri, 2001). This one-sided focus has come at the expense of understanding the role targets play in these processes. Making the inevitable comparison to reading a passage of text, we know much more about the reader than we do about the book. The imbalance is striking given that interpersonal perception is

inherently dyadic – a perceiver cannot make a judgment without a target person to judge. The overarching goal of this project is to address this imbalance and explore what makes for more or less “readable” targets.<sup>1</sup>

### **Historical Overview of Interpersonal Perception Research**

According to Kenny (1994), interpersonal perception began to garner research interest in the first half of the 20<sup>th</sup> century as an outgrowth of the individual differences orientation that was a then predominate theme in psychological research. A prominent goal of psychologists at that time was to develop intelligence tests and identify individual differences in cognitive skills. A natural outgrowth of these efforts was to ask whether there were also individual differences in social skills. This early work was particularly motivated following WWII by an effort to identify highly skilled perceivers in order to pick good commanders (see for example Chowdhry & Newcomb, 1952; Gage & Exline, 1953). Selection considerations continued to play a driving role with an eye towards aptly identifying candidates for other jobs that require perceptivity such as clinicians, judges, and teachers (e.g., Dymond, 1953; Weiss, 1963). Thus, at the start this research tradition emphasized perceivers, focusing solely on the question of who is the good judge.

Another criticism of early interpersonal perception work is that it suffered from a lack of structure. Most notably, methodological diversity and lack of coherence among the measures was problematic. In a review paper, Taft (1955) summarizes over 50 studies that examine judgment accuracy on dimensions ranging from ratings of emotional expressions in photographs or movies, to open-ended descriptions of a target’s

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<sup>1</sup> I prefer the term “readability” over its synonym “judgeability.” Relating these terms to comprehension of a passage of text, readers might make a number of judgments about any text – accurate or not – but only a highly readable passage would be accessible and easily understood. I also prefer readability because it places emphasis on the target, whereas judgeability places emphasis on the perceiver.

personality, to predictions of behavioral responses or performance for a target or a group of targets. These judgments were compared to accuracy criterions that could come from expert judges, group consensus, or the targets themselves. Not surprisingly given the jumble of methodological options, the bland take home point of Taft's review is that some factors predict some measures some of the time. He ended with the conclusion that "a great deal of carefully designed investigation is obviously required in the area of judging ability, both with respect to this ability as a general trait, and with respect to differences in the ability under specific conditions" (p. 20).

A major upset happened around the time of Taft's survey of the field when research in this area came under fire from Cronbach who criticized the then common approach to computing accuracy on methodological grounds (Cronbach, 1955; Gage & Cronbach, 1955). This critique centered on the premise that the relationship between a judgment and an accuracy criterion (e.g., a difference score or profile correlation) is composed of many strands, only some of which may actually reflect "true accuracy." For instance, stereotype accuracy, or knowledge of the generalized other, contributes to the correlation of a perceiver's judgment of a target's trait but is generally not what researchers consider "true" accuracy. Importantly, Cronbach did not argue that it was impossible to measure accuracy, but rather his point was that what researchers at that time were calling accuracy was actually contaminated with artifacts that needed to be separated out. The unfortunate and unintended result of this critique was that researchers "crowded the exits" (Gilbert, 1998, p. 91) and moved toward questions about judgmental *processes* and away from questions about judgmental *accuracy* to side step these methodological issues completely.

After several decades of relative silence on the topic, a resurgence began following the introduction of Kenny's mathematical model of interpersonal perceptions, the Social Relations Model (SRM; Kenny & Albright, 1987), which provided a way for researchers to study interpersonal perceptions using a componential approach that directly addressed Cronbach's critique. This was an important development for interpersonal accuracy researchers because it made it possible to deal with the seemingly intractable methodological problems highlighted by Cronbach. Uleman and Kressel (2013) go as far as to say that "Kenny, his models, his colleagues, and the desk-top computer have put the study of accuracy in person perception back on solid theoretical and methodological ground" (p. 59). Following this development, interpersonal perception research has strongly come back into favor; Kenny's early papers on the SRM (Kenny & LaVoie, 1984; Kenny & Albright, 1987; Kenny, 1994) have cumulatively received nearly 1,800 citations to date. There is no sign of the resurgence in interpersonal accuracy research slowing down anytime soon; a recent section of *Psychological Inquiry* (Zaki & Ochsner, 2011) was devoted to the topic accuracy in social cognition research suggesting many psychologists are currently engaged in this line of research.

## **Measuring Accuracy**

The revival of interest in interpersonal accuracy is encouraging, but unfortunately research in this area continues to suffer from diffuseness in terms of both terminology and methodology. For instance, researchers cannot even agree on how to name the overarching construct; Zaki and Ochsner (2011) favor the term "mind perception," Gilbert (1998) advocates for "ordinary personology." Other relevant terms include

impression formation, mind reading, empathy, social intelligence, and interpersonal sensitivity, among others.

There is little question that these constructs are all conceptually linked, but whether their operational definitions are also empirically related is unclear. This is because researchers rarely use multiple assessments of judgment accuracy to look for relations across measures. As a case in point, the term empathic accuracy might refer to the Ickes methodology (Ickes et al., 1990) where perceivers judge a target's specific thoughts, or the Levenson and Ruef (1992) methodology where perceivers judge a target's continuous affect (see Zaki, Bolger, & Ochsner, 2008). But these measures have never been assessed concurrently so it is unclear if they even tap the same underlying construct even though they are identically named.

This lack of precision may be due in part to the nature of the phenomenon of interest. Interpersonal interactions between perceivers and targets are rife with complexity which presents challenges for studying these phenomena in the lab. In order to make assessing perceptions a tractable goal, research paradigms typically pinpoint one limited dimension of the possible array. This is all well and good for solving methodological issues, but without making coherence among measures and constructs a priority, this research tradition will continue to call to mind the parable of the blind men and the elephant – as Zebrowitz (2001) points out, it is a mistake to explore only one aspect of the domain and then claim to understand the whole.

In an effort to begin to shed light on this issue, a primary goal of this project is to use multiple measures of interpersonal accuracy to study whether target readability generalizes across domains. It could be that target readability is a broad characteristic –

someone who has easy to read thoughts also has easy to read affect and easy to read personality traits. However, it could instead be that target readability is specific to the type of judgment being assessed. Null results from several studies suggest that the latter is the case for perceiver abilities (see Hall, 2001; Lewis & Hodges, 2009); being a good judge in one domain (e.g., decoding nonverbal emotion expressions) is not necessarily correlated with being a good judge in another domain (e.g., accurately inferring someone's thoughts). To date there is no research examining whether or not target readability follows the same pattern. In order to test this, this project used three established accuracy measures that represent a range of stable to dynamic dimensions of interpersonal judgments: accuracy for personality trait judgments, accuracy for thoughts, and accuracy for general affect. These measures have not previously been assessed concurrently.

### **Why Focus on Targets?**

To begin, we must establish a definition of target readability. In interpersonal perception research, the “good judge” is someone who is highly skilled on average at understanding others’ mental states, emotions, and personality traits. Conversely, the “good target” is someone who has mental states, emotions, and traits that on average are easy for others to understand. It is worth noting that readability is not synonymous with expressivity. Although expressivity is likely to be linked to readability (a point discussed in more detail below), a person could be *inaccurately* expressive (e.g., purposefully displaying expressions that do not match her internal states) which would presumably impede readability.

Examining target readability is an important avenue of study for several reasons. First, from a basic science perspective, examining the role of targets may be more fruitful for advancing our understanding of interpersonal perception than examining the role of perceivers. Identifying the “good perceiver” has turned out to be a rather elusive task, and researchers have had difficulty pinning down reliable predictors of interpersonal perceptive accuracy (see Davis & Kraus, 1997; Hodges, Lewis, & Ickes, 2014). Looking for correlates of perceptive accuracy presumes individual differences in these skills. However, recent research from two domains of interpersonal perception including empathic accuracy (Lewis, Hodges, Laurent, Srivastava, & Biancarosa, 2012) and trait judgments (Biesanz, 2010) has shown converging evidence that there are only minimal individual differences in accuracy associated with perceivers. This means that because perceivers do not differ much in terms of their ability to read targets, looking for correlates of accurate decoding is an ill-fated research strategy. In contrast, looking for correlates of accurate *encoding* is much more promising because various past studies (e.g., Human & Biesanz, 2014; Ickes, Buyssee, et al., 2000) have shown that targets *do* differ in terms of how readable they are so there is variability available to be predicted.

An additional consideration comes from Ickes, Buyssee and colleagues (2000) who examined the decomposition of variance in interpersonal accuracy across a number of different studies. Their results suggest that the relative ratio of perceiver to target variance depends on the type of design the study employs. In studies that used standardized stimuli, where perceivers inferred the thoughts of targets that they did not know and would never interact with, the amount of perceiver variance outweighed the amount of target variance. In contrast, studies that used live dyadic interactions showed

the opposite pattern: there was virtually no perceiver variance and more substantial amounts of target variance.

In thinking about why this difference occurs, it is important to consider the differences between live dyadic interactions and the artificial nature of standardized stimuli. Standardized stimuli strip interpersonal interactions of many important elements that may affect interpersonal accuracy (e.g., worrying about what kind of impression one is making, planning one's next response in a conversation, wondering about the possibility and nature of future interactions with the other person). The experience of perceivers is likely to be qualitatively different when they are engaged in an actual interaction with a live partner versus, for example, sitting at a computer making judgments about people in videos. This suggests that studies that rely solely on standardized stimuli may have limited generalizability to real world interactions. For instance, perceiver intelligence, measured by college GPA, has occasionally predicted empathic accuracy measured using standardized stimuli (Ickes et al., 1990). But people with higher GPAs tend to possess traits that make them good students (e.g., they are motivated and conscientious) and these traits may also make them good participants which may explain higher levels of accuracy. Thus the link between intelligence and accuracy may not replicate in face-to-face interactions when many other factors are at play. For this reason, the current project will assess interpersonal judgment accuracy in live dyadic interactions in order to better capture the *interpersonal* nature of person perception.

Another reason it is important to consider the role of targets in interpersonal perception is that failure to do so can lead to incorrect conclusions about perceivers.

Interpersonal perception is inherently dyadic – a perceiver’s judgments are yoked with a target about whom those judgments are made; thus, when a perception is accurate it could be because the perceiver was very perceptive, but it could also be because the target was particularly easy to read. Failing to account for both possibilities not only leads to an incomplete understanding of interpersonal perception, but it can also lead to biased conclusions.

To illustrate, in a series of studies, Snodgrass and her colleagues (Snodgrass, 1992; Snodgrass, Hecht, & Ploutz-Snyder, 1998) set out to test how power affects interpersonal accuracy. To test this, they studied accuracy within dyads created for the experiment, where one dyad member was assigned to a high-power role and the other a lower-power role and then each individual made a series of judgments about his or her dyad partner. The earlier study (Snodgrass, 1992) suggested that when it came to understanding how their partner felt about them, lower power individuals were more accurate than high power individuals. Importantly, however, this measure of accuracy confounds the decoding skills of the perceiver with the encoding skills of the target. By using a new set of judges to disentangle these two components, the authors went on to show that high levels of accuracy on the part of low-power perceivers are actually because high-power targets were particularly easy to read (Snodgrass et al., 1998).

From an applied perspective, another important reason to study target readability is that there is research that suggests target readability is an important determinate of successful interpersonal relationships. The reasons for this may have evolutionary roots. The nonverbal expression of emotion predates language, thus communication in early humans would have heavily depended on reading others’ emotion expressions. There is

clearly an adaptive value to reading others emotions: perceiving others' fear results in heightened vigilance for predators and possible attack; perceiving others' disgust results in avoidance of the offending stimulus and possible toxins. There was also likely to be adaptive value in being *readable*. In particular, cueing others to one's internal states would help facilitate social coordination and protect interpersonal ties. For instance, displaying shame when appropriate could appease an affronted social partner and reduce risk of ostracism (Keltner, 1995). Boone and Buck (2003) make a case that emotional expressivity acted as a signal of trustworthiness to potential social partners. They propose that individuals high in (accurate) expressivity would be viewed as more trustworthy (because they give more indicators of internal states) and as a result were more valuable social partners. According to this view, natural selection would favor 1) individuals with the capability to pick out trustworthy social exchange partners that are most likely to cooperate and 2) individuals that reliably give signals to their trustworthiness.

Consistent with this, research has shown that expressive suppression, or the tendency to inhibit the expression of emotion (which presumably hinders readability), is associated with worse interpersonal outcomes (Gross & John, 2003). Suppressors tend to have fewer close relations (Srivastava, Tamir, McGonigal, John, & Gross, 2009) and social interaction partners of suppressors feel less rapport for that person and are less interested in future affiliation (Butler, Egloff, Wilhelm, Smith, Erickson, & Gross, 2003). Similarly, research on the coherence between outward emotional behavior and internal experience has shown that incoherent individuals have worse psychological well-being and this effect seems to be mediated through poorer quality social connections (Mauss, Shallcross, Troy, John, Ferrer, Wilhelm, & Gross, 2011). Furthermore, emotional

inauthenticity (either from suppression or amplification) is associated with poorer perceptions and untrustworthiness (Krumhuber, Manstead, Cosker, Marshall, Rosin, & Kappas, 2007). Taken together this line of research suggests that target readability plays an important role in interpersonal outcomes, but why and how some people are more readable than others is not well understood at this point. The goal of the current work is to further our understanding of target readability by pinpointing individual differences that predict readability as well as to investigate whether readability generalizes across judgment domains.

### **Theoretical Framework and Hypotheses**

A useful theoretical framework for understanding accurate interpersonal perceptions is Funder's (1995) Realistic Accuracy Model. This model was originally developed with personality trait judgments but can be generalized to other types of interpersonal judgments as well. According to this model, accurate interpersonal perceptions can be facilitated by good judges, but also by good targets.<sup>2</sup> Funder further proposed that accurate perceptions are a product of a series of stages (see Figure 1). A target must emit some *relevant* behavior that is made *available* to the perceiver. The perceiver must then *detect* these cues and correctly *utilize* them to make a judgment. Note that RAM is not a general process model of how all interpersonal judgments are formed, but rather a description of how *accurate* judgments are formed. The target's direct role in this process will be most important in the first two stages (relevance and availability). Characteristics that make targets more likely to emit relevant cues and enhance the availability of those cues are likely to be correlated with readability.

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<sup>2</sup> Funder's model also specifies two additional moderators of accuracy: good traits (e.g., traits that are more visible like extraversion) and good information (e.g., higher quantity or quality information).

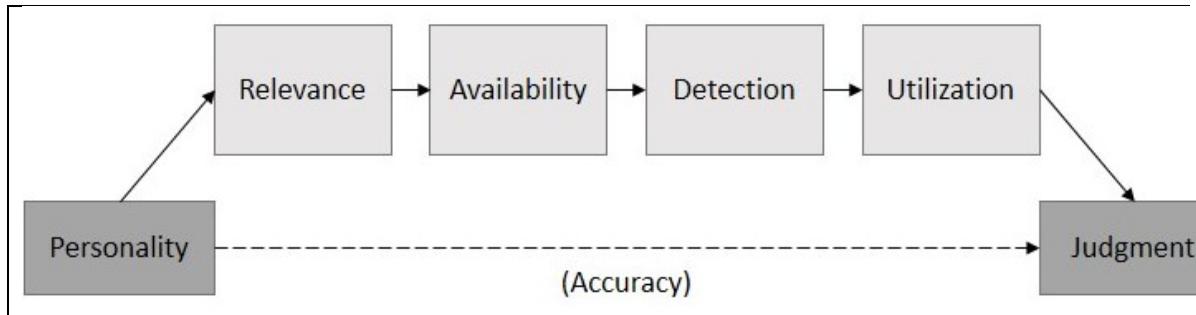


Figure 1. The Realistic Accuracy Model (modeled after Funder, 1995).

Below I outline some guiding predictions regarding which target individual differences might enhance cue relevance and availability and thereby correlate with readability (for a more thorough treatment of target readability and Funder's RAM, see Human & Biesanz, 2013). It is important to be clear at the outset though that this research is correlational in nature and as the first study of its kind, a large number of candidate individual differences that might relate to readability were assessed. Given that the study of target readability is underdeveloped at this time, the current study is an important starting point that can pave the way for future research that investigates causal models.

The factors I propose that will be likely to be linked to cue relevance and cue availability can be grouped into three general areas: expressivity, social-threat sensitivity, and psychological adjustment. Each of these are discussed in turn and the relevant available supporting research is reviewed.

**Expressivity.** Factors that lead targets to amplify the cues they emit or to enhance the sheer quantity of cues present will likely promote availability. Targets high in expressivity or the behavioral manifestation of emotions (Gross & John, 1995) should be more likely to amplify their cues and thus be more readable. Similarly, extraverts are by definition more talkative and outgoing, thus extraversion is likely to be linked to the availability of cues and there is evidence to suggest it is (Colvin, 1993). On the opposite

end of the spectrum of expressivity, targets that amplify their cues are likely to be low in emotion suppression, or the tendency to suppress the outward expressions of emotion (Gross & John, 2003). A related individual difference that is likely to be directly linked to divergence between internal experiences and outward expressions is the extent to which targets mask their internal experiences (e.g., a sample item from the Masking Scale is “*The way I feel is different from how others think I feel*”; Gross & John, 1998).

Consistent with the hypothesis that expressivity should matter, Thomas and Fletcher (2003) found a link between target readability and what they term “behavioral diagnosticity” in one of their studies of empathic accuracy. Their operationalization of behavioral diagnosticity is akin to expressivity – they assessed the extent to which participants’ outward behavioral cues reflected their internal mental states. Not surprisingly, higher behavioral diagnosticity was linked to higher readability. But interestingly, this correlation was strongest when the target and the perceiver were unacquainted with one another. The link was weaker when the target and perceiver were close to one another, presumably because their past relationship history was another rich source of information for the perceiver to draw upon in making their inferences.

**Social-threat sensitivity.** Sensitivity to social threats may also affect target readability because social threats seem to lead people to tamp down expressivity and behave in an inhibited and withdrawn manner (Schlenker & Leary, 1985). Thus, we might expect that individuals that are habitually more likely to perceive social threats might be generally less readable. One variable that closely tracks perceptions of social threats is self-esteem (Leary, Tambor, Terdal, & Downs, 1995). Gaucher and colleagues (Gaucher, Wood, Stinson, Forest, Homes, & Logel, 2012) investigated self-esteem in

relation to self-presentation styles in interpersonal interactions and found that individuals with low self-esteem were less expressive when social threats were heightened. Similarly, Mikulincer and Nachson (1991) have shown that attachment style, another variable related to sensitivity to social-threats (Simpson & Rholes, 1998), is linked to self-disclosure; specifically, insecurely attached individuals are generally lower in self-disclosure than securely attached individuals. Other related interpersonal variables such as social anxiety, loneliness, and the need to belong might likewise affect target readability to the extent that these variables also heighten concerns regarding social threats and thereby result in targets acting in a less expressive manner.

**Psychological adjustment.** In order for cues to be relevant to a target's thoughts, affect, and traits, there must be consistency between a target's internal experiences and outward expressions. This coherence is likely to be higher under certain conditions. One factor identified in previous research that promotes coherence is psychological adjustment. Human and Biesanz (2011) have also shown that people who are psychologically well-adjusted – people who are low in depression, have satisfying relations with others, and are high in self-esteem and satisfaction with life – have personality traits that are more easily read. Human, Biesanz, Finsesteth, Pierce, and Le (2014) have shown in a follow-up investigation that this is because well-adjusted people behave more in line with their personality traits; stated differently, well-adjusted people tend to emit more relevant cues to their personality traits.

Another component of psychological adjustment is authenticity or the tendency to behave consistently with one's "true" self (Wood, Linley, Maltby, Baliousis, & Joseph, 2008). Authentic individuals are likely to have lower divergence between internal

experiences and outward expressions than inauthentic individuals which should promote readability. Social status is another component of psychological adjustment that might promote coherence between internal experiences and outward expressions as status has been shown to influence how likely individuals are to express their attitudes (Anderson & Berdahl, 2002). Consistent with this, as reviewed above, Snodgrass and colleagues (1998) showed that high power people are more readable in terms of their thoughts about their partners (relative to low power people) because they give better cues to their opinions and Hall, Rosip, LaBeau, Horgan and Carter (2006) found that low-power people are harder to read because they send less clear messages.

**Cue detection and utilization.** Although the target's role is most likely evident in the first two stages of the RAM (i.e., relevance and availability of cues), target characteristics might also influence later stages. In particular, perceivers might be more engaged and motivated when interacting with targets that, for instance, are more likeable or attractive, and this may enhance the extent to which perceivers detect cues and properly utilize them. In this way, targets may indirectly impact accuracy via changing perceivers' behaviors.

## **Project Overview**

In sum, even though variance decomposition studies suggest that the good target seems to be a more plausible determinate of interpersonal accuracy than the good judge, we still know much less about which targets are more readable than others and whether or not target readability is a general trait or if it is instead specific to different types of judgments. The goal of this project is to address this imbalance. Because looking for more or less readable targets presumes individual differences in readability, Aim 1 is to

examine how variance in interpersonal accuracy is distributed across levels (i.e., how variance associated with differences among targets compares to variance associated with differences among perceivers). Aim 2 is to examine whether target readability correlates across measures (e.g., whether a target whose personality traits are easy to read also has affect that is easy read) by using multiple accuracy measures that represent a range of interpersonal judgments. To capture a more complete picture of the complexity of interpersonal processes, the dimensions targets were judged on ranged from stable (i.e., personality traits) to dynamic (i.e., continuous affect and discrete thoughts that potentially change moment by moment). And finally Aim 3 is to explore the individual differences (assessing the constructs described above) that may correlate with target readability and look for patterns of interrelations across outcome measures.

In order to test these research aims, participants were videotaped interacting with a partner during brief “getting-acquainted” conversations using a round-robin design where each person served as perceiver and target in multiple interactions. After interacting, people rated their partner’s personality traits, and dynamically changing affect and thoughts. In order to assess accuracy, each partner made parallel ratings about their own traits, affect, and thoughts. Measures of expressivity, social-threat sensitivity, and psychological adjustment were collected at a later time point from the participants as well as informants in order to examine whether these variables were related to target readability on traits, affect, and thoughts.

## CHAPTER II

### METHOD

#### **Participants**

Undergraduates from the University of Oregon participated in this study in exchange for course credit. In total, 53 groups of four participated in this study, which resulted in a total of 212 participants (63.7% women;  $M_{age} = 20.17$ ,  $SD_{age} = 2.99$ ; 68.4% Caucasian, 11.8% Asian, 5.7% Black, 5.7% Hispanic, 8.4% other or missing).

Participants were asked not to sign up for the study with friends so the partners were generally unacquainted.

#### **Individual Difference Measures**

The lab portion of the study (see below) took two hours to complete, so to minimize fatigue participants completed the individual differences online at a later time. Participants were invited to complete the survey one week after completing the lab portion of the study via Qualtrics online survey presentation software. The participation rate in the second session was 86.32%.

**Scoring.** The raw scale scores for each measure were transformed to reflect the percentage of maximum possible (POMP; Cohen, Cohen, Aiken, & West, 1999). This linear transformation changes the raw metric into a 0 (minimum possible score) to 100 (maximum possible score) scale which makes for more intuitive comparisons across measures. Informant reports were averaged across all available informants for each participant. See Table 1 for a summary of scale reliabilities (i.e., Cronbach's alpha) and descriptive statistics. All scales used 7-point Likert rating scales (1 = *strongly*

Table 1  
*Reliabilities, Means, and Standard Deviations for Individual Difference Measures*

	<b>Cronbach's <math>\alpha</math></b>		<b><math>M (SD)</math></b>	
	Participants	Informants	Participants	Informants
<i>Expressivity</i>				
Masking Scale	.83	.72	46.01 (15.84)	37.59 (12.31)
Berkeley Expressivity Questionnaire				
Positive Expressivity	.74	.66	73.88 (14.47)	80.21 (12.60)
Negative Expressivity	.74	.68	46.29 (17.26)	52.12 (15.67)
Impulse Strength	.82	.79	63.25 (19.22)	59.80 (18.04)
Expressive Suppression	.74	.76	43.86 (18.99)	37.87 (17.93)
BFI Extraversion	.83	.86	60.56 (17.92)	66.59 (18.94)
<i>Social-Threat Sensitivity</i>				
Attachment Style Measure				
Anxious Attachment	.46	.62	39.80 (16.56)	37.09 (17.27)
Avoidant Attachment	.81	.85	39.73 (21.70)	34.32 (21.11)
Secure Attachment	.52	.54	41.06 (14.56)	40.55 (15.03)
Need to Belong	.82	-	58.45 (15.74)	-
UCLA Loneliness Scale	.94	-	35.34 (18.51)	-
Fear of Negative Evaluation	.96	.96	56.60 (23.15)	49.12 (22.35)
Social Interaction Anxiety Scale				
Social Anxiety	.85	-	30.84 (19.42)	-
Social Phobia	.89	-	32.03 (22.02)	-
<i>Psychological Adjustment</i>				
Authenticity Scale	.87	.87	67.68 (15.67)	72.45 (14.86)
Rosenberg Self-Esteem	.90	-	68.07 (18.09)	-
Satisfaction with Life Scale	.86	-	65.57 (19.80)	-
Sense of Power Scale	.83	.72	62.82 (13.86)	69.33 (11.55)

*disagree, 7 = strongly agree), except for the UCLA Loneliness Scale which used a 4-point scale (1 = never, 4 = always). See Appendix A for a complete record of all items of each individual difference measure.*

**Expressivity.** Participants completed the following measures of constructs related to expressivity: the Masking Scale (13 items; Gross & John, 1998), the Berkeley Expressivity Questionnaire (16 items; Gross & John, 1995), and the Emotion Regulation Questionnaire (10 items; Gross & John, 2003). The BEQ is comprised of three subscales that assess positive expressivity, negative expressivity, and impulse strength. The ERQ is comprised of two subscales that assess two types of emotion regulation, expressive suppression and cognitive reappraisal, although only the expressive suppression subscale was of interest as a potential correlate of readability. The Extraversion subscale of the Big Five Inventory (BFI; John & Srivastava, 1999) which was used to assess trait judgments (see description below) was also computed as a potential component of expressivity that might relate to target readability.

**Social-threat sensitivity.** Participants completed the following measures of constructs related to social-threat sensitivity: the Need to Belong Scale (10 items; Leary, Kelly, Cottrell, & Schreindorfer, 2005), the UCLA Loneliness Scale (20 items; Russell, 1996), and the Fear of Negative Evaluation Scale (12 items; Leary, 1983). Participants completed the Social Interaction Anxiety Scale (6 items; Peters, Sunderland, Andrews, Rapee, & Mattick, 2012) which is comprised of two subscales that assess social anxiety and social phobia. Participants completed the Attachment Style Measure (13 items; Simpson, 1990) which is comprised of three subscales that assess the three prototypical types of attachment: secure, anxious, and avoidant (note that these are not categorical and

treated continuously). In keeping with the direction of the other two subscales, the items comprising the secure attachment subscale were coded such that higher values indicate less secure attachment.

**Psychological adjustment.** Participants completed the following measures of constructs related to psychological adjustment: the Authenticity Scale (12 items; Wood, Linley, Maltby, Baliousis, & Joseph, 2008), the Rosenberg Self-Esteem Scale (10 items; Rosenberg, 1965), the Satisfaction with Life Scale (5 items; Diener, Emmons, Larsen, & Griffin, 1985), and the Sense of Power Scale (8 items; Anderson, John, & Keltner, 2012).

**Informant reports.** In order to collect informant reports on a portion of the individual difference measures, each participant was asked to nominate two close peers and a close family member. Approximately 78.8% of participants nominated at least one informant. All informants were emailed a link to complete questionnaires about the participant. Informants also received two follow-up reminder emails approximately one and then two weeks after the initial survey mailing. The response rate for informants was 50.94%. Three informants were obtained for 15.1% of participants, two informants were obtained for 23.6% of the sample, and one informant was obtained for 22.6% of the sample (leaving 38.7% of participants with no informant reports). Informants were asked to complete the individual difference measures about the participants. Informants completed the same measures as participants except for the Need to Belong Scale, the UCLA Loneliness Scale, the Rosenberg Self-Esteem Scale, the Satisfaction with Life Scale, and the Social Interaction Anxiety Scale. These measures were excluded to keep the informants' survey short to encourage a higher response rate, and because it seemed

unlikely that informants would be able to provide any unique insight given that participants themselves are better informants of low-observability traits (Vazire, 2010).

## **Procedure**

**Phase I.** For the getting-acquainted task, participants interacted with each other in pairs. The pairs were instructed that their goal was to get to know one another as best they could in five minutes. To encourage more engaging conversations and ensure discussions went beyond perfunctory questions like “Where are you from?” and “What classes are you taking?”, each pair was provided with an envelope that contained slips of paper with a number of possible discussion questions. Participants were told that their goal was not to cover as many questions as possible in 5 minutes, but rather to explore each other’s responses to one question in depth.

The discussion questions were drawn from the pool of items in the Aron, Melinat, Aron, Vallone, and Bator (1997) Closeness Generating Exercise, as well as similar items written for this study or drawn from conversation-starter board games such as Table Topics®. Representative items include questions such as; “For what in your life do you feel most grateful?”, “If you could change anything about the way you were raised, what would it be?”, and “If you could go back in time 5 years, what piece of advice would you give your younger self?” (see Appendix B for a list of all possible discussion questions). Items were selected so that answers required some self-disclosure, but not so much that it would make participants overly uncomfortable to discuss with someone they did not know well. Immediately after each interaction participants were separated and asked to rate their partners’ personality traits (see details below) as well as a number of items assessing dyadic rapport (see details below). Participants completed this procedure three

times until all participants had interacted with and rated every other participant in the group. The experiment presentation software, MediaLab (Jarvis, 2012) was used to collect all measures in the lab session.

**Phase II.** After all possible dyads had interacted, everyone in the group was separated to private cubicles that were each equipped with a computer and headphones. Participants (now acting as **targets**) watched each of the three videos of the dyadic interactions they participated in. For the first two minutes of each video, participants were asked to report their moment-by-moment affect (see details below). At the end of the first two minutes and at the end of each 45 second period thereafter, the video was paused and participants were asked to report the specific thoughts they remembered having at that time (see details below). It was stressed that participants should report the affect and thoughts they remembered having experienced during the original interaction and not any affect or thoughts they experienced in reaction to viewing the videotapes. Next participants (now acting as **perceivers**) again watched each of the three videos of the dyadic interactions they participated in. However, this time they continuously rated the affect of their partner for the first two minutes of the video and inferred their partner's thoughts at each of the pre-determined tape stops.

### **Interpersonal Judgment Measures**

**Trait judgments.** Participants rated their own and their partners' personality trait ratings using a 21-item shortened version of the Big Five Inventory (BFI; John & Srivastava, 1999) using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Three additional items were included to assess intelligence (e.g., "Receives very good grades"). Two additional items were included to assess honesty (e.g., "Is trustworthy").

**Dyadic rapport.** Participants rated each partner/interaction on a number of interpersonal dimensions (see Appendix C for complete list of items) such as liking, rapport and desire for future affiliation (e.g., “I liked interacting with this person”, “If given the chance, I would try and hang out with this person again”, “I shared a lot of personal information with this person”) using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*).

**Affect judgments.** In the **target** phase, participants reported their moment-by-moment affect following established procedures (Zaki et al., 2008) for the first two minutes of each video. To do this, participants watched each video and continuously rated the level of positive to negative affect they remember feeling at each moment using a sliding 9-point scale (1 = *very negative*, 9 = *very positive*) that was presented onscreen immediately below the video clip. Participants were instructed to use their mouse to “rate how you felt at each moment” and adjust the sliding scale as often as necessary. The computer recorded 10 samples per second that were averaged to provide a single affect rating for each second. In the **perceiver** phase, participants rated their partner’s moment-by-moment affect for the first two minutes of each video.

**Thought judgments.** In the **target** phase, participants were asked to report the specific discrete, dynamic thoughts they remember having when the interaction took place following the Ickes methodology for assessing empathic accuracy for thoughts (Ickes et al., 1990). To ensure an adequate number of thoughts were reported, the videos were stopped at five pre-determined times (2:00, 2:45, 3:30, 4:15, 5:00) as opposed to freely allowing participants to indicate when they remembered having had a thought (see Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008 for a similar variation on the

original empathic accuracy paradigm). In the **perceiver** phase, participants were asked to guess their partner's specific thoughts at each of the pre-determined tape stops.

To code perceivers' accuracy for targets' specific thoughts, independent raters compared each participant's inference to the actual thought reported by the target. The inferences were coded for accuracy using a 4-point scale (*0 = essentially different content, 1 = somewhat correct content, but something notable is missing or incorrect, 2 = mostly correct content, but some small element is missing or incorrect, and 3 = essentially the same content*). The coding was split into four batches and four to five independent raters coded each batch. The raters were reliable (Cronbach's alpha ranges .91 to .92) thus accuracy ratings were averaged across raters for each inference and rescaled to yield a scale ranging from 0 (*zero accuracy*) to 100 (*complete accuracy*).

**Thought judgment baseline accuracy scores.** Also following Ickes et al. (1990), we estimated baseline accuracy for perceivers' thought judgments. Baseline accuracy refers to the overlap between the content of perceivers' inferences and targets' thoughts that is due to general knowledge (of a target or of the whole target pool), rather than distinctive knowledge of one specific thought. To estimate between-target baseline accuracy, three inferences were randomly selected for each perceiver from each target they interacted with. Each inference was then paired with different randomly selected thoughts reported by different targets from different groups. These pairings were rated for accuracy (using the same 4-point scale as above) by three judges. Accuracy ratings for each inference were averaged across judges (Cronbach's  $\alpha = .64$ ).

## CHAPTER III

### RESULTS

Before presenting the results, I first outline the three main research aims that guided analyses and the analytic strategies used for the dependent measures (see Table 2 for overview). I then present the results separately for each research aim.

**Aim 1:** Examine variance decomposition in interpersonal accuracy and compare across accuracy measures.

**Aim 2:** Examine interrelations among target readability estimates for different measures of interpersonal accuracy.

**Aim 3:** Investigate potential individual differences that correlate with target readability as well as look for patterns of individual differences that consistently correlate with readability across measures.

### Analytic Strategies

Table 2  
*Analytic Strategy Overview*

Measure	Analytic Strategy	Predicting Target Readability	
		Distinctive Accuracy	Normative Accuracy
Trait Judgment and Continuous Affect Accuracy	Social Accuracy Model	Random target effects for distinctive accuracy slopes	Random target effects for normative accuracy slopes
Thought Accuracy	Social Relations Model	Random target effects of overall accuracy corrected for baseline accuracy intercepts	Random target effects of baseline accuracy intercepts

**Trait judgments.** Trait judgment accuracy was modeled using the Social Accuracy Model (SAM; Biesanz, 2010). SAM was developed for trait judgment research and is appropriate when perceivers make judgments of a target across some series of

attributes (e.g., multiple personality trait items). Traditionally, the correspondence between a criterion measure and a perceiver's judgment has been expressed as a simple profile relationship (i.e., a correlation). In contrast, SAM (see Figure 2 below) simultaneously models perceivers' judgments as a function of the criterion measure (e.g., a specific target's self-reported extraversion) *and* the mean for the criterion measure (e.g., the average level of self-reported extraversion). As a result, the raw profile relationship is decomposed into *distinctive accuracy* (the correspondence between perceivers' judgments and targets' self-reports controlling for the average person's personality) and *normative accuracy* (the correspondence between perceivers' judgments and the average person's personality after controlling for targets' self-reports).

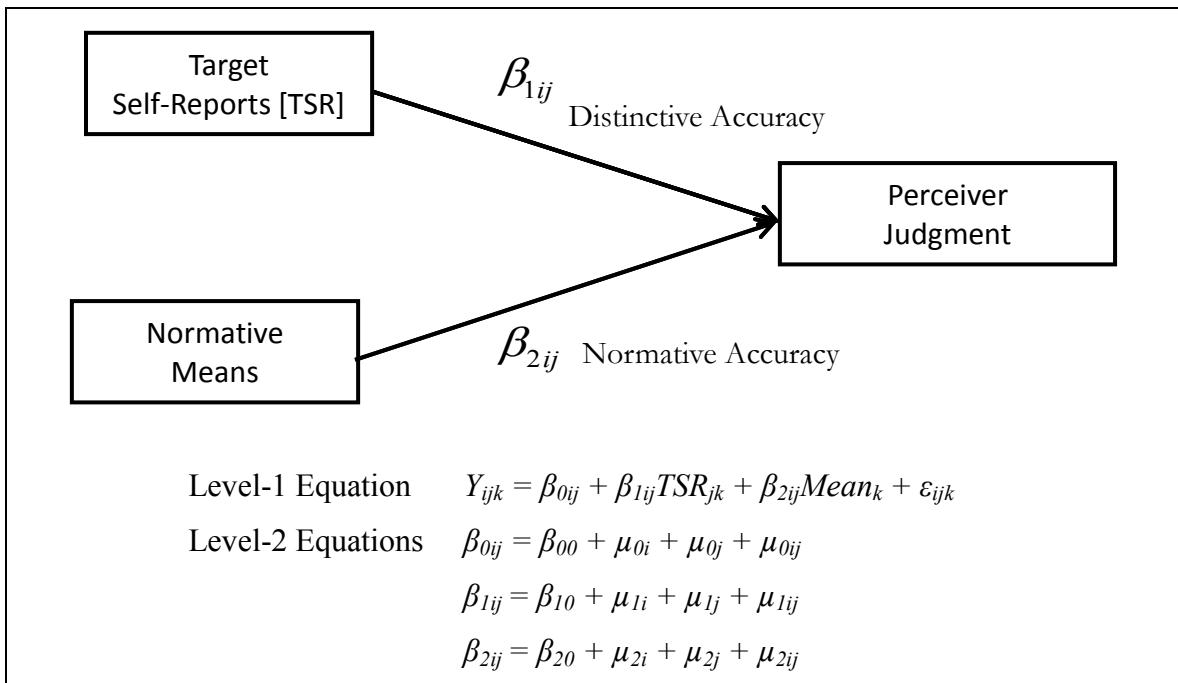


Figure 2. The Social Accuracy Model and equations.

The specific equations estimated by SAM models are displayed above. Interpretation of the Level-1 equation parameters is as follows:  $Y_{ijk}$  is the rating a particular perceiver ( $i$ ) gave for a particular target ( $j$ ) on a particular item ( $k$ ). This rating

is predicted as a function of that target's self-report on that particular item ( $TSR_{jk}$ ) as well as the mean self-report (averaged across the larger set of self-reports) for that particular item ( $Mean_k$ ). The intercept ( $B_{0ij}$ ) is the average trait rating for a particular target-perceiver dyad when the target's self-report ( $TSR_{jk}$ ) and the mean self-report ( $Mean_k$ ) are both equal to 0. Of more interest than the intercept are the two slopes estimated by this equation. The regression coefficient  $B_{1ij}$  is the correspondence between perceiver  $i$ 's judgments and target  $j$ 's self-report (controlling for  $Mean_k$ ). In other words,  $B_{1ij}$  represents an estimate of **distinctive accuracy** – the extent to which a target's unique, differentiating characteristics are accurately understood – for a particular dyad. Finally,  $B_{2ij}$  is the correspondence between the mean self-report and perceiver  $i$ 's judgments of target  $j$  (controlling for target  $j$ 's self-report). In other words,  $B_{2ij}$  represents an estimate of **normative accuracy** – the extent to which a target is seen as similar to the average person – for a particular dyad.

Conceptually, the Level-1 equation is estimated for each unique perceiver-target dyad so that true latent variability (individual differences in the accuracy components) can be parsed from sampling error. This is captured in the Level-2 equations. The regression coefficients  $\beta_{00}$ ,  $\beta_{10}$ , and  $\beta_{20}$  represent the fixed effects in the model. These are, respectively, the grand mean (i.e., averaged across perceivers and targets) intercept, distinctive accuracy slope, and normative accuracy slope. Latent variability in these fixed effects is represented by the random effects – the  $\mu$ 's – which are the deviations from the grand mean. Perceivers (e.g.,  $\mu_{0i}$ ), targets (e.g.,  $\mu_{0j}$ ), and dyads (e.g.,  $\mu_{0ij}$ ) can all differ from the grand mean. For instance,  $\beta_{10}$  is the grand mean distinctive accuracy slope and  $\mu_{1i}$  indicates the difference between that mean and the particular slope estimated for

perceiver  $i$ . In other words,  $\beta_{10} + \mu_{1i}$  is perceiver  $i$ 's unique level of distinctive accuracy (averaging across all the targets perceiver  $i$  rated). Similarly,  $\beta_{10} + \mu_{1j}$  is target  $j$ 's unique level of distinctive accuracy (averaging across all the perceivers who rated target  $j$ ). Table 3 below displays the interpretation of each component. To understand how much latent variability there is in the random effects, variances are estimated for each  $\mu$  (note that the variance of the random dyad effects include true dyadic variability plus error).

**Table 3**  
*Interpretation of SAM Components*

	<b>Perceiver</b>	<b>Target</b>
<b>Distinctive Accuracy</b>	$\beta_{10} + u_{1i}$ The extent to which one perceives the distinct characteristics of others.	$\beta_{10} + u_{1j}$ The extent to which one's distinct characteristics are perceived by others.
<b>Normative Accuracy</b>	$\beta_{20} + u_{2i}$ How much one's impressions of others correspond to the average person.	$\beta_{20} + u_{2j}$ How similar to the average person one is generally perceived.

**Affect accuracy.** The continuous affect ratings were first binned (following Zaki et al., 2008) by calculating a non-moving average for each five-second interval. Each binned interval served as one data point. Affect accuracy was also modeled using SAM: perceivers' affect judgments were predicted by targets' actual affect ratings as well as average affect ratings. This is a novel application of SAM that has not yet been tested. However, because there may be a general affect trajectory that the modal dyadic interaction follows (e.g., people may start out feeling awkward but gradually warm to each other and thus affect follows a roughly upward linear trajectory), it is possible that affect accuracy could be broken down into normative and distinctive accuracy much like trait judgments.

**Thought accuracy.** Unlike trait judgments and continuous affect where accuracy is computed by examining the bivariate relationship between the perceiver's judgment and the target's self-report, the accuracy of perceivers' inferences of targets' thoughts is captured by the univariate coded accuracy score. Thus, the outcome measure is itself already an accuracy score and SAM is not appropriate. Instead, these data were modeled using the Social Relations Model (SRM; Kashy & Kenny, 1990; Kenny & LaVoie, 1985) which was developed for round-robin designs where interpersonal perceptions are measured. The SRM is also a cross-classified multilevel modeling strategy that breaks down a rating (in this case an accuracy score) as a function of the group mean, a perceiver effect, a target effect and a dyadic relationship effect. For example, Polly's empathetic accuracy for Tim is a function of their group mean<sup>3</sup>, the extent to which Polly is generally accurate at reading others' thoughts, the extent to which Tim's thoughts are generally accurately perceived by others, and Polly's unique accuracy for Tim above and beyond the other main effects.

$$\text{Level-1 Equation} \quad Y_{ijk} = \beta_{0ijk} + \varepsilon_{(ij)}$$

$$\text{Level-2 Equation} \quad \beta_{0ijk} = \beta_{00} + \mu_{0i} + \mu_{0j} + \mu_{0k}$$

The specific equations specified by this type of model are displayed above. In this case,  $Y_{ijk}$  represents the accuracy for a particular target perceiver dyad in a particular group which is modeled as a function of the grand mean ( $\beta_{00}$ ), a perceiver effect ( $\mu_{0i}$ ), a target effect ( $\mu_{0j}$ ), a unique dyad effect ( $\varepsilon_{(ij)}$ ), and a group effect ( $\mu_{0k}$ ). Variances are estimated for the perceiver, target, dyad, and group effects. When perceivers make a

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<sup>3</sup> Group effects are of little interest in the current design and none were hypothesized given that participants only interacted in pairs and never as a larger group.

single judgment of a target, the unique dyad effect is confounded with error.<sup>4</sup> At the dyadic level, it is possible that there could be a correlation between one member's unique dyad effect and the partner's unique dyad effect ( $\varepsilon_{(ij)}$  is correlated with  $\varepsilon_{(ji)}$ ) and this is estimated as an error covariance. At the individual level, it is possible that there could be covariance between a person's actor effect and their partner effect (i.e., people that tend to read others more accurately are more accurately read themselves). The actor/partner covariance cannot be estimated with traditional multilevel modeling software, however simulation studies suggest that even when this covariance is non-zero it does not have a discernible impact on the estimation of other effects in the model (Biesanz, 2010). Within the SRM framework, target individual differences can be used to predict accuracy much like a standard regression.

Similar to decomposing overall accuracy into normative and distinctive components in the SAM analyses, baseline accuracy scores were calculated (see above for details) in order to estimate how much of the perceivers' overall thought accuracy is attributable to making correct inferences based on general knowledge and/or stereotypes. Empathic accuracy scores were divided into normative (baseline accuracy) and distinctive accuracy (overall accuracy corrected for baseline accuracy) and SRM analyses were conducted on each component separately.<sup>5</sup>

To address Aim 1, baseline models with the above specified components were computed for each of the outcome measures. Using the *R lme* package (Bates, Maechler,

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<sup>4</sup> Perceivers actually made multiple judgments of each target because they inferred multiple thoughts for each target they interacted with. However, the process used to estimate baseline accuracy precludes an examination of empathic accuracy at the thought level because baseline accuracy was calculated at the dyad level.

<sup>5</sup> In a few cases, baseline accuracy was higher than overall accuracy which resulted in a negative estimate of distinctive accuracy. Negative values were replaced with zero in these instances.

Bolker, & Sarkar, 2013), the Empirical Bayes random target effect estimates for each of these models were extracted. These values were then used in the analyses addressing Aim 2 (determining whether target readability correlated across measures) and Aim 3 (determining whether individual differences predicted target readability). The analyses for Aim 2 and Aim 3 were conducted in *Mplus* (Muthén & Muthén, 2007) because this program routinely uses a maximum likelihood estimator whereas *R* does not (see below).

**Missing data.** Table 4 below displays the amount of missingness for each outcome measure separately for perceivers and targets.<sup>6</sup> Missingness for the interpersonal accuracy outcome measures was due to initial technical difficulties with programming and computer equipment which resulted in greater amounts of missing data from groups run earlier in the course of the study. The amount of missingness varies for the outcome measures because in circumstances when there were video playback issues (the most frequently encountered difficulty), it was still possible to collect trait judgments. This missingness is assumed to be missing completely at random, thus it was deemed ignorable.

Table 4  
*Percent Missingness for Outcome Measures*

	Perceivers	Targets
Trait Judgments	1.89%	2.36%
Affect Accuracy	5.66%	3.77%
Thought Accuracy	11.32%	6.60%

Of larger concern is the driver of missingness on the individual difference measures which were collected at a second online session. The participation rate was high at 86.32%, but this leaves missing data on the individual difference measures for 13.68%

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<sup>6</sup> Perceiver and target missingness differ because technical difficulties occurred at the individual level and not the group level (e.g., even if a particular person's perceiver data was lost, that person's partners could still have made judgments about him or her and thus target data would still be available for that person).

of the sample. Some participant characteristics (sex, age, GPA, Big 5 personality traits) were available as they were assessed in the lab session, thus it was possible to examine whether there were group differences related to the missingness of the individual difference measures. A total of four significant group differences were present (see Table 5): people who did not complete the online session were more likely to be male ( $p = .03$ ), had lower GPAs ( $p = .009$ ), were somewhat less conscientious ( $p = .06$ ), and were higher in openness ( $p = .04$ ).

**Table 5**  
*Group Differences in Missingness*

	Missing	Present
Sex	54.2% male	32.2% male
GPA	$M = 2.91$	$M = 3.23$
Conscientiousness	$M = 68.40$	$M = 74.00$
Openness	$M = 76.74$	$M = 69.58$

These systematic differences suggest that the pattern of missingness is not completely random which is concerning because this can potentially bias statistical estimates. To deal with this, the analyses involving the correlation of individual differences with the estimates of target readability were analyzed with maximum likelihood (ML) estimates. ML does not require complete data and implicitly copes with missingness on outcome variables to provide unbiased parameter estimates (Enders, 2010). Unfortunately, although *R* uses ML routinely in its multilevel modeling package, listwise deletion is still employed whenever a case is missing data for an independent variable (but not on a dependent variable). Thus, all analyses involving the individual difference measures were instead conducted in *Mplus* which does not have this oversight. Using ML to estimate the correlation between individual differences and target readability addresses the issue of potential bias due to nonrandom missingness; however,

one potential drawback to this approach is that the random target effects extracted from the multilevel models have less variability than the model-based latent estimates which may attenuate any statistical relationships and makes this a more conservative analysis.

Although Funder's RAM provided a guiding framework for selecting individual differences that may correlate with target readability, this work is largely exploratory and as such a wide range of individual differences were measured and analyzed. Thus it is important to acknowledge at the outset that the risk of committing Type I errors is high given the large number of tests that were conducted. On the other hand, using conservative alpha adjustments such as Bonferroni's correction results in a stark loss of power. This raises the risk of committing Type II errors which I consider to be the more costly error for exploratory research. Although I report the unadjusted  $p$ -values in conjunction with the correlation analyses, more attention should be paid to the size of the effects and their respective confidence intervals rather than the dichotomous outcome of the hypothesis tests. I openly regard the results presented here as preliminary, and in need of future confirmatory analysis with more stringent analytic methods (an issue I return to in the discussion section).

## Primary Results

**Aim 1.** In order to decompose the variance in interpersonal accuracy and compare across accuracy measures I ran a series of baseline variance decomposition models on the accuracy measures. All analyses were conducted in *R*'s *lme4* package (Bates et al., 2013).

For the bivariate accuracy outcome measures (trait judgments and continuous affect), variance decomposition was accomplished by running cross-classified multilevel models with SAM components (see above for details). The perceivers' judgments were

modeled as a function of the targets' self-reports and the normative profile. Consistent with SAM, initially these two parameters (and the intercept) were allowed to vary randomly for targets, perceivers, and dyads.

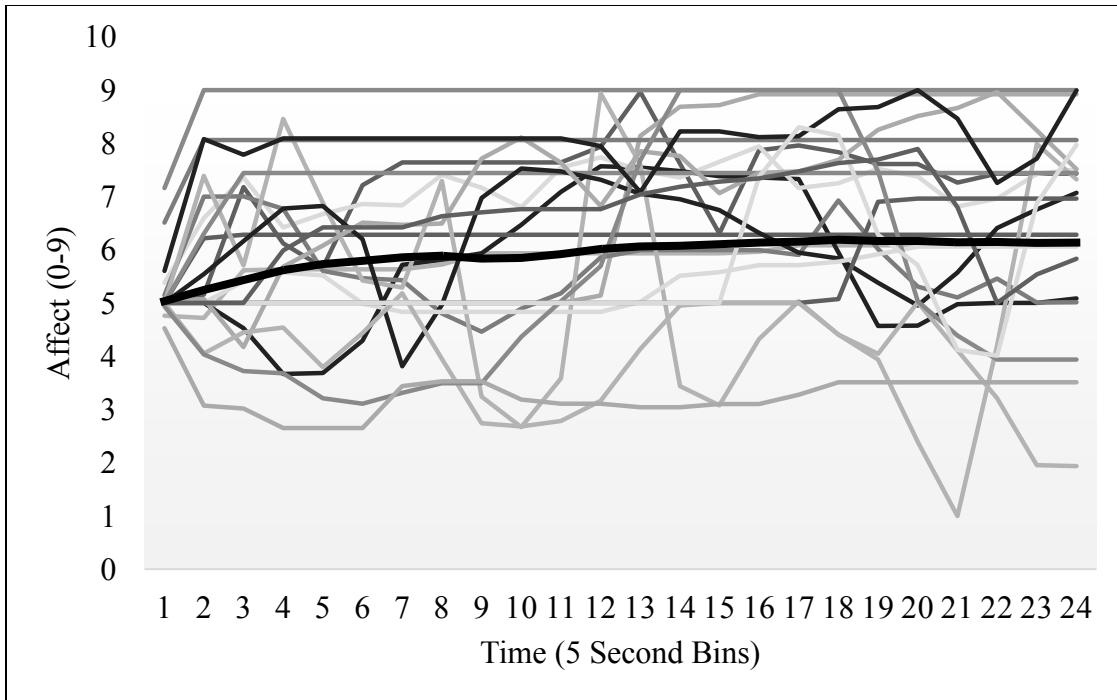
Calculation of the normative profile depended on the outcome measure. For traits, the normative profile was the mean self-report for each trait item across the larger pool of participants. For continuous affect, the normative profile was calculated by averaging self-reported affect for each interval across perceivers and dyads. In both cases, the normative profile was subtracted from the target self-report and each of these variables was then grand mean centered in order to clarify parameter interpretation and reduce collinearity.

For the thought accuracy measure, variance decomposition was accomplished by running separate cross-classified multilevel models on normative empathic accuracy (i.e., baseline accuracy scores) and distinctive empathic accuracy (i.e., total accuracy minus baseline accuracy) with the SRM components (see above for details). Each model included a random effect of the intercept for targets, perceivers, and dyads. To minimize computational demands and avoid model overfitting, a random effect for group was not included. Both baseline models converged without issue.

The baseline model with SAM components for trait judgment accuracy failed to converge. Model nonconvergence can signal problems with the model (i.e., it is improperly specified) or problems with the data (e.g., there are issues with low variability). In the current case, the nonconvergence is likely due to problems with the data. Namely, the small number of perceivers per target (and vice versa) resulted in fairly low reliability of parameters that are also small in size (an issue I return to in the discussion

section). Because distinctive accuracy was of the most interest, a simplified baseline model was fitted that excluded random effects for the normative profile (i.e., the normative profile was included in the model but it was treated as fixed for all perceivers, targets, and dyads) and only included a random effect of the intercept for dyads. This model reached convergence and this is the model used in all further analyses.

The baseline model with SAM components for continuous affect accuracy also did not converge. In addition to the issues noted above for trait judgments, this failure to converge may also have been caused by limited variance in the normative affect trajectory. Figure 3 displays the normative trajectory (the dark dotted line) overlaid onto a subsample of affect trajectories. This figure makes evident that relative to overall variance in self-reported affect ( $\sigma^2 = 2.07$ ), the variance in the normative affect trajectory is very small ( $\sigma^2 = 0.10$ ). The variance is even smaller ( $\sigma^2$  decreases to 0.04) if the initial time points are excluded to correct for the potential artifact introduced by the fact that the starting point of the rating dial was set at 5. A simplified baseline model that excluded random effects for the normative profile (i.e., the normative profile was included in the model but it was treated as fixed for all perceivers, targets, and dyads) reached convergence and this is the model used in all further analyses. See Appendix D for the specific equations corresponding to the baseline models for all three outcome measures.



*Figure 3.* Overall mean affect trajectory (dark dotted line) overlaid on a subsample of individual affect trajectories.

Table 6 displays a summary of the results of the baseline models for each outcome measure. The fixed effects are the grand mean distinctive and normative components (averaged across perceivers and targets). The random effects indicate how much variation there is around the fixed effects for the various factors in the model. In other words, the random effects indicate the extent to which there are individual differences in the fixed effects at the target and/or perceiver level.

Table 6  
*Summary of Fixed and Random Effect Estimates*

Outcome Measure	Fixed Effects	Random Effects	
		Target	Perceiver
Trait Accuracy			
Distinctive Accuracy	0.13**	0.20**	0.08**
Normative Accuracy	0.77**	-	-
Affect Accuracy			
Distinctive Accuracy	0.10**	0.21**	0.20**
Normative Accuracy	0.69**	-	-

Thought Accuracy			
Distinctive Accuracy	17.96**	2.21	4.62*
Normative Accuracy	3.97**	0.00	1.82*

*Note.* \* denotes  $p < .05$  and \*\*denotes  $p < .01$ . Fixed effects are unstandardized regression coefficients and the random effects are standard deviations.

For trait judgment accuracy and affect accuracy, interpersonal judgments are largely driven by normative accuracy. Normative accuracy for these two measures indicates that perceiver ratings of target traits and affect strongly correspond to the normative response profile (after adjusting for target self-reports). In other words, people's ratings of others' extraversion are partially driven by general knowledge that most people are moderately extraverted. Likewise, judgments regarding affect are partially a function of general knowledge that most people tend to feel neutral to slightly positive most of the time.

Though smaller in effect size, distinctive accuracy was also significant for trait judgment accuracy and affect accuracy. Distinctive accuracy for these two measures indicates that perceiver ratings of target traits and affect correspond to target self-reports even after partialing out the normative response profile. In other words, people are somewhat able to discern when their partners' traits differ from that of the average person or when their affect deviates from average levels.

One potential concern with the interpretation of distinctive accuracy for trait judgments is it may solely be driven by individuals whose profile of traits is highly deviant from the normative profile. In other words, perhaps it is only possible to judge the unique traits of people who are indeed unique. To test whether this may be the case, for each person I computed the standard deviation of their trait profile after partialing out trait norms to obtain an estimate of how deviant their trait profile was from the normative

profile. I then tested whether this value correlated with the extracted random distinctive accuracy slope. If distinctive accuracy is only driven by deviant individuals, we would expect these to be positively correlated (i.e., individuals whose traits vary more around the norm are seen with more distinctive accuracy and individuals whose traits correspond highly to the norm are seen with less distinctive accuracy). However, this correlation was close to zero and nonsignificant ( $r = -.02, p = .77$ ) which suggests that even individuals with highly normative trait profiles are still seen with distinctive accuracy and distinctive accuracy is not merely a statistical artifact.

The results for thought accuracy followed a different pattern; distinctive thought accuracy was high relative to normative thought accuracy. For this measure, distinctive accuracy represents overall accuracy corrected for normative accuracy estimates. Normative accuracy was calculated by estimating baseline accuracy, or the portion of perceiver's overall accuracy that can be attributed to correct guesses. This suggests that normative accuracy played a much smaller role relative to distinctive accuracy or knowing what a particular target was thinking at a particular time after correcting for guessing.

Of more interest than the overall fixed effects in these models are the random effects. Specifically, given that the primary focus of this project is on the targets of interpersonal accuracy, how does the variance attributable to targets compare to the variance attributable to perceivers? Considering distinctive accuracy first, the results depend on the type of accuracy measured. Figure 4 displays kernel density plots of the distribution of random effects for distinctive accuracy separately by outcome measure for targets (top row) and perceivers (bottom row). Consistent with previous research

(Biesanz, 2010), variance in distinctive trait accuracy slopes is greater for targets than for perceivers (see the first column in Figure 4). For distinctive affect accuracy, perceiver and target variance estimates are very similar (see the second column in Figure 4). Lastly, for distinctive thought accuracy, perceiver variance outweighs target variance (see the third column in Figure 4). This is partially consistent with the results reported in Lewis et al. (2012). That study also decomposed variance in thought accuracy, but the design used made it possible to separate out perceiver variance, target variance, and within target variance at the thought level.<sup>7</sup> The results of Lewis et al. (2012) showed that perceiver variance outweighed target variance (which was estimated to be zero) and the largest portion of systematic variance was attributable to within target differences at the thought level. Taken together, in the current study there is nonzero target variance in distinctive accuracy for all outcome measures (though not significantly so for thought accuracy), but only for trait judgments, does target variance actually outweigh perceiver variance.

Normative accuracy was modeled as a fixed effect for trait accuracy as well as affect accuracy, thus no variability is estimated in either of these outcomes for perceivers or targets. For normative thought accuracy, there was variance due to perceivers, but target variance was estimated to be zero.

**Aim 2.** In order to examine interrelations among target readability estimates for different measures of interpersonal accuracy, the Empirical Bayes random target effect estimates were extracted from the analysis of the baseline models for each outcome measure (when target variance was nonzero). Table 7 displays a correlation matrix of the interrelations among the random target effects.

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<sup>7</sup> The current study design precludes examination of thought-level variance because each thought was judged by only one perceiver.

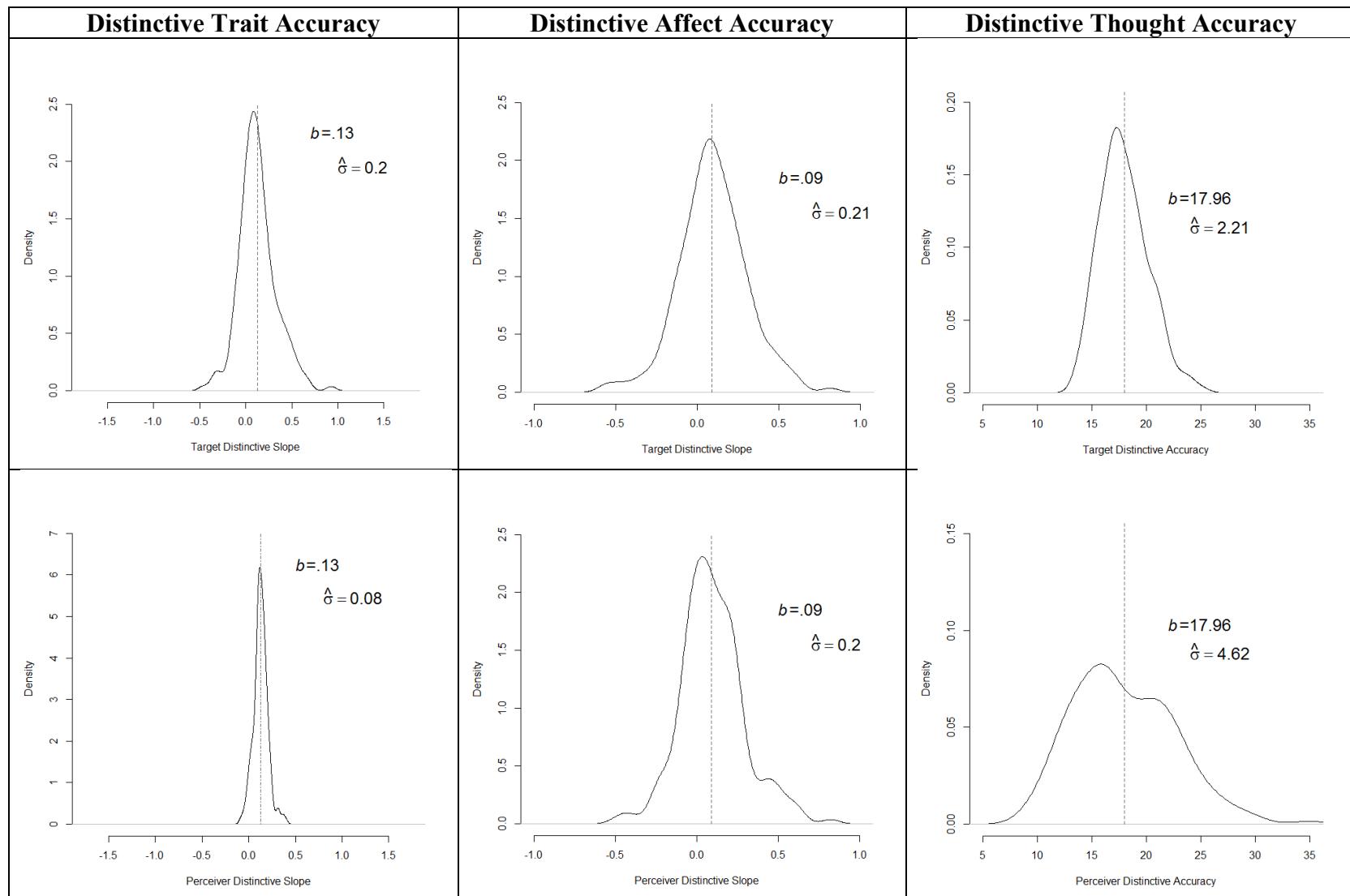


Figure 4. Kernel density plots of the distribution of random effects in distinctive accuracy displayed separately for targets (upper row) and perceivers (bottom row).

Table 7  
*Correlations of Target Readability Estimates*

Measure	1	2	3
1. Distinctive Trait Accuracy	-	.03 [-.11, 0.15]	-.12 [-.26, 0.002]
2. Distinctive Affect Accuracy		-	-.06 [-.21, 0.05]
3. Distinctive Thought Accuracy			-

*Note.* Correlations are presented with 95% confidence intervals.

If target readability is a general characteristic we would expect moderate to large positive correlations among the different outcome measures. There was no evidence to support this in these data. The correlation between trait accuracy and affect accuracy was close to zero and the correlations between these two outcomes and distinctive thought accuracy were also close to zero and even potentially consistent with small negative effects. Overall this suggests that much like perceptive accuracy, target readability is not a general characteristic but is rather unique to subdomains within interpersonal accuracy.

**Aim 3.** Based on guiding hypotheses generated from Funder's RAM and previous research regarding target readability, individual differences linked to expressivity, social-threat sensitivity, and psychological adjustment were measured. In order to investigate whether any of these measures correlated with target readability, I computed correlations in *Mplus* using a maximum likelihood estimator between the Empirical Bayes random target effects extracted from the baseline models estimated in Aim 1 and the individual difference variables (assessed via self-reports and informant-reports). Table 8 displays these correlations separately for self-reports and informant-reports alongside 95% confidence intervals.

Table 8

*Summary of Correlations of Individual Difference Measures and Target Readability Estimates*

	Distinctive Trait Accuracy		Distinctive Affect Accuracy		Distinctive Thought Accuracy	
	Self-Report	Informant-Report	Self-Report	Informant-Report	Self-Report	Informant-Report
<i>Expressivity</i>						
Masking Scale	-.03 [-.17, .10]	<b>-.14 [-.27, -.01]</b>	.02 [-.11, .16]	-.05 [-.19, .08]	<b>-.20 [-.33, -.07]</b>	<b>-.16 [-.29, -.03]</b>
Berkeley Expressivity Questionnaire						
Positive Expressivity	.02 [-.12, .15]	.05 [-.09, .18]	-.09 [-.22, .05]	.06 [-.08, .19]	-.01 [-.14, .13]	.12 [-.01, .25]
Negative Expressivity	<b>-.14 [-.27, -.01]</b>	<b>-.16 [-.28, -.02]</b>	.05 [-.08, .19]	.02 [-.11, .16]	.10 [-.04, .23]	.12 [-.01, .25]
Impulse Strength	-.07 [-.20, .07]	-.09 [-.22, .05]	.01 [-.12, .15]	<b>.17 [.04, .30]</b>	-.03 [-.16, .11]	.02 [-.12, .15]
Expressive Suppression	-.01 [-.15, .12]	.11 [-.03, .24]	-.07 [-.21, .06]	-.03 [-.17, .10]	-.10 [-.23, .03]	-.08 [-.21, .06]
Extraversion	-.03 [-.16, .11]	-.10 [-.23, .04]	-.09 [-.22, .05]	-.07 [-.20, .06]	.11 [-.02, .24]	.08 [-.05, .21]
<i>Social-Threat Sensitivity</i>						
Attachment Style Measure						
Anxious Attachment	-.07 [-.21, .06]	<b>-.16 [-.29, -.03]</b>	.01 [-.14, .13]	-.07 [-.20, .07]	-.06 [-.19, .08]	-.02 [-.15, .12]
Avoidant Attachment	-.07 [-.20, .07]	-.13 [-.26, .01]	.01 [-.14, .13]	-.06 [-.19, .08]	-.07 [-.20, .07]	-.06 [-.19, .08]
Secure Attachment	-.11 [-.24, .03]	-.13 [-.26, .01]	-.06 [-.19, .08]	-.05 [-.18, .08]	-.10 [-.23, .03]	-.08 [-.21, .06]
Need to Belong	<b>-.15 [-.28, -.02]</b>		-.04 [-.17, .10]			-.08 [-.21, .05]
UCLA Loneliness Scale	-.10 [-.23, .04]		-.01 [-.14, .13]			<b>-.16 [-.29, -.03]</b>
Fear of Negative Evaluation				.01 [-.13, .14]		
	<b>-.15 [-.28, -.01]</b>	<b>-.16 [-.29, -.03]</b>	-.08 [-.21, .05]		-.09 [-.22, .04]	<b>-.16 [-.29, -.03]</b>
Social Interaction Anxiety Scale						
Social Anxiety	-.04 [-.17, .09]		.11 [-.03, .24]			<b>-.14 [-.27, -.01]</b>
Social Phobia	-.08 [-.21, .06]		-.07 [-.20, .06]			-.12 [-.25, .01]
<i>Psychological Adjustment</i>						
Authenticity Scale	.11 [-.03, .24]	.09 [-.04, .23]	-.06 [-.19, .08]	-.02 [-.15, .12]	.07 [-.07, .20]	.13 [-.01, .26]
Rosenberg Self-Esteem	<b>.13 [.00, .26]</b>		-.09 [-.22, .05]		<b>.17 [.04, .30]</b>	
Satisfaction with Life Scale	-.04 [-.17, .10]		-.03 [-.17, .10]			.06 [-.07, .19]
Sense of Power Scale	-.03 [-.16, .11]	.12 [-.02, .25]	-.11 [-.24, .02]	.01 [-.13, .14]	.08 [-.05, .22]	-.05 [-.18, .09]
Rapport Composite	<b>-.23 [-.35, -.10]</b>		-.12 [-.25, .01]			.08 [-.06, .21]

Note. Correlations are presented with 95% confidence intervals. Significant correlations ( $p < .05$ ) are in bold.

**Expressivity.** Measures related to expressivity were included because the extent to which people openly convey their internal emotional experiences is conceptually linked to whether outward cues are made available to perceivers. Thus, we might expect expressivity to positively correlate with target readability. There is some evidence to support this in these data, most notably for masking, or the extent to which people's behavior is a reflection of their true inner experiences (Gross & John, 1998). The masking scale had a small negative relation with target readability for distinctive thought accuracy as well as distinctive trait accuracy (although only informant- and not self-reports were significant correlated for trait accuracy); the distinctive traits and thoughts of targets who masked their inner experiences were judged less accurately.

No other expressivity-related individual difference measure showed consistent patterns across outcome measures but there were a few significant correlations to note. Informant-reports of impulse strength, or the tendency to feel emotions very strongly, were positively related to distinctive affect accuracy, but this variable was not correlated with the other outcome measures. Inconsistent with general predictions, negative expressivity, or the tendency to openly express negative emotions, was negatively linked to distinctive trait accuracy; the distinctive traits of targets who were high in negative expressivity were judged less accurately. Negative expressivity was positively correlated (albeit small and nonsignificantly) with the other accuracy measures. Extraversion had a small positive correlation with distinctive thought accuracy but it was nonsignificant and the correlations with the other outcome measures were in the opposite direction.

**Social-threat sensitivity.** Concerns over social threats may affect readability because targets feel less safe in expressing themselves and their true attitudes (e.g.,

Gaucher et al., 2012) and thus behave in a more inhibited and withdrawn manner (Schlenker & Leary, 1985). Thus, we might expect negative correlations between these variables and target readability. Although the relationships are small in size, there is some support for this hypothesis in these data across the different outcome measures. Most notably, the fear of negative evaluation was negatively linked to target readability for all three outcome measures: The distinctive traits, affect, and thoughts were judged less accurately (although not always statistically significantly) for targets who were highly concerned over whether others form favorable impressions of them (assessed via self- and informant-reports).

Likewise, although the correlations were small and often nonsignificant, the other social-threat sensitivity variables (whether self-reports or informant-reports) also tended to be negatively correlated with target readability estimates. Targets who were lonelier and higher in the need to belong tended to be judged less accurately, particularly in terms of their distinctive traits and thoughts. The three components of attachment style as well as Social Anxiety and Social Phobia also showed a general pattern of small negative correlations with target readability (excepting the relationship between self-reports and distinctive affect accuracy).

***Psychological adjustment.*** Measures related to psychological adjustment were included because past research suggests adjustment is linked to the extent to which targets emit cues that are more relevant to their traits (Human & Biesanz, 2011; Human et al., 2014). Thus, we might expect positive correlations between these variables and target readability. Of the four variables that assessed different components of psychological adjustment, two were somewhat consistently positively linked to target readability.

Informant- and self-reports of authenticity and self-esteem were positively correlated with distinctive trait and thought accuracy (only self-esteem significantly so); however, both variables showed small negative correlations with distinctive affect accuracy. The two other components of psychological adjustment (satisfaction with life and sense of power) had small nonsignificant correlations in inconsistent directions with the outcome measures.

Well-adjusted individuals tend to be more likeable which may result in perceivers who are more engaged and motivated, which may in turn enhance the extent to which perceivers detect cues and properly utilize them. Thus, we might expect a positive correlation between likeability and target readability. To assess this, I created a composite target rapport variable that was an average of the relevant interpersonal judgment variables (see Appendix C) averaged across the three partners each target person interacted with. Inconsistent with the hypothesis, rapport was *negatively* correlated with distinctive trait and affect accuracy; the traits and affect of targets who generated more rapport on average were judged with less distinctive accuracy. Rapport was positively correlated with distinctive thought accuracy but this effect was small and nonsignificant.

To help make sense of the large number of correlations and statistically test for the presence of a general pattern of support for the hypothesized relations, a binomial sign test was calculated for each of the three different dimensions of individual differences. This test takes into account the number of successes (i.e., a correlation in the predicted direction) relative to the number of trials (i.e., the total number of correlations tested) and denotes the probability of obtaining such a pattern. For the individual differences related to social-threat sensitivity, 31 of the 36 correlations were in the

predicted direction. The sign test for this pattern indicates that the probability of obtaining so many correlations in the predicted direction is very low ( $p < .0001$ ). This result lends further support for the presence of a link between social-threat sensitivity and target readability. For psychological adjustment, only 9 of the 18 correlations were in the predicted direction. The sign test for this pattern indicates that the probability of obtaining this many correlations in the predicted direction is about even ( $p = .59$ ). Finally, for expressivity, only 18 of the 54 correlations were in the predicted direction. The sign test for this pattern indicates that the probability of obtaining so few correlations in the predicted direction is very low ( $p = .01$ ). In other words, there are more failures than we would expect by chance alone which suggests that more nuanced theory is needed to explicate why expressivity sometimes is and sometimes is not linked to target readability and the direction of this relationship.

## CHAPTER IV

## DISCUSSION

### **Summary of Results**

The overarching goal of this study was to examine the role of targets in interpersonal accuracy and investigate three main aims: 1) Are some targets more readable than others?; 2) Is target readability a general trait?; and 3) What are the correlates of target readability? Given the complexity of the dyadic process of interpersonal accuracy, it should not be surprising that the answers to these questions are also complex.

To measure target readability, overall accuracy on the three outcome measures was parsed into distinctive accuracy and normative accuracy. Although distinctive accuracy was of primary interest in this study, the results for both components across the outcome measures warrant consideration. For trait judgments, being seen distinctively means that one's unique and individuating characteristics are accurately perceived. Consistent with previous research (Biesanz, 2010), average levels of distinctive accuracy were lower than normative accuracy. For traits, being perceived normatively means that one is generally seen consistent with trait norms. In other words, people have general knowledge about the average person is like (e.g., people tend to be somewhat extraverted and fairly agreeable and not so neurotic) and this general knowledge is applied when judging a target person. Because people tend to exhibit a fair amount of consistency in their personality traits (Roberts & DelVecchio, 2000), it is not surprising that perceivers possess base rate knowledge to draw upon when making trait judgments.

Consistent with the results for trait judgments, for affect accuracy the average levels of distinctive accuracy were lower than normative accuracy. For affect, being perceived distinctively means that one's trajectory of affect as it differs from the normative trajectory is accurately perceived. Being perceived normatively means that on average perceivers' inferences for that particular target are generally consistent with the normative trajectory. Interestingly, there was no real normative *trajectory* for affect; mean affect ratings stayed roughly constant across time at a slightly positive level. In contrast to traits where the norms include knowledge of one trait relative to others (e.g., neuroticism is generally low whereas extraversion is generally moderate), the norms for affect did not differentiate across time points within the interaction (e.g., base rate affect was slightly positive at the beginning, middle, and end of an interaction). Participants were given a general set of discussion questions (some positive in topic and some more negative) but the order these questions were presented was randomized and participants were free to stray to other topics if they desired, so one interaction could be quite different from the next. Thus, one interpretation of the lack of normative affect trajectory is that extensive diversity from interaction to interaction meant perceivers could not develop good base rate knowledge of how affect typically changes across the course of an interaction because there was no typical pattern. Normative affect accuracy could function more similarly to normative trait accuracy in a more constrained context where the affective experience generally follows a similar pattern for more people (e.g., during a job interview where applicants generally start out very nervous but become increasingly comfortable over time).

In contrast to the results for trait judgments and affect accuracy, normative thought accuracy played a smaller role relative to distinctive thought accuracy. This result is inconsistent with Lewis et al. (2012) who found that normative accuracy was high relative to distinctive accuracy. However, in that study, perceivers inferred the thoughts of targets who were all women who had recently become first-time parents and were interviewed discussing that transition. Thus, the interaction format and the topic of conversation were more constrained and largely limited to a topic that has cultural stereotypes associated with it (e.g., new parents are stereotyped as tired but also in love with their babies). As noted above the interactions in the current study could vary quite a bit, thus distinctive accuracy might have been higher because targets reported more idiosyncratic thoughts that could not be inferred simply by relying on average responses or stereotypes.

Returning to the main research aims, are some targets are more readable than others? Overall, the results suggest that indeed, some people are easier to read than others. For distinctive accuracy in trait judgments, the breakdown in variance showed considerably more evidence for differences between targets compared to differences between perceivers. In other words, the best target was much more readable than the worst target, but the best perceiver was not all that much better than the worst perceiver. However, this pattern did not replicate across all accuracy measures. For affect accuracy, the breakdown in variance in distinctive accuracy was comparable for targets and perceivers. For distinctive thought accuracy, perceiver variance outweighed target variance. The results for trait judgments and thought accuracy are consistent with past work; Biesanz (2010) reported more target variance than perceiver variance in distinctive

trait accuracy and Lewis et al. (2012) reported more perceiver variance than target variance in thought accuracy. To my knowledge, this is the first variance decomposition study involving affect accuracy so replication of this result is needed before more definitive conclusions can be drawn.<sup>8</sup>

Turning now to the second aim, is target readability a general trait? These results suggest it is not, at least for the three types of accuracy measured in this study; there were no positive correlations between any of the measures and if anything there was a trend towards negative (albeit small) correlations between the different pairs of distinctive accuracy. Before speculating about the reason for the lack of correlations among measures of target readability, it is important to note that definitive conclusions can never be drawn from a single study, particularly when those conclusions are based on null findings. These issues notwithstanding, one explanation for the lack of correlations is that the three accuracy measures used in this study focus on a varied range of interpersonal judgments. One prominent distinction is that judgments of personality traits address stable characteristics that tend to generalize across situations, whereas affect accuracy and thought accuracy judgments both address dynamic and context-specific cues to a person's discrete emotional states and specific mental content. And even though the measures of thought accuracy and affect accuracy share the common feature of assessing more discrete elements, they too differ dramatically in terms of the scope of the type of judgment: potential judgments of a target's affect could vary from very negative to very positive, but the potential inferences for a target's thoughts are theoretically limitless.

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<sup>8</sup> An exception is an empathic accuracy study conducted by Zaki, Bolger, and Ochsner (2009) where they used a multilevel design to assess continuous affect accuracy. However they did not report the variance decomposition results so it is not clear how target variance compared to perceiver variance in their study.

Given this divergence it seems possible that interpersonal judgments were based on qualitatively different cues. Is there any evidence to support this?

Research suggests that perceivers form trait judgments (accurate or not) from many cues including appearance (Albright, Kenny, & Malloy, 1998) and even a target's habitual physical environment (e.g., her bedroom – see Gosling, Ko, Mannarelli, & Morris, 2002). But trait judgment *accuracy* seem to be largely driven by information targets share about their general behavior patterns (Letzring & Human, 2013; although see also Andersen, 1984). In contrast, accurate thought judgments are large in part due to verbal cues that communicate a target's specific mental states (e.g., "behavioral diagnosticity"; Gesn & Ickes, 1999; Thomas & Fletcher, 2003). Verbal cues also strongly contribute to affect accuracy, but this is particularly so for verbal information that is emotional in nature, and emotion information conveyed via nonverbal affective cues like prosody and facial expressions also predicts affect accuracy (Zaki et al., 2009). Taken together, these findings suggest that the cues that promote accurate judgments differ depending on the accuracy domain. If the likelihoods of emitting these different types of cues are not correlated (e.g., someone is forthcoming in talking about his thoughts may not necessarily be someone who is also forthcoming in talking about his typical behaviors) then this may explain why target readability does not correlate across measures.

Regardless of why target readability was not associated, the lack of intercorrelations suggests that readability is not a broad generalizable characteristic and that a person's level of readability will depend on the type of accuracy that is measured. Perhaps it should not be entirely surprising that target readability depends on the type of

accuracy being measured: Such a result is consistent with research that has found that perceiver accuracy across different forms of interpersonal sensitivity is *also* not a broad generalizable characteristic. Perceptive accuracy does not correlate across measures (Hall, 2001; Lewis & Hodges, 2009) – and appears to depend on the kind of accuracy being measured. Thus, interpersonal accuracy researchers should choose their outcome measures with care and use caution in interpreting results that will not necessarily generalize to other accuracy measures. This call for caution is especially important for researchers studying the forms of affect accuracy and thought accuracy that are both called “empathic accuracy” in the literature. These results suggest that conceptual clarity and specificity are critical to avoid misassumptions about the generalizability of results found with one measure.

Turning now to the third and final major aim, what are the correlates of target readability? Even though the target readability estimates did not correlate across measures, a few consistent patterns in the relationship between individual differences and target readability did emerge. The variables related to social-threat sensitivity were generally negatively correlated with target readability; specifically, people who were higher in the fear of negative evaluation, need to belong, and loneliness tended to be less readable. Replicating previous research suggesting target adjustment is an important driver of target readability for traits (Human et al., 2014), self-esteem and authenticity were both positively linked to trait accuracy as well as thought accuracy. The results for the variables related to expressivity were not as consistent. The only partially consistent relations to emerge were for masking which negatively correlated with both trait and

thought accuracy: people who tended to mask their true inner experiences were read less accurately in terms of their unique traits and their specific thoughts.

How do we make sense of the consistent pattern of correlations across different assessments of target readability, particularly given that target readability did not correlate across the different assessments? The individual differences assessed were hypothesized to affect target readability because they should enhance the extent to which targets emit relevant cues and/or make these cues available to perceivers; in other words, these individual differences should be linked to target behavior that promotes readability. For instance, Human and colleagues (2014) found that target adjustment is positively associated with distinctive trait readability because well-adjusted targets tend to behave more in line with their distinctive characteristics.

If this type of explanation (target characteristic → target behavior → target readability) was the sole mechanism of the link between individual differences and target readability, then we might expect that because thought accuracy did not correlate with trait accuracy, then a target individual difference that promoted specific behaviors that enhanced thought accuracy would not also promote specific behaviors that enhance trait accuracy. But the data are not consistent with this – for instance, fear of negative evaluation negatively correlated with distinctive trait accuracy and distinctive thought accuracy even though these variables themselves were not correlated. One potential explanation for this is that contrary to the original hypothesis, it is not the case that fear of negative evaluation is linked to the *target's* behavior in ways that affect interpersonal accuracy, but rather the target's fear of negative evaluation impacts the *perceiver's* behavior in ways that affect interpersonal accuracy. Connecting back to Funder's RAM,

target individual differences may play an indirect role further downstream in the process and impact the extent to which perceivers detect and correctly utilize cues. For instance, perhaps perceivers are “turned off” when interacting with a target who is high in fear of negative evaluation and as a result are less invested in developing a relationship and pay less attention to that person. Or, perhaps targets who tend to mask their inner experiences alert perceivers in some way and out of politeness perceivers try not to see beyond the outward impression that target is trying to depict. In the current study only a limited survey of perceiver behavior and reactions to their partner were assessed. Future work that with more refined measurements of perceivers’ behavior in interpersonal interactions – such as how much they attend to their partners and what specific details they attend to – will be important to explicate how target characteristics are linked to target readability. Within the current study, a lens model analysis (Brunswik, 1956) could also be very fruitful to identify 1) what observable cues were indicative of a target’s traits, thoughts, and affect and 2) which cues were linked to perceivers’ judgments of these dimensions.

Does target readability matter? In the introduction I argued that we need to know more about target readability because it may be important for success in social relationships. Interestingly, there is not much evidence that this is the case in these brief get-to-know-you interactions between unacquainted strangers. Indeed, distinctive trait accuracy was even negatively correlated with dyadic rapport. Although it seems plausible that target readability should promote smoother social interactions and thus liking, it may be the case that these interactions were too brief, as well as too constrained, in nature for target readability to impact relationship quality. In other words, maybe target readability is linked to relationship quality in more naturalistic settings where interactions have the

potential to go awry, or relationships can fizzle out altogether, because one person is a “closed book.” Future work should test the role of target readability longitudinally in conjunction with relationship development and maintenance.

This study assessed target readability across different outcome measures but held constant the relationship between the target and the perceiver (they were unacquainted strangers). This leaves open the question of whether the context created by the nature of the dyadic relationship matters. The research regarding social-threat sensitivity reviewed in the introduction suggests that social threats can change people’s self-presentation style, making them more inhibited and less expressive (Schlenker & Leary, 1985). Social-threat concerns are likely to be heightened when interacting with strangers, thus the current study may have created a context that pulls for some targets to be more readable than others. Target readability could be consistently high when people interact with close others in stable non-threatening relationships. On the other hand, past research has shown that the interpersonal judgments we make about close others more often “go beyond” what is directly observable (Stinson & Ickes, 1992; Thomas & Fletcher, 2003) which may indicate that target readability does not matter in close relationships where general knowledge stores are more extensive and can be drawn upon to understand another person’s thoughts, affect, and general characteristics.

### **Limitations and Future Research**

There are several important caveats to note about this study and what can be concluded from it. First, in order to maximize the number of interpersonal accuracy measures it was possible to collect, the smallest possible group size ( $n = 4$ ) was used. This means any one target was only judged by three perceivers (and vice versa). As a

result, the accuracy parameter estimates are inherently less reliable than those that we would expect with a larger number of perceivers per target. This is particularly a concern when the target variance is small to begin with relative to sampling error. Stated differently, the small group size makes the signal less reliable in measures where the signal is already low relative to the noise. The low reliability of target readability estimates is a concern because this makes it difficult to accurately estimate correlations with other variables. To deal with this issue, the next step for future research is to use the videos created in this study as stimuli in another study where a larger sample of perceivers can judge each target in order to get more reliable estimates of target readability. Additionally, another benefit of pursuing this approach is that with different sets of perceivers evaluating the different types of accuracy, any correlations between target readability estimates across measures will be cleaner because a common source of variance (namely rater variance) has been removed. Following up this research with a new set of perceivers will also make it possible to address another limitation with the current study, namely that the associations examined between the individual difference variables and target readability were exploratory in nature and replication is necessary before any strong claims can be made about the relationships that emerged.

A related caveat regarding these results is that they are all correlational in nature, which calls into question what, if any, causal relationships are present among the constructs studied. Although intuitively it makes more sense that targets who are more sensitive to social threats behave (or evoke perceiver behavior) in ways that make them less readable, it may also be the case that being less readable heightens sensitivity to social threats (perhaps because one has experienced negative outcomes associated with

being misread before). The current methods do not allow this alternative explanation to be ruled out. Only experimental or longitudinal work will be able to pinpoint the direction of these relationships and thus doing this work is an important agenda for the future.

An additional important limitation is that this study examined one type of social interaction (meeting a new person for the first time when no future interactions were to be expected) with one population (college students). Thus, the external validity of these results may be limited. As noted above it is not clear whether these results generalize to less constrained interactions or interactions between people who are in a relationship. It is also not clear if these results generalize to other populations. For instance, age and cultural differences may affect the mean levels as well as correlates of readability and investigating these factors will be an interesting agenda for future research. People's personalities tend to change in important ways as they age (Roberts, Walton, & Viechtbauer, 2006) – people tend to increase in extraversion, emotional stability, and conscientiousness as they get older. These trait differences may shape the ways people express themselves and/or the social interactions they have with others which may in turn affect readability. Cultural differences may also impact target readability in interesting ways, particularly to the extent that different cultures have different display rules (Matsumoto, 1990) and different norms for expressivity (Elfenbein, Beaupre, Levesque, & Hess, 2007).

Another variable that this study did not address is motivation. Past research has shown that motivation can affect perceivers in interpersonal accuracy (e.g., Biesanz & Human, 2010; Klein & Hodges, 2001) but motivation may also affect targets. For

instance, target readability may differ when targets are actively trying to manage the impression they are making (e.g., in a job interview or on a first date). Actively managing the impression one is making may decrease readability because people act less authentically or conversely it may instead increase readability because people amplify the cues they give off to perceivers. Future work that examines different situations that may pull for more motivation on the part of targets to be readable or not will be important in order to understand more about how readability waxes and wanes in real life interactions.

A number of correlations emerged, but the typical effect size was very small. This was not wholly unexpected given that 1) analysis choices led to constrained variance in the target readability estimates which makes large effects unlikely and 2) low reliability of target readability estimates as well as some of the individual difference measures also limits the size of the potential relations that can emerge between these measures. Regardless, the small effect sizes warrant restraint in over claiming the practical significance of the pattern of results that emerged. A related concern regarding the effects this study uncovered are the low response rates for informants. Low response are problematic because this raises concerns about self-selection which can threaten internal validity. For instance, informant reports did not always mirror the size and direction of the relations between self-reports and target readability estimates. This could be because the informants have different perspectives on some individual difference measures than the targets themselves, or alternatively it could be because informant reports are only available for a particular subset of the targets studied.

## **Final Conclusion**

Returning to the comparison of one's ability to read a passage of text, it does not matter how good one's eyesight is if the book is closed. Likewise, even the most sensitive perceiver will have difficulty reading a target who is the equivalent of "closed book." Despite this, past interpersonal accuracy research has paid too little attention to the role of targets. The current results suggest that targets do matter: some people are easier to read than others and those people tend to be less sensitive to social threats, less likely to mask their inner experiences, and more well-adjusted.

This work only begins to ask questions about the role of targets in interpersonal accuracy, and there is much work left to do to explicate when, why, and how some people are more readable than others. An equally important question for future research is the real life implications of readability (or lack thereof). If you ask people what super hero power they most want to possess, they often wish they could read minds (Marist Poll, 2011) – they want to be able to see others with perfect clarity. But most of us would be horrified if our foreheads became the equivalent of a theatre marquee and our private mental content was always on open display to others. Diaries do not come equipped with locks by accident; people want to control what they do and do not share with others. Likewise, future research might uncover that as opposed to being highly readable all the time, it might be more important to be *selectively* readable and broadcast what you want to while simultaneously keeping private what you don't.

APPENDIX A  
COMPLETE RECORD OF INDIVIDUAL DIFFERENCE MEASURES

Attachment Style Measure

1. I find it relatively easy to get close to others.
2. I'm not very comfortable having to depend on other people.
3. I'm comfortable having other depend on me.
4. I rarely worry about being abandoned by others.
5. I don't like people getting too close to me.
6. I'm somewhat uncomfortable being too close to others.
7. I find it difficult to trust others completely.
8. I'm nervous whenever anyone gets too close to me.
9. Others often want me to be more intimate than I am comfortable being.
10. Others often are reluctant to get as close as I would like.
11. I often worry that my partner(s) don't really love me.
12. I rarely worry about my partner(s) leaving me.
13. I often want to merge completely with others, and this desire sometimes scares them away.

Need to Belong Scale

1. If other people don't seem to accept me, I don't let it bother me.
2. I try hard not to do things that will make other people avoid or reject me.
3. I seldom worry about whether other people care about me.

4. I need to feel that there are people I can turn to in times of need.
5. I want other people to accept me.
6. I do not like being alone.
7. Being apart from my friends for long periods of time does not bother me.
8. I have a strong “need to belong”
9. It bothers me a great deal when I am not included in other people's plans.
10. My feelings are easily hurt when I feel that others do not accept me.

#### UCLA Loneliness Scale

1. How often do you feel that you are in tune with the people around you?
2. How often do you feel that you lack companionship?
3. How often do you feel that there is no one you can turn to?
4. How often do you feel alone?
5. How often do you feel part of a group of friends?
6. How often do you feel that you have a lot in common with the people around you?
7. How often do you feel that you are no longer close to anyone?
8. How often do you feel that your interests and ideas are not shared by those around you?
9. How often do you feel outgoing and friendly?
10. How often do you feel close to people?
11. How often do you feel left out?
12. How often do you feel that your relationships with others are not meaningful?
13. How often do you feel that no one really knows you well?

14. How often do you feel isolated from others?
15. How often do you feel you can find companionship when you want it?
16. How often do you feel that there are people who really understand you?
17. How often do you feel shy?
18. How often do you feel that people are around you but not with you?
19. How often do you feel that there are people you can talk to?
20. How often do you feel that there are people you can turn to?

#### Fear of Negative Evaluation Scale

1. Sometimes I think I am too concerned with what other people think.
2. I worry about what kind of impression I make on people.
3. I am afraid that people will find fault with me.
4. I am concerned about other people's opinions of me.
5. When I am talking to someone, I worry about what they may be thinking of me.
6. I am afraid that others will not approve of me.
7. I am usually worried about the kind of impression I make.
8. I am frequently afraid of other people noticing my shortcomings.
9. I worry what other people think of me even when I know it doesn't make any difference.
10. It bothers me when people form an unfavorable opinion of me
11. I often worry that I will say or do the wrong things.
12. If I know that someone is judging me, it tends to bother me.

### Social Interaction Anxiety Scale

1. I have difficulty making eye contact with others.
2. I find it difficult mixing comfortable with the people I work with.
3. I tense up if I meet an acquaintance on the street.
4. I feel tense if I am alone with just one person.
5. I have difficulty talking with other people.
6. I find it difficult to disagree with another's point of view.
7. I get nervous that people are staring at me as I walk down the street.
8. I worry about shaking or trembling when I'm watched by other people.
9. I would get tense if I had to sit facing other people on a bus or train.
10. I worry I might do something to attract the attention of other people.
11. When in an elevator, I am tense if people look at me.
12. I can feel conspicuous standing in a line.

### Authenticity Scale

1. I think it is better to yourself, than to be popular.
2. I don't know how I really feel inside.
3. I am strongly influenced by the opinions of others.
4. I usually do what other people tell me to do.
5. I always feel I need to do what others expect me to do.
6. Other people influence me greatly.
7. I feel as if I don't know myself very well.
8. I always stand by what I believe in.

9. I am true to myself in most situations.
10. I feel out of touch with the ‘real me.’
11. I live in accordance with my values and beliefs.
12. I feel alienated from myself.

### Masking Scale

1. I’m not always the person I appear to be.
2. I’ve learned it is better to suppress my anger than to show it.
3. I can look anyone in the eye and tell a lie with a straight face (if for a right end).
4. In different situations and with different people, I often act like very different persons.
5. Whenever people do nice things for me, I feel “put on the spot” and have trouble expressing my gratitude.
6. I guess I put on a show to impress or entertain people.
7. If a friend surprised me with a gift, I wouldn’t know how to react.
8. I may deceive people by being friendly when I really dislike them.
9. The way I feel is different from how others think I feel.
10. My behavior is usually an expression of my true inner feelings, attitudes, and beliefs.
11. I sometimes appear to others to be experiencing deeper emotions than I actually am.
12. Even if I am not enjoying myself, I often pretend to be having a good time.
13. In order to get along and be like, I tend to be what people expect me to be rather than anything else.

### Berkeley Expressivity Questionnaire

1. Whenever I feel positive emotions, people can 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 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 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.

#### Emotion Regulation Questionnaire

1. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.
2. I keep my emotions to myself.

3. When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.
4. When I am feeling positive emotions, I am careful not to express them.
5. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.
6. I control my emotions by not expressing them.
7. When I want to feel more positive emotion, I change the way I'm thinking about the situation.
8. I control my emotions by changing the way I think about the situation I'm in.
9. When I am feeling negative emotions, I make sure not to express them.
10. When I want to feel less negative emotion, I change the way I'm thinking about the situation.

#### Rosenberg Self-Esteem Scale

1. I feel that I am a person of worth, at least on an equal basis with others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole, I am satisfied with myself.
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I am no good at all.

### Satisfaction with Life Scale

1. In most ways my life is close to ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

### Sense of Power Scale

1. I can get people to listen to what I say.
2. My wishes don't carry much weight.
3. I can get others to do what I want.
4. Even if I voice them, my views have little sway.
5. I think I have a great deal of power.
6. My ideas and opinions are often ignored.
7. Even when I try, I am not able to get my way.
8. If I want to, I get to make the decisions.

### Big Five Inventory

*Note.* The capital letter in parentheses following each item indicates which trait it assesses (E = Extraversion, O = Openness, C = Conscientiousness, A = Agreeableness, N = Neuroticism/Emotional Stability, I = Intelligence, and H = Honesty/Trustworthy) and *r* indicates the item is reverse keyed.

I see this person as someone who...

1. \_\_\_\_ Is full of energy. (E)

2. \_\_\_\_ Is intelligent. (I)
3. \_\_\_\_ Generates a lot of enthusiasm. (E)
4. \_\_\_\_ Remains calm in tense situations. (Nr)
5. \_\_\_\_ Is trustworthy. (H)
6. \_\_\_\_ Makes plans and follows through with them. (C)
7. \_\_\_\_ Has an assertive personality. (E)
8. \_\_\_\_ Is sometimes shy, inhibited. (Er)
9. \_\_\_\_ Is outgoing, sociable. (E)
10. \_\_\_\_ Tends to find fault with others. (Ar)
11. \_\_\_\_ Is honest (H)
12. \_\_\_\_ Is depressed, blue. (N)
13. \_\_\_\_ Is original, comes up with new ideas. (O)
14. \_\_\_\_ Is helpful and unselfish with others. (A)
15. \_\_\_\_ Can be somewhat careless. (Cr)
16. \_\_\_\_ Is relaxed, handles stress well. (Nr)
17. \_\_\_\_ Receives very good grades. (I)
18. \_\_\_\_ Starts quarrels with others. (Ar)
19. \_\_\_\_ Is a reliable worker. (C)
20. \_\_\_\_ Can be tense. (N)
21. \_\_\_\_ Is reserved. (Er)
22. \_\_\_\_ Is ingenious, a deep thinker. (O)
23. \_\_\_\_ Has a forgiving nature. (A)
24. \_\_\_\_ Is bright. (I)

25. \_\_\_ Tends to be quiet. (*Er*)

26. \_\_\_ Does a thorough job. (C)

## APPENDIX B

### DISCUSSION QUESTIONS FOR GETTING-TO-KNOW-YOU TASK

Given the choice of anyone in the world, whom would you want as a dinner guest?

Would you like to be famous? In what way?

What would constitute a "perfect" day for you?

If you were able to live to the age of 90 and retain either the mind or body of a 30-year-old for the last 60 years of your life, which would you want?

Do you have a secret hunch about how you will die?

For what in your life do you feel most grateful?

If you could wake up tomorrow having gained any one quality or ability, what would it be?

If a crystal ball could tell you the truth about yourself, your life, the future, or anything else, what would you want to know?

Is there something that you've dreamed of doing for a long time? Why haven't you done it?

What is the greatest accomplishment of your life?

What do you value most in a friendship?

What is your most treasured memory?

If you knew that in one year you would die suddenly, would you change anything about the way you are now living? Why?

What does friendship mean to you?

What did you get into trouble for the most when you were young?

When you want to laugh, what or who do you turn to?

Where would be a terrible place to find yourself tomorrow?

What is something you always struggle to do?

What would you like to accomplish this year?

When you're feeling down, what is one thing that always makes you feel better?

What's something other people do that always makes you uncomfortable?

What's the worst thing that's happened to you in the past week?

What has been the most terrifying moment of your life so far?

What's something you wish you were better at?

What do you complain about the most?

What are the best steps you've ever taken in an effort to improve your health?

How do you typically react in extremely stressful situations and crises?

What annoys you most about your family?

What feeling do you have the most difficulty expressing?

What feeling do you have the most difficulty controlling?

If you could go back in time 5 years, what piece of advice would you give your younger self?

APPENDIX C  
INTERPERSONAL JUDGMENT ITEMS

1. I liked interacting with this person.
2. I put a lot of effort into getting to know this person.
3. I thought this person was interesting.
4. This person is someone I would be friends with.
5. If given the chance, I would try and hang out with this person again.
6. I felt comfortable interacting with this person.
7. I felt like my interaction with this person went smoothly.
8. I thought this person was attractive.
9. I felt similar to this person.
10. This person and I seemed to “click.”
11. I shared a lot of personal information with this person.
12. I shared more personal information about myself than I wished I had.
13. This person shared a lot of personal information with me.
14. My partner shared more personal information about himself/herself than I was comfortable with.
15. My partner was difficult to talk to.
16. During the discussion with my partner:
  - I felt like I had more power than my partner
  - I felt like I had a little more power than my partner
  - I felt like my partner and I had equal power
  - I felt like my partner had a little more power than me
  - I felt like my partner had more power than me

APPENDIX D  
SPECIFIC EQUATIONS FOR BASELINE MODELS

**Trait Judgment Accuracy**

Level-1 Equation       $Y_{ijk} = \beta_{0ij} + \beta_{1ij}TSR_{jk} + \beta_{2ij}Mean_k + \varepsilon_{ijk}$

Level-2 Equations

$$\begin{aligned}\beta_{0ij} &= \beta_{00} + \mu_{0i} + \mu_{0j} + \mu_{0ij} \\ \beta_{1ij} &= \beta_{10} + \mu_{1i} + \mu_{1j} \\ \beta_{2ij} &= \beta_{20}\end{aligned}$$

**Affect Accuracy**

Level-1 Equation       $Y_{ijk} = \beta_{0ij} + \beta_{1ij}TSR_{jk} + \beta_{2ij}Mean_k + \varepsilon_{ijk}$

Level-2 Equations

$$\begin{aligned}\beta_{0ij} &= \beta_{00} + \mu_{0i} + \mu_{0j} + \mu_{0ij} \\ \beta_{1ij} &= \beta_{10} + \mu_{1i} + \mu_{1j} + \mu_{1ij} \\ \beta_{2ij} &= \beta_{20}\end{aligned}$$

**Thought Accuracy**

Level-1 Equation       $Y_{ij} = \beta_{0ij} + \varepsilon_{(ij)}$

Level-2 Equation       $\beta_{0ij} = \beta_{00} + \mu_{0i} + \mu_{0j} + \mu_{0ij}$

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