INDIVIDUAL DIFFERENCES IN PERSONALITY PERCEPTION FROM TEXT MESSAGES

A Thesis
by
NICHOLAS RHOADES

Submitted to the Graduate School
at Appalachian State University
in partial fulfillment of the requirements for the degree of
MASTER OF ARTS

August 2017
Department of Psychology

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Abstract

INDIVIDUAL DIFFERENCES IN PERSONALITY PERCEPTION FROM TEXT MESSAGES

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We live in an age of unprecedented instant communication. For example, people are able to communicate with strangers via text messages, whether online or using their smartphones. This begs the question, are people able to perceive the traits of others using only these text messages? Interestingly, research has suggested that personality traits are in fact detectable purely from the linguistic features of social media posts (Park et al., 2014) and text messages (Hood, Silio, & Webb, 2015; Udry, Rhoades & Webb, 2016). However, there may be individual differences in the ability to detect and utilize these linguistic cues. One trait that has been associated with accurate personality perception in previous research is intelligence (Christiansen, Wolcott-Burnam, Janovics, Burns, & Quirk, 2005; Lippa & Dietz, 2000; Murphy & Hall, 2009; Realo et al., 2003; Taft, 1955). The current study recruited 15 targets and 406 raters to investigate whether the relationship between rater intelligence and accuracy would hold true within the context of personality perception from text messages. Targets provided self-reported personality information and text messages, while raters were asked to complete an other-reported personality measure based on the text message of a particular target and an intelligence measure. Raters' accuracy was assessed in terms of agreement with their assigned targets' self-reported personality. Results indicated that while raters were able to achieve some level of accuracy in terms of agreement with targets' traits, intelligence did not appear to be related to accurate personality perception in the context of text messages.

Acknowledgments

I would like to thank my thesis committee for their time and invaluable advice given in the process of completing this thesis. My faculty mentor and thesis chairperson, Dr. Rose Mary Webb, provided expert guidance with an incredible amount of patience. The advice and encouragement provided by my committee members, Dr. Andrew Smith and Dr. Mary Ballard, were instrumental in shaping this document. I cannot express enough my gratitude for these individuals willingness to support my efforts in completing this work. I would also like to extend my sincere gratitude to the Wiley F. Smith Foundation for providing the funds necessary for completing my research, and to the Office of Student Research for providing funds which helped enable me to present the results of this research at the 2017 meeting of the Southeastern Psychological Association.

Dedication

I would like to dedicate this work to my parents, Lynn and Dusty, who have supported me beyond every expectation, and to my partner Andrew, for keeping me sane.

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Abstract

We live in an age of unprecedented instant communication. For example, people are able to communicate with strangers via text messages, whether online or using their smartphones. This begs the question, are people able to perceive the traits of others using only these text messages? Interestingly, research has suggested that personality traits are in fact detectable purely from the linguistic features of social media posts (Park et al., 2014) and text messages (Hood, Silio, & Webb, 2015; Udry, Rhoades & Webb, 2016). However, there may be individual differences in the ability to detect and utilize these linguistic cues. One trait that has been associated with accurate personality perception in previous research is intelligence (Christiansen, Wolcott-Burnam, Janovics, Burns, & Quirk, 2005; Lippa & Dietz, 2000; Murphy & Hall, 2009; Realo et al., 2003; Taft, 1955). The current study recruited 15 targets and 406 raters to investigate whether the relationship between rater intelligence and accuracy would hold true within the context of personality perception from text messages. Targets provided self-reported personality information and text messages, while raters were asked to complete an other-reported personality measure based on the text message of a particular target and an intelligence measure. Raters' accuracy was assessed in terms of agreement with their assigned targets' self-reported personality. Results indicated that while raters were able to achieve some level of accuracy in terms of agreement with targets' traits, intelligence did not appear to be related to accurate personality perception in the context of text messages.

Keywords: Computer Mediated Communication, Person Perception, Personality

Individual Differences in Personality Perception from Text Messages

With hundreds of websites and mobile apps offering options for connecting and interacting with acquaintances and strangers from around the world, meeting and communicating with new people has never been easier. Often referred to in the literature as computer mediated communication (CMC), meeting people via the internet and cellular networks has revolutionized the way we interact with others. However, can we really know the people we are meeting online? After all, while some services offer video chatting, CMC is generally devoid of important social cues such as body language and tone of voice. While research has suggested that most people are not generally *deliberately* deceptive online (Back et al., 2010), many potentially important features of face to face communication are obscured by the very nature of online interactions. This may make it difficult to get an accurate perception of another person's personality. However, research on social media has indicated that many cues to personality are in fact available online, and many of these cues leave records that may later be accessed by researchers (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Kosinski, Stillwell, & Graepel, 2013; Park et al., 2015). Recent research has even found that untrained stranger raters can accurately report on some of the personality traits of text message authors given only access to their text messages (Hood, Silio, & Webb, 2015; Udry, Rhoades, & Webb, 2016). Research has not yet indicated, though, whether there are individual differences in the ability to judge personality traits in these sorts of low information environments, something the current study will seek to address.

Accuracy in personality perception

According to Funder's (1995) realistic accuracy model (RAM) for person perception, there are four requirements for accurate perception of another individual's personality. First, the personality trait to be observed must have relevant behavioral cues associated with it. Second, those cues must be available for observation in the environment. Neuroticism, for example, contains many behavioral cues that are not visible to outside observers, such as increased tendencies to ruminate. Since these behaviors are not available for observation in the environment, they cannot contribute to accuracy in personality judgments. Third, raters must be able to detect those cues. This is distinct from the requirement that behaviors related to a trait must be available for observation, as it is more focused on the ability of the rater to detect the behaviors rather than the existence of the behaviors themselves. Finally, raters must be able to properly utilize cues once they have been detected. It does raters no good to detect that a behavior exists if they do not know what trait it is associated with.

For an example of the process of accurate personality perception, consider the trait of conscientiousness. Gosling, Ko, Mannerelli, and Morris (2002) indicated that conscientiousness was associated with how clean people keep their offices. Thus, there is a behavior associated with the trait—conscientiousness is associated with cleanliness—satisfying the first condition of the RAM. This behavior is also observable in the environment; one can observe a target cleaning their office, or observe that a target's office is always clean. This satisfies the second requirement of the RAM. Raters still must make this observation, however, to satisfy the third condition. If potential raters fail to pay attention to the cleanliness of a target's office, they may not make an accurate judgment. Finally, even if raters do take note of the cleanliness of a target's office, they must still understand that cleanliness is associated with conscientiousness. As previously stated, it does raters no good to detect a behavior if they do not know what trait it is connected to. In summary, there is a behavior (cleaning one's office) associated with conscientiousness, and it is observable in the environment. As long as raters detect this behavior and connect it to conscientiousness, their judgments of the target's conscientiousness should be reasonably accurate. The first two requirements of Funder's model can be considered to rely on features of the stimulus produced by the target individual, while the latter two rely on features of the rater.

Another model of accuracy in personality perception, Vazire's (2010) self-other knowledge asymmetry (SOKA) model, more explicitly addresses differences in the "observability" of cues. Specifically, the model suggests that certain traits will be assessed more accurately by other-reports than by self-reports, and vice versa. The model proposes that how accurately a trait will be rated relative to other traits is related to two elements: observability and evaluativeness. Traits that are highly observable are those for which cues are readily available in outward behavior (e.g., extraversion), and should be well assessed by other reports in comparison with less observable traits. Meanwhile, traits that are highly evaluative are those that relate highly to value judgments. That is, evaluative traits may be highly relevant to many individuals' self-concept. For example, some individuals may understate how neurotic they are due to feeling that neuroticism is a negative trait. Self-reports of these traits should show suppressed accuracy compared to less evaluative traits.

The Behavioral Residue Hypothesis

Research has suggested that people can also be accurate in assessing the personality traits of others even when those others aren't present. According to the behavioral residue hypothesis, people's "spaces" contain valid cues to their personalities. That is, people leave behind clues to their personality in the physical spaces in which they live and work. According to Gosling et al. (2002), people leave valid cues to all of the "Big Five" personality traits in these physical spaces. Stranger raters showed a strong degree of convergence in their assessments of individuals' personalities based on those individuals' offices and bedrooms. In the first of two studies, stranger raters were exposed to target individuals' offices and asked to make personality judgments. The raters were shown to be able to produce accurate estimates of targets' extraversion, conscientiousness, and openness to experience based only on exposure to the offices. While raters were only able to achieve accuracy for three of five personality variables when exposed to targets' offices, additional analysis found valid cues for all five personality traits. Cues were assessed with a coding scheme that classified various aspects of the offices. Extraversion was correlated with how inviting the office was and how decorated the office was. Agreeableness was correlated with offices in high traffic areas. Conscientiousness was positively correlated with the level of organization of the office and negatively associated with how varied the books in the office were. Neuroticism was correlated with the relative formality of the office. Openness to experience was correlated with stylish and distinctive offices.

When exposed to individuals' bedrooms, participants' accuracy expanded to all of the big five personality traits. Stranger raters were the most accurate in assessing targets' openness to experience. Additionally, similar cues for all five traits were found in people's bedrooms to those found in their offices in the previously discussed study (Gosling et al., 2002). While these findings reflect the ability of people to judge personality from physical spaces rather than from electronic spaces social media or text message cues, they do provide evidence that people have the ability to judge personality traits without direct interaction with a target other.

Personality Traits in Social Media

Gosling et al. (2011) extended this line of research into electronic spaces, finding valid cues to individuals' personality in self-reported and observed details of their social media use. Extraversion in particular could be estimated from people's Facebook use, correlating highly with variables such as number of friends reported, frequency of leaving comments on others' pages and frequency of viewing one's own page. Meanwhile valid cues were also demonstrated for conscientiousness (e.g., frequency of viewing any page, reversed), agreeableness (e.g., frequency of viewing someone else's page), and openness to experience (e.g., replacing one's profile picture). This research is similar to previous behavioral residue research in that many of the observed or reported behaviors could theoretically be accessed by others, including researchers or other agents without resorting to self-report or requiring a direct behavioral observation by the rater. Many online behaviors such as viewing a page do leave digital records that may be accessed asynchronously by raters.

Kosinski et al. (2013) provided particularly compelling evidence of the ability to determine personality from social media behavior. They found not only correlations between Facebook “likes” and all five Big Five personality traits, but correlations between Facebook likes and intelligence, as well as a number of secondary personal traits, such as sexuality. For example, openness to experience was positively associated with liking Facebook pages related to artists, such as Leonardo da Vinci or Oscar Wilde, and negatively associated with pages or items such as “I don't read” and NASCAR. Conscientiousness was positively associated with liking items such as Accounting and Glock INC, and negatively associated with liking items such as Wes Anderson and Join if Ur Fat. Extraversion was positively associated with liking items such as Theatre and Cheerleading, while it was negatively associated with liking items such as Roleplaying Games or Terry Pratchet. Agreeableness was associated with liking such items as Christianity and Redeeming Love, and negatively associated with liking items such as Freidrich Nietzsche or Prada. Finally, neuroticism was positively associated with liking such items as Sometimes I Hate Myself and Girl Interrupted, and negatively associated with items such as Business Administration and Parkour. This research falls in line with the original behavioral residue research conducted by Gosling et al. (2002) as Facebook “likes” represent a behavior that leaves a clear and lasting record.

Altogether, these results suggest that there are valid cues to personality and individual traits even in conditions with no interaction between target and rater. None of the cues found in these studies require face-to-face interaction with the target to gauge the targets’ traits. Thus, it is plausible that stranger raters could draw inferences about the personality of targets’ from observing behaviors or records of behaviors in other CMC contexts without resorting to self-report measures.

Similar results were obtained by Hood et al. (2015) using patterns of smartphone use rather than Facebook use. For example, openness to experience was related to average call length and number of applications stored on one's phone. Conscientiousness was related to having photos of one's pet stored on one's phone and number of calls. Extraversion was related to number of contacts stored in the participant’s phones and number of different contacts used regularly. Agreeableness was negatively associated with use of one's phone at work and while driving. Finally, neuroticism was positively associated with overall time spent on one's phone and having a large number of pictures of one's partner on one's phone. Rhoades, Udry, and Webb (2016) extended these results, confirming the association between extraversion and number of contacts among other replications, and demonstrating a general pattern whereby agreeableness, conscientiousness, and openness were negatively associated with using one's phone during social, romantic, or otherwise inappropriate situations.

Linguistic cues to personality

Further research has shown that cues to personality may even exist in the ways people use language. Park et al. (2014) investigated the link between language use on social media and Big Five personality traits. Park et al. drew upon earlier research suggesting that the frequency of the use of certain types of words and phrases corresponds to personality traits. Using a computer model to analyze the linguistic features of participants' Facebook posts, they found statistically significant correlations between the way participants used language and participants' self-reported personality traits. For example, a link was found between high extraversion and the use of positive words (e.g., “awesome”), while low extraversion was associated with more self-focused (e.g., “I,” “me”) language and more tentative language (e.g., “probably”). Linguistic features of Facebook posts were found to correlate with all five of the Big Five personality traits to some degree. As with previous research on personality cues in social media, openness to experience, conscientiousness, and extraversion were the most easily predicted traits from linguistic features of Facebook posts, while neuroticism and agreeableness were very slightly less predictable (Park et al., 2014). These findings demonstrate that even the way language is used on social media may contain valid cues to people's personality traits.

Given that valid cues do exist in textual information, stranger raters could conceivably draw valid inferences about target individuals’ personalities with nothing but a text sample. In other words, it may be possible to draw valid inferences about target individuals' personality not only under conditions of no interaction, but conditions with very little actual information about the target. This may be particularly useful for situations where it is desirable to assess individuals' personality indirectly (e.g., when making hiring decisions).

Personality Perception from Text Messages

While research has shown that the use of language in text can reveal personality, the question remains if untrained individuals are capable of determining personality from textual cues. Park et al. (2014) used sophisticated data analytics to generate estimates of the target individual’s personality. This analysis generated estimates from a variety of cues such as frequency of the use of phrases or words. These estimates correlated strongly with self-reported personality for all traits. However, the majority of anonymous communication is not performed by personality experts or computer algorithms, but by untrained individuals. Hood et al. (2015) found that untrained stranger raters (undergraduate research assistants) may be able to use some of these linguistic cues to draw inferences about individuals' personalities based solely on those individuals' text messages. This study collected 5 text messages and self-reported personality data from 68 undergraduate targets. Stranger raters then completed an other-report personality inventory based on those text messages. Hood et al. (2015) found that raters were able to produce an estimate of target’s neuroticism that correlated with target’s self-reported neuroticism. A second study by Udry et al. (2016) expanded on the study conducted by Hood et al. (2015), collecting 7 text messages from 180 targets. In this study, raters were able to produce accurate estimates of target’s conscientiousness and agreeableness. Additionally, the correlations between rater and target reports of target’s agreeableness and openness were similar to the correlations shown by Hood et al. (2015).

However, neither openness or agreeableness produced significant correlations in the study by Hood et al. (2015), and openness was not statistically significant in the study by Udry et al. (2016). Taken together, these studies provide evidence for the ability of stranger raters to glean some personality information from text messages.

Implications of Previous Research in Accuracy Models

It has been previously demonstrated that relevant behavioral cues for at least some personality traits are available within the use of language in CMC environments. For example, Park et al. (2014) found valid cues to all five traits of the traits in the five factor model within the linguistic features of social media posts. Additionally, the fact that stranger raters are able to glean personality information with any degree of accuracy from text messages (Hood et al., 2015; Udry et al., 2016) indicates that these cues are present. In terms of Funder's (1995) RAM, this suggests that the first two conditions for accuracy are satisfied in text messages. That is, linguistic behaviors related to some personality traits exist, and they are observable in the environment of text messages.

However, every cue may not be detectable by every rater. Research using stranger raters has generally found that while raters are able to make accurate judgments about some traits, it is rare to find situations in which all raters make accurate judgments regarding all traits. While some studies (e.g., Gosling et al., 2002) have found that stranger raters have the ability to achieve accuracy across all big five traits, they often require access to fairly intimate “spaces” of the targets (such as access to the target's bedrooms).

Previous research addressing person perception from text has found that strangers achieve accuracy on only a subset of traits. While stranger raters seem to be able to gain accurate perception of all five personality traits when given access to intimate physical spaces such as bedrooms, they are not able to match this in low information text-based environments. Research on personality cues in social media contexts has suggested that cues exist in terms of extraversion, agreeableness, openness to experience, and conscientiousness (Gosling et al., 2011). Additionally, language use on social media can contain valid cues to all big five traits (Park et al., 2014). In the lower information environment of text messages, however, stranger raters have only been shown to achieve a degree of accuracy in terms of neuroticism (Hood et al., 2015) and for agreeableness and conscientiousness (Udry et al., 2016). Regardless, it is apparent that cues do exist within text messages. This leaves the question of whether there are individual differences in the ability to detect and utilize these cues.

Rater Characteristics in Personality Perception

Research suggests that individual differences in the ability to perceive personality may be quite subtle. Previous investigations based on age, gender, level of education, and other demographic variables have not produced convincing evidence of related differences in the ability to judge others' personality traits (Allik, de Vries, & Realo, 2016). Raters’ own personality traits have not consistently predicted accuracy in personality perception. Christiansen et al. (2005) reported that rater's openness to experience was correlated with their accuracy in judging target others' personality traits. Lippa and Dietz (2000), in contrast, found that raters' openness to experience was *negatively* correlated with their accuracy in judging the neuroticism of others. Moreover, Realo et al. (2003) found that while personality traits (particularly extraversion) were associated with greater belief in one's ability to perceive the personality and emotional states of others, they were not associated with actual accuracy. Likewise, belief in one's person perception abilities was not associated with actual person perception accuracy. Therefore, personality traits of raters have not shown a consistent relation with accuracy in perceiving the personality traits of others.

However, one facet of individual difference that has consistently accounted for individual differences in personality perception is intelligence. Reporting on several early studies, Taft (1955) suggested that intelligence was highly related to rater's accuracy in making personality judgments of others in a variety of contexts, including judgments of known others. Taft reported that the highest correlation between intelligence and accuracy was .55, although he suggested that previous studies' correlations had been attenuated by a lack of variance in terms of intelligence. Thus, Taft (1955) stated that the relationship between intelligence and accurate personality perception was extremely high, well above .55. However, more modern studies have generally shown smaller correlations. A more recent meta-analysis has demonstrated a small but consistent relationship between intelligence and accuracy across a variety of person perception tasks, including personality perception. (Murphy & Hall, 2009). The majority of studies included in the meta-analysis used video interviews as their stimulus, while some used audio only interviews or still photos of subjects.

Lippa and Dietz (2000) found a strong relationship between general intelligence and accuracy in detecting target others' extraversion from video interviews. However, the same relationship was not detected for neuroticism. This suggests that intelligence may have differential relationships with accuracy on different traits, consistent with Vazire's (2010) theory of self-other knowledge asymmetry.

Other studies have confirmed that there is a relationship between intelligence and accuracy in personality judgments. Realo et al. (2003) found a correlation between accuracy in personality judgment and scores on a visual pattern completion task measuring general reasoning ability (Raven's Standard Progressive Matrices). In this study, judgments were made based on videos of interviews with target others.

Christiansen et al. (2005) also investigated the accuracy of personality judgments using video interviews of unknown others, although a significant correlation between general intelligence and accuracy of personality judgments from these interviews was not found. However, they did find that “dispositional intelligence” correlated with accuracy of personality judgments based on the video interviews. Christiansen et al. (2015) defined dispositional intelligence as knowledge of the relationships between traits and behaviors, and measured it by asking participants to match descriptions of individuals’ personality traits to possible behaviors on a multiple choice instrument. Christiansen et al. (2015) also had participants report on the personality of known others, finding that general intelligence and dispositional intelligence both correlated strongly with accuracy on these reports. Overall, these authors concluded that both general intelligence and dispositional intelligence were related to accuracy in personality perception. Additionally, they suggested that participants' openness to experience may be related to accuracy in personality perception in both the video interview conditions and the known other conditions, although the correlation for known others was not significant. This contrasts with research suggesting that rater personality traits are not related to accuracy in personality perception (e.g., Realo et al., 2003).

The Current Study

The current study sought to extend previous findings regarding the ability of people to judge personality traits in text messages as well as to investigate individual differences in that ability. Previous studies on the accuracy of personality perception have frequently used video interviews as their stimuli or had participants report on familiar others. However, there are a number of situations in CMC where communication with unknown others is conducted entirely through textual information. Thus, an examination of how personality perception functions in similar conditions may prove useful.

Previous studies using behavioral residue methodology have suggested that the way language is used in social media reveals personality traits (Park et al., 2014). This has been extended to text messages, with participants being able to report on some personality traits of targets based solely on text messages (Hood et al., 2015; Udry et al., 2016). The current study, then, sought to extend research on accuracy in personality perception to the text message paradigm. Previous studies have demonstrated that stranger raters in general display the ability to make personality judgments, but have not examined individual differences in accuracy. The use of text messages isolates raters from any contextual information and allows them to use only features of the texts to make their personality judgments. Thus, the text message paradigm should be useful in investigating individual differences in the ability to accurately report on personality from linguistic behavioral samples.

The primary individual difference construct of raters investigated by the current study was intelligence. Numerous studies point to intelligence as a reliable predictor of accuracy in a variety of forms of person perception, including personality perception (Christiansen et al., 2005; Lippa & Dietz, 2000; Murphy & Hall, 2009; Realo et al., 2003; Taft, 1955). Previous studies have used both general intelligence measures and measures of more specific constructs. Christiansen et al. (2005) particularly used “dispositional intelligence.” The current study used a measure of general intelligence with three subcategories. Specifically, the intelligence measure included letter-number completion items, verbal reasoning items, and matrix reasoning items.

The current study investigated the relationship between the intelligence of raters and accuracy in personality perception by presenting participants with a set of 10 text messages written by a stranger who has provided a self-report personality inventory. Participants completed an other-reported personality inventory based on those text messages, a self-report version of the same personality inventory, and an intelligence measure. Participants' accuracy was judged in terms of self-other agreement. That is, participants were considered accurate if their other-report of the targets' personalities showed convergence with the targets' self-reported personality traits.

The current study had two primary multifaceted hypotheses. The first hypothesis was that the stranger raters would be able to achieve convergence with targets’ reports of the targets’ personality traits. Specifically, it was hypothesized that stranger raters would achieve convergence with target reports of agreeableness and conscientiousness based on the results obtained by Udry et al., (2015), although convergence for all big five factors will be examined. The second hypothesis was that raters’ intelligence scores would be associated with their accuracy in terms of self-other agreement. Self-other agreement was measured by taking the absolute value of the difference between rater and target reports for each trait. Additionally, an accuracy score for the entire profile of traits was calculated using a Euclidian distance, as detailed in the analysis section. In both cases, smaller values indicated greater accuracy. Thus, it was hypothesized that as raters’ intelligence scores increased, their absolute difference scores would decrease, reflecting greater accuracy for more intelligent raters.

Method

Participants

Initially, 26 adult participants were recruited from Amazon Mechanical Turk (Mturk) to serve as targets. The targets completed a self-report personality inventory and provided the content of their last 10 text messages. Targets were paid 20 cents for their participation. From this pool of 26 potential targets, 15 participants were selected to serve as targets for the study. Targets were selected by sorting all targets by each personality trait, and selecting a high, medium, and low scoring target for each trait. Targets were additionally selected to ensure rich text messages, avoiding targets who only replied with single letters or numbers, for example.

A second sample of 450 additional users of Amazon Mturk was recruited to serve as raters and received 50 cents for their participation. Of these, 44 raters were removed from the data set before analysis for either completing the task too quickly (taking less than 5 minutes suggested that raters did not adequately pay attention to the task) or having insufficient variance in their ratings of the targets' personalities (i.e., from answering all personality items with 1 or 5 on the 5-point rating scale). Thus, the final number of raters was 406. The number of raters sought was based on a power analysis (one-tailed bivariate normal correlation, $r = .2$, $\alpha = .05$, $\beta = .10$) indicating that 211 participants would be sufficient to detect an effect size similar to those seen in previous research investigating the relationship between intelligence and accurate personality perception. The final sample of raters included 183 men, 220 women, 2 individuals who indicated that they preferred not to respond, and 1 individual who did not answer. Raters ranged in age from 18 to 74 years, with a mean age of 35.05 ($SD = 11.29$) All procedures used in the current study were compliant with the ethical standards set by the American Psychological Association (2010). The Institutional Review Board of Appalachian State University approved the original study on February 6, 2017 and a modification on February 17, 2017, (see Appendix A). Both target and rater versions of the consent form used in the current study can be found in Appendix B.

Measures

Both targets and raters completed a 50-item self-report personality inventory drawn from the International Personality Item Pool, the IPIP-NEO (Goldberg et al., 2006). This inventory contains 10 items each for neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. The raters completed an other-report version of the same personality inventory based on the ten text messages provided by the target. The other-reported inventory consisted of the same items as the self-report, with modified grammar to reflect the other-reported perspective.

Raters' intelligence was measured using a 24-item intelligence test drawn from the public domain International Cognitive Ability Resource (ICAR; Condon & Revelle, 2014). The measure consisted of 8 verbal reasoning items, 8 letter/number series items, and 8 matrix reasoning items. Each of these 24 items consists of a multiple choice question with 8 answer options. The reliabilities of all instruments used in the current study are included in Table 1.

Procedure

Targets completed their task online. After providing their consent, they completed the self-report personality inventory and submitted their last 10 sent text messages. Targets were instructed to type their text messages into a text field exactly as they appear, including "emojis," "text speak," and misspellings. Targets were additionally instructed to replace any names given in their texts with the first letter to maintain anonymity.

Raters also completed their task as an online survey. After providing their consent, raters were presented with 10 text messages from one target. They were instructed to complete an other-reported personality inventory based on the text message items. The text messages and personality inventory were presented on the same screen, so raters were able to reference the texts as needed, and they had an unlimited amount of time to complete the inventory. Afterwards, the raters completed the 24 intelligence items.

Analysis

The initial analysis for the current study focused on whether raters achieved any degree of accuracy in assessing the personality traits of the targets. This was done in the same manner as Hood et al. (2015) and Udry et al. (2016), using a simple correlation between targets' self-reported traits and raters' other-reports of those traits. It was expected that there would be a correlation between targets' self-reported traits and raters' estimations of those traits for the traits of conscientiousness and extraversion, as seen in Udry et al. (2016).

The next goal of the current study was to investigate the relationship between rater intelligence and accuracy of personality perception from text messages. For the purposes of the current study, accuracy in personality perception was considered in terms of rater-target agreement. That is, the degree to which a rater was considered to be accurate was the degree to which that rater's judgment matched up with the self-reported personality traits of the target. This agreement was measured for each trait individually and for the profile formed by all five traits. The agreement for individual traits was assessed by simply calculating the absolute value of the difference between the target's self-reported trait score and the rater's estimation of the trait. Smaller differences between target and rater scores were taken to mean that the rater is more accurate. Thus, it was hypothesized that raters who score highly on the intelligence measures would provide other-reported scores that are closer to the target's self-reported score, and thus would have lower difference scores.

Raters' accuracy across the whole profile was assessed using profile comparison methodology outlined by Cronbach and Gleser (1953). These authors recommended the use of an elaborated linear distance in n-space to assess the overall similarity between two profiles. This method treats the individual scores which make up a profile as points in a hypothetical space with a number of dimensions equal to the number of scores which make up the profile. The overall amount of difference between two profiles can then be considered as the total distance in this hypothetical space between the points of each profile.

This distance may be calculated as a Euclidean distance, which is obtained by summing the squared differences between individual points. This total yields D^2, which we then take the square root of to produce D, a score that can be used as a measure of the overall difference (and thus also similarity) between two profiles. For a simple example of this, imagine a hypothetical personality inventory consisting of two trait scales. Using this method, each of these two trait scales represents one dimension in a hypothetical space. Thus, the space used to assess differences between profiles on this inventory will be 2-dimensional. Imagine two participants complete this hypothetical profile. Participant A scores 4 for both trait scales, and participant B scores 2 for both trait scales. Participant A's profile can be considered to occupy the point (4,4) in hypothetical space, while participant B's profile occupies the point (2, 2). The distance between them can be expressed thusly: $D^2 = (X_1-X_2)^2+(Y_1-Y_2)^2$, where X_1 and Y_1 are participant A's scores and X_2 and Y_2 are participant B's scores. Using these scores, the distance is thus $D^2 = (4-2)^2+(4-2)^2$. Therefore, $D^2 = 8$. Taking the square root of this gives D, which in this example is 2.83. Profiles with a greater number of trait scales simply add additional dimensions to the formula, adding z, w, and so on. Using the profiles generated by IPIP-NEO used in the current paper, there were five dimensions in the hypothetical space. The D score can be used as an overall measure of accuracy, where a smaller D score indicates greater agreement between rater and target, and thus greater accuracy on the part of the rater. It was expected that raters who scored higher on our intelligence measures would also have smaller D scores, indicating greater accuracy.

Results

Descriptive statistics for target and rater reports of targets' traits are found in Table 2. Descriptive statistics for raters' intelligence scores are found in Table 3. Rater reports of targets' traits were all within acceptable parameters in terms of normality, as were raters' intelligence scores. Rater reports of targets' openness showed a slightly leptokurtic distribution (kurtosis = 1.40). Targets were selected based on their self-reported scores such that the final group of 15 included a high, medium, and low exemplar for each trait. As a result, the distribution of targets' self-reported traits was generally highly platykurtic. In addition, inflated variance was seen for targets' self-reported traits relative to raters' other-reports of those traits. This inflated variance was seen for four of five traits. These distributions were not considered to be sufficiently abnormal to alter the analysis plan of the current study. However, they are worth noting.

Convergence between rater and target reports of targets' traits were assessed using simple correlations, which are summarized in Table 4. It was hypothesized that convergence would be found between rater and target reports of targets' personality traits, particularly for the traits of agreeableness and conscientiousness. Convergence was found between rater and target reports of extraversion, openness, and conscientiousness, but not for neuroticism or conscientiousness. Thus, the results partially supported the hypotheses.

Exploratory analysis revealed associations between rater reports and target reports for several non-matching traits. That is, associations were found between rater reports of traits and entirely separate traits as reported by targets. For example, rater reports of targets' neuroticism were negatively correlated with targets' self-reported openness, while rater reports of targets' agreeableness and conscientiousness were positively correlated with targets' self-reported openness. In other words, four out of five rater-reported traits were correlated with targets' self-reported openness. Additionally, rater reports of targets' agreeableness were correlated with targets' self-reported extraversion, and rater reports of targets' extraversion and openness were negatively correlated with targets' self-reported conscientiousness. A summary of these relationships can be found in Table 4.

The second hypothesis postulated that raters' intelligence scores would be correlated with the accuracy of their reports of targets' personality traits. Rater accuracy was assessed in terms of agreement with targets' self-reported personality traits. The absolute value of the difference between a rater's report of their assigned target's score on a trait and the target's self-reported score on a trait was used as a measure of this agreement. A lower difference indicated greater agreement, and thus greater accuracy. Therefore, it was hypothesized that raters' scores on intelligence would be negatively correlated with the difference score. The difference scores were absolute values and thus had a possible range of 0 to 5. However, the observed ranges of the differences were smaller, with the greatest difference score for any trait being 3.30. The mean difference between rater and target reports of targets' neuroticism was 0.91 (SD = 0.56), the mean difference for extraversion was 1.02 (SD = 0.68), the mean difference for openness was 0.87 (*SD* = 0.52), the mean difference for agreeableness was 0.75 (*SD* = 0.60), and the mean difference for conscientiousness was 0.98 (*SD* = 0.70). All of the difference scores were sufficiently normal in their distributions. Only a single statistically significant correlation was found between raters' scores on matrix reasoning items and the accuracy of their reports of targets' neuroticism, r (406) = -.08, p = .045, one-tailed. No other intelligence score was correlated with accuracy on any target trait (see Table 5). Thus, the hypotheses regarding the relationship between intelligence and accuracy of personality assessments from text messages were not supported for individual traits.

To assess raters' accuracy across the entire profile, a Euclidian distance was used. This distance, hereafter referred to as *D*, was calculated by taking the square root of the sum of the squared differences between rater and target reports of targets' scores on each trait, as described in the method section. As before, rater reports were considered to be accurate to the degree that they agreed with target self-reports. Therefore, it was hypothesized that raters with higher scores on the intelligence measure would have lower *D* scores, and thus there would be a negative correlation between raters' intelligence scores and *D* scores. Raters' average *D* score was 2.31, with a standard deviation of 0.85, and the distribution of *D* scores was approximately normal. However, no intelligence score was correlated with raters' *D* scores (see Table 5). Thus, as with individual traits, the hypothesis that intelligence would be related to accuracy in personality judgments from text messages was not supported.

Additional exploratory analysis examined whether accuracy varied as a function of raters' age or gender. Neither age, r = .07, p = .184, nor gender, t (401) = 1.75, p = .081, were associated with profile-level accuracy (i.e., *D* scores). Gender differences were further explored by examining the correlations between target and rater reports of personality, by trait and gender, demonstrating a different pattern of convergence between men and women, with men exhibiting convergence only for openness and women only for conscientiousness (see Table 6).

Discussion

The aims of the current study were twofold. The first aim was to replicate previous research demonstrating the ability of stranger rater reports to achieve convergence with targets' self-reports of personality traits when raters were given access to targets' text messages. The second aim was to ascertain whether raters' intelligence would contribute to greater accuracy when reporting on the traits of targets' based on those text messages. The ability of raters to achieve some level of convergence had previously been demonstrated by Hood et al. (2015) and Udry et al. (2016). Likewise, the relationship between intelligence and accuracy in personality perception had been previously established in the literature (Murphy & Hall, 2009).

Convergence between Target and Rater Reports

The first step in answering the questions examined by the current study was to establish whether raters achieved convergence with target reports. Convergence between target and rater reports was observed for three of five traits. Specifically, convergence was observed between target and rater reports of targets' extraversion, openness, and conscientiousness. The convergence observed between target and rater reports of targets' conscientiousness is a direct replication of results shown by Udry et al. (2016). Additionally, the effect size of the relationship between target and rater reports of targets' openness was highly consistent with the effect sizes seen in Udry et al. (2016) and Hood et al. (2015).

While the correlations between target and rater reports of targets' openness were not significant in either earlier study, the correlation has been consistently between .10 and .20 across Hood et al. (2015), Udry et al. (2016), and the current study. The pattern of results obtained across these three studies demonstrates that stranger raters are consistently able to achieve similar convergence with target reports of targets' traits for both openness and conscientiousness.

Results regarding convergence between target and rater reports of targets' other traits has been less consistent. This inconsistency may be in part due to the different methodologies employed in the studies. Hood et al. (2015) and Udry et al. (2016) used a small group of raters and a large group of targets. In order to better assess the impact of rater characteristics on accuracy, the current study used a small group of targets and a large group of raters. Inconsistencies may also be due to the restricted set of texts that were shown to raters in each study. If the features of text messages that can be used as personality cues do not occur within every set of texts, then rater accuracy may in part be a function of which of the target's text messages they receive. Regardless, the overall pattern of results suggests that stranger raters have the consistent ability to achieve convergence with targets' self-reports on several personality traits, especially openness and conscientiousness. Thus, it is plausible to conclude that cues exist within text messages for these traits.

Funder's (1995) RAM suggests that there are four conditions necessary for accuracy in personality perception. The first condition of the RAM is that behaviors (cues) related to a trait must exist. The second condition of the RAM is that those behaviors must be performed in the environment. The third condition is that raters must be able to detect the cues, and the fourth is that raters must know what cues are associated with specific traits. As raters have been shown to be able to produce some degree of accuracy (that is, achieve convergence with targets' reports) in their judgments of targets' personality when only given access to those targets' text messages, it logically follows that the conditions for accuracy have been met to some degree. Thus, it appears that cues to certain traits both exist and are performed within the context of text messages. This is consistent with other research demonstrating that cues are available within the features of language, including Park et al. (2014). However, prior to the studies conducted by Hood et al. (2015) and Udry et al. (2016), as well as the current paper, cues had not been demonstrated within a setting as minimal as text messages. Further, these studies have shown that stranger raters have the ability to detect these cues without training.

While it seems evident that cues exist within text messages, it is not clear what the cues within text messages are. Udry et al. (2016) sought to investigate the relationship between actual features of text messages and the personality traits of text message authors. The features of text messages examined by Udry et al. (2016) were primarily quantitative features, such as the number of characters in each message or the number of spelling errors. However, none of these features were strongly associated with any personality trait. This suggests that the cues contained in text messages may be more qualitative in nature. This would be consistent with the cues indicated in social media contexts by Park et al. (2014). For example, one extraversion cue used by Park et al. was the relative valence of words used in social media posts. Extraverts used words indicative of enthusiasm such as "excellent" or "great" in their social media posts. Additionally, extraverts were seen to use words or emotes suggesting positive emotion (e.g., smile or heart emoticons) and words indicating sociability (e.g., party or hanging out). It is possible that the features of text messages that serve as personality trait cues are similar. Clearly, this would be fertile ground for future research.

Additionally cues do not appear to be available within text messages for all traits. This is consistent with Vazire's (2010) SOKA model, which postulates that some traits will be more observable than others. Previous research has shown that the relationship between the "visibility" of traits and accuracy in detecting those traits may not necessarily be particularly strong, however (McDonald & Letzring, 2016). This research used visibility ratings established by consensus among participants in pilot testing, which may be different than the objective observability of the traits. Nonetheless, the failure to find convergence between rater and target reports of a certain trait does not necessarily mean that cues for that trait do not exist.

The current study found that raters were only able to achieve accuracy in their reports of targets' extraversion, openness, and conscientiousness. It is therefore reasonable to state that cues exist for these three traits based on the findings of the current study. It may be that these traits are considered more favorable than the other two traits. Previous research by McDonald and Letzring (2016) suggests that favorability is relevant to target-rater agreement. Meanwhile, no rater-reported trait was correlated with targets' self-reported neuroticism or agreeableness. This potentially suggests that no cues exist within small linguistic samples of text messages for neuroticism or agreeableness. Alternatively, it is possible that cues exist for these traits, but the cues are not detectable to raters. The current study did not include a means of differentiating between these two possibilities, thus leaving the question open for future research.

One additional pattern apparent in the data from the current study was the correlations between targets' reports of their own extraversion, openness, and conscientiousness with raters' reports of various non-matched target traits. In particular, targets' reports of their own openness were associated with rater reports of targets traits for 4 out of 5 traits (excluding extraversion). Meanwhile, targets' self-reported extraversion was correlated with rater reports of targets' agreeableness, and targets' self-reported conscientiousness was negatively correlated with rater reports of targets' extraversion and openness. These results speak directly to the fourth condition of Funder's RAM, suggesting that raters often make errors in connecting available behavioral cues to the correct traits. Specifically, these results suggest that raters are prone to overusing available cues. Raters appear to have used the cues to openness, extraversion, and conscientiousness that appear to exist within text messages to answer questions about all five of the targets' traits. Notably, these traits are those considered most observable by Vazire's (2010) SOKA model. Further research may be necessary to confirm whether it is in fact the case that raters were overgeneralizing these cues.

Intelligence and Accuracy

No relationship was found between rater intelligence and accuracy of the raters' personality judgments based on text messages. This contrasts with previous research which suggests that intelligence is one of the only rater characteristics to have a relationship with personality judgments. However, the relationship between intelligence and accuracy in previous research has been quite small, with few modern studies finding correlations beyond .20. These results may simply confirm the assertion made by Allik et al. (2016) that there are indeed no significant rater characteristics which predict accuracy in personality perception. It may be that personality perception is so fundamental a task that all raters are equally skilled at it, even in the context of tiny samples of targets' text messages. The fact that raters are able to achieve convergence with targets' self reported personality based solely on the targets text messages may simply be more evidence of how skilled people are at perceiving personality. Convergence between target and rater reports of personality based on text messages has been consistently small compared to previous research in the behavioral residue phenomenon. It may be that accuracy in personality judgments is principally a function of the medium rather than any individual difference on the part of raters.

Nonetheless, previous research has found a relationship between intelligence and accuracy while the current study did not (e.g., Lippa & Dietz, 2000; Realo et al., 2003). While it is possible that the relationship between intelligence and accuracy is simply mercurial, this finding may also suggest that there are major differences between making personality judgments from text messages and making personality judgments from the stimuli used in previous research. This idea is further suggested by the apparent gender differences in accuracy shown in the current study. However, as the current study did not directly compare stimuli, the following possible explanation is speculative.

One of the more common stimuli used in research examining the accuracy of the personality judgments of strangers is video interviews (e.g., Christiansen et al., 2005; Lippa & Dietz, 2000). Video interviews provide a much richer source of personality information than the out of context text messages used by the current study. It may be that this makes personality judgments from text messages a much more difficult task than making personality judgments from video interviews, and that this might account for the lack of the relationship between intelligence and accuracy in the current study. This is partially borne out by Letzring, Wells, and Funder (2006), who found that accuracy in personality perception generally increased as information quality and quantity increased. In other words, raters did better at the task of perceiving targets’ personality traits given access to richer and more varied information, suggesting that the task was easier under those conditions.

However, it might be expected that a more difficult task would have a larger relationship with intelligence, rather than a smaller one. Thus one might expect a larger relationship between intelligence and accuracy in a situation with low information quantity, such as text messages. It is possible though that intelligence is more related to the ability to detect cues in a "noisy" or stimulus-rich environment than it is related to pairing those cues to the correct trait. That is, it is possible that intelligence is more related to the third condition of Funder's (1995) RAM—detection—than the fourth condition of utilization. Another way of phrasing this might be to suggest that the relationship between intelligence and accuracy is dependent on the quantity, rather than the quality of information available. As there should be considerably fewer cues contained only in the linguistic features of text messages than in richer stimuli (e.g., video interviews), then it is possible that detecting personality cues from text messages relies less on intelligence than detecting personality cues from the richer stimuli.

One reason for this might be that intelligence contributes more to raters' ability to direct their attention to relevant cues, and once those cues are detected pairing them with traits is a simple task. If this were true, it would be expected to find a weaker or nonexistent relationship between intelligence and accuracy of personality judgments made from text messages. This would be due to the fact that there is less information within text messages overall, as indicated by the lower correlations observed between rater and target reports of targets' traits. Less information may also imply to less "noise," and thus less of a relationship with intelligence if intelligence is indeed primarily involved in determining which cues are relevant in a high-information environment. The findings of the current study—that intelligence was not related to accuracy—suggest that this a possible alternative. However, this explanation is purely speculative, and further research is necessary. The finding that rater intelligence was not related to accuracy in personality perception from text messages may indicate that there are differences between the media used to make personality judgments.

If the medium through which personality information is transmitted is in fact a moderator of the relationship between intelligence and accuracy, it could explain why rater characteristics that contribute to the accuracy of personality judgments are so difficult to find. A direct comparison between personality perception from different stimuli would be necessary to investigate this possibility, which is beyond the scope of the current paper and most empirical investigations thus far. Previous research has compared differences in quality and quantity of information within the same medium (i.e., direct interaction between participants, Letzring et al., 2006; Letzring & Human, 2014), finding a linear relationship between accuracy and both the quantity and quality of information. Similar comparisons have largely not been made between different mediums of communication, or for differences in how intelligence might relate to accuracy based on these differences.

Letzring and Human (2014) did investigate the relationship between different types of information and accuracy within the same medium (direct interaction between target and rater). These researchers found that distinctive accuracy (that is, accuracy in determining the unique order of the targets' traits and how the target differs from others) was higher when targets verbally described past behavior than when raters were able to directly observe targets' behavior. A similar design could be used to examine differences between media through which information could be delivered, and in addition to investigate whether the relationship between intelligence and accuracy varies based on those media.

In contrast to intelligence, the relationship between demographic characteristics of raters and accuracy in personality perception found in the current study was consistent with previous literature (Allik et al., 2016). Age and gender were not related to whole profile accuracy. While the pattern of convergence with target self-reports appeared to be slightly different for men and women, these differences did not appear systemic.

One other factor that may account for the failure to find a relationship between intelligence and accuracy is the nested structure of the data used by the current study. There were 15 targets used in this study, with 25-30 raters per target. It is possible that target characteristics play a role in the relationship between intelligence and accuracy, as well as in the relationship between target and rater reports of targets' traits. Thus, future analysis might benefit from the use of multilevel modelling techniques to account for both rater and target characteristics simultaneously.

Conclusions and Future Directions

While no relationship was found between intelligence and accuracy in the current study, further evidence was found for the ability of stranger raters to gain information on targets' personality traits using only small samples of text messages. This implies that raters should be able to gain personality information on targets in CMC contexts, using only the linguistic features of targets' interactions. Thus, raters may be able to begin gathering information on targets even before any substantial information is communicated by either party. Further, this ability seems to be relatively egalitarian, with raters with higher intelligence scores not achieving greater accuracy than others. However, raters also seem to be prone to overgeneralizing the information they may gain from these small slices of information, potentially providing a source of bias in personality perception in computer mediated contexts.

While the ability to gain personality information from even the slightest amount of linguistic data may be good news for people wishing to begin relationships online, it may be even more useful for personality researchers. It implies that accurate personality information can be gained in electronic contexts without direct interaction with targets, thus minimizing the bias inherent in self-report measures. Future research may reveal more specific cues within text messages that may allow researchers to use texts as a reliable source of personality data. It is probable that larger sets of text messages would be needed to investigate these cues fully, which does present both practical and ethical challenges to researchers. Alternatively, a direct investigation into the differences in personality perception between different mediums (e.g., direct interaction, passive viewing of video interviews, or text messages) may provide further insight into the mechanics of accurate personality perception.

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Table 1

Reliabilities of Instruments

Instrument	α
Target Report	
N	.58
E	.76
O	.68
A	.61
C	.84
Rater Report	
N	.80
E	.76
O	.75
A	.88
C	.90
Rater Intelligence	
g	.85
LN	.62
V	.70
M	.76

Note: N = neuroticism, E = extraversion, O = openness, A = agreeableness, C = conscientiousness, *g* = general intelligence, LN = letter-number completion, V = verbal, M = matrix reasoning. Target reports were self-reported, rater reports were based on targets' texts.

Table 2

Means and Standard Deviations for Target and Rater Variables

	Target (n = 15)		Rater (n = 406)	
Trait	*M*	*SD*	*M*	*SD*
N	2.61	0.90	2.56	0.56
E	3.06	1.10	3.29	0.63
O	3.65	0.72	3.04	0.50
A	3.90	0.54	3.45	0.69
C	3.73	0.87	3.15	0.72

Note: N = neuroticism, E = extraversion, O = openness, A = agreeableness, C = conscientiousness. Target scores were self-report; rater scores were other-report based on targets' text messages.

Table 3

Means and Standard Deviations for Rater Intelligence Scores

Intelligence Score	*M*	*SD*	Minimum	Maximum
g	11.26	5.38	0	23
LN	3.54	2.35	0	8
V	4.36	1.96	0	8
M	3.36	2.21	0	8

Note: Rater n = 406, *g* = general intelligence, LN = letter number completion, V = verbal intelligence, M = matrix reasoning.

Table 4

Correlations Between Rater and Target Reports of Personality Traits

Rater Reports	Target Reports				
	N	E	O	A	C
N	-.03	-.08	-.22**	.00	.07
E	.09	.11*	.10	-.03	-.15**
O	.09	.06	.19**	-.05	-.15**
A	-.06	.11*	.28**	.02	-.04
C	-.06	.07	.21**	.05	.13**

Note: * p < .05, ** p < .01, two tailed. N = neuroticism, E = extraversion, O = openness, A = agreeableness, C = conscientiousness

Table 5

Correlations Between Rater Intelligence and Rater Accuracy

Rater Intelligence	Accuracy Scores					
	N	E	O	A	C	D
g	-.06	-.03	.11	.00	.04	.03
LN	-.03	-.04	.09	.01	.06	.04
V	-.02	-.02	.07	.00	.02	.03
M	-.08*	-.02	.10	-.01	.02	.00

Note: * p < .05, one tailed. N = neuroticism, E = extraversion, O = openness, A = agreeableness, C = conscientiousness, D = profile D score, *g* = general intelligence, LN = letter-number completion, V = verbal, M = matrix reasoning. Accuracy scores for individual traits were based on the absolute difference between rater and target reports, while the profile difference score was based on the square root of the sum of squared differences for each trait in the profile.

Table 6

Correlations Between Rater and Target Reports by Gender of Rater

Trait	Gender of Rater	
	Men	Women
N	-.15*	.05
E	.14	.08
O	.27**	.12
A	.00	.03
C	.03	.21**

Note: * $p < .05$, ** $p \leq .001$. Correlations are between rater and target reports of targets' traits for the indicated trait. N = neuroticism, E = extraversion, O = openness, A = agreeableness, C = conscientiousness.

Appendix A
IRB Correspondence

To: Nicholas Rhoades
Psychology 266 Mallard Ln Apt 8 Boone NC, 28607
CAMPUS EMAIL

From: IRB Administrator
Date: 2/06/2017
RE: Notice of IRB Exemption

STUDY #: 17-0195
STUDY TITLE: Individual differences in person perception in low information environments

Exemption Category: (2) Anonymous Educational Tests; Surveys, Interviews or Observations

This study involves minimal risk and meets the exemption category cited above. In accordance with 45 CFR 46.101(b) and University policy and procedures, the research activities described in the study materials are exempt from further IRB review.

All approved documents for this study, including consent forms, can be accessed by logging into IRBIS. Use the following directions to access approved study documents.

1. Log into IRBIS
2. Click "Home" on the top toolbar
3. Click "My Studies" under the heading "All My Studies"
4. Click on the IRB number for the study you wish to access
5. Click on the reference ID for your submission
6. Click "Attachments" on the left-hand side toolbar
7. Click on the appropriate documents you wish to download

Study Change: Proposed changes to the study require further IRB review when the change involves:

- an external funding source,
- the potential for a conflict of interest,
- a change in location of the research (i.e., country, school system, off site location),

- the contact information for the Principal Investigator,
- the addition of non-Appalachian State University faculty, staff, or students to the research team, or
- the basis for the determination of exemption. Standard Operating Procedure #9 cites examples of changes which affect the basis of the determination of exemption on page 3.

Investigator Responsibilities: All individuals engaged in research with human participants are responsible for compliance with University policies and procedures, and IRB determinations. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records. The PI should review the IRB's list of PI responsibilities.

To Close the Study: When research procedures with human participants are completed, please send the Request for Closure of IRB Review form to irb@appstate.edu.

If you have any questions, please contact the Research Protections Office at (828) 262-2692 (Robin).

Best wishes with your research.

Websites for Information Cited Above

Note: If the link does not work, please copy and paste into your browser, or visit https://researchprotections.appstate.edu/human-subjects.

1. Standard Operating Procedure #9: http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/IRB20SOP920Exempt%20Review%20Determination.pdf

2. PI responsibilities: http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI20Responsibilities.pdf
3. IRB forms: http://researchprotections.appstate.edu/human-subjects/irb-forms
CC:
Rose Webb, Psychology

To: Nicholas Rhoades
Psychology 266 Mallard Ln Apt 8 Boone NC, 28607
CAMPUS EMAIL

From: Monica Molina, IRB Associate Administrator
Date: 2/17/2017
RE: Notice of IRB Exemption (Mod)

STUDY #: 17-0195
STUDY TITLE: Individual differences in person perception in low information environments

Exemption Category: (2) Anonymous Educational Tests; Surveys, Interviews or Observations

This study involves minimal risk and meets the exemption category cited above. In accordance with 45 CFR 46.101(b) and University policy and procedures, the research activities described in the study materials are exempt from further IRB review.

Study Specific Notes:
The following changes were approved:
The rater survey instrument from the previous submission has been modified by the addition of eight new items in the ability test and one new item in the other-report inventory. Additionally, four verbal ability items have been removed from the ability test.
The new items on the ability test are eight matrix reasoning items, and are found on pages 11-14 and pages 18-21 of the updated PDF version of the instrument, at the end of each block labeled "UPP block."
The new item in the target personality block asks raters which sex they believe the target to be, and can be found on page 7 of the updated PDF.

All approved documents for this study, including consent forms, can be accessed by logging into IRBIS. Use the following directions to access approved study documents.

1. Log into IRBIS
2. Click "Home" on the top toolbar
3. Click "My Studies" under the heading "All My Studies"
4. Click on the IRB number for the study you wish to access
5. Click on the reference ID for your submission
6. Click "Attachments" on the left-hand side toolbar
7. Click on the appropriate documents you wish to download

Study Change: Proposed changes to the study require further IRB review when the change involves:

- an external funding source,
- the potential for a conflict of interest,
- a change in location of the research (i.e., country, school system, off site location),
- the contact information for the Principal Investigator,
- the addition of non-Appalachian State University faculty, staff, or students to the research team, or
- the basis for the determination of exemption. Standard Operating Procedure #9 cites examples of changes which affect the basis of the determination of exemption on page 3.

Investigator Responsibilities: All individuals engaged in research with human participants are responsible for compliance with University policies and procedures, and IRB determinations. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records. The PI should review the IRB's list of PI responsibilities.

To Close the Study: When research procedures with human participants are completed, please send the Request for Closure of IRB Review form to irb@appstate.edu.

If you have any questions, please contact the Research Protections Office at (828) 262-2692 (Robin).

Best wishes with your research.

Websites for Information Cited Above

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3. IRB forms: http://researchprotections.appstate.edu/human-subjects/irb-forms

CC: Rose Webb, Psychology

Appendix B
Target and Rater Consent Forms

Information to Consider about this Research
Individual Differences in Person Perception from Text Messages
Principal Investigator: Nicholas Rhoades
Faculty Advisor: R. M. Webb
Department: Psychology
Principle Investigator Contact Information: rhoadesng@appstate.edu, 828.262.2272
Faculty Advisor Contact Information: webbrm@appstate.edu, 828.262.2272, ext. 410

What is the purpose of this research?

You are invited to participate in a research study that examines people's ability to assess the personality of others through text messages. In order to investigate this ability, we require samples of individuals' text messages paired with information regarding their personality.

Why am I being invited to take part in this research?

You are eligible to participate if you are at least 18 years of age and if you own or have consistent access to a cell phone.

What will I be asked to do?

You will be asked to complete a personality test and to report on text messages you have sent. You will be asked only about the content of your text messages, not the names, phone numbers, or other identifying information of recipients. Your participation should take approximately 10-20 minutes.

What are possible harms or discomforts that I might experience during the research?

To the best of our knowledge, the risk of harm and discomfort from participating in this research study is no more than you would experience in everyday life.

What are possible benefits of this research?

There may be no personal benefit from your participation but the information gained by doing this research may help others in the future.

Will I be paid for taking part in the research?

Your MTurk account will be credited $0.20 for completing this study.

How will you keep my private information confidential?

This study is anonymous. That means that no one, not even members of the research team, will know that the information you gave came from you. Please be aware that any work performed on Amazon MTurk can potentially be linked to information about you on your Amazon public profile page, depending on the settings you have for your Amazon profile. We will not access any personally identifiable information about you that you may have put on your Amazon public profile page. We will store your mTurk worker ID separately from the other information you provide to us. Please be aware that the content of your provided text messages will be shown to future research participants. However, all identifying information will be removed from the messages and it will not be possible to connect the messages to you in any way.

Whom can I contact if I have a question?

If you have questions about your rights as someone taking part in research, contact the Appalachian Institutional Review Board Administrator at 828-262-2692 (days), through email at irb@appstate.edu or at Appalachian State University, Office of Research Protections, IRB Administrator, Boone, NC 28608.

Do I have to participate?

Your participation in this research is completely voluntary. If you choose not to volunteer, there is no penalty or consequence. If you decide to take part in the study you can still decide at any time that you no longer want to participate. You will not lose any benefits or rights you would normally have if you do not participate in the study.

Appalachian State University's Institutional Review Board has determined this study to be exempt from IRB oversight.

By continuing on to the survey, you acknowledge you have read and agree to the descriptions and terms outlined in this consent form, and voluntarily agree to participate in this research.

Information to Consider about this Research
Individual Differences in Person Perception from Text Messages
Principal Investigator: N. Rhoades
Faculty Advisor: R. M. Webb
Department: Psychology
Principle Investigator Contact Information: rhoadesng@appstate.edu, 828.262.2272
Faculty Advisor Contact Information: webbrm@appstate.edu, 828.262.2272, ext. 410

What is the purpose of this research?

You are invited to participate in a research study that examines people's ability to perceive the personality traits of others from text messages. This research is intended to improve our understanding of how people perceive one another in the digital age. Our findings may be presented at academic conferences or published, but reports will be based on group responses, not those of individuals.

Why am I being invited to take part in this research?

You are eligible to participate if you are at least 18 years of age and if you own or have consistent access to a cell phone.

What will I be asked to do?

You will be shown ten text messages written by a previous participant. Based on these text messages, you will complete a personality test on behalf of the text message author. Afterwards, you will be asked to complete a brief test and a self-report personality inventory. Your participation should take approximately 30-45 minutes.

What are possible harms or discomforts that I might experience during the research?

To the best of our knowledge, the risk of harm and discomfort from participating in this research study is no more than you would experience in everyday life.

What are possible benefits of this research?

There may be no personal benefit from your participation but the information gained by doing this research may help others in the future.

Will I be paid for taking part in the research?

Your MTurk account will be credited $0.50 for completing this study.

How will you keep my private information confidential?

This study is anonymous. That means that no one, not even members of the research team, will know that the information you gave came from you. Please be aware that any work performed on Amazon MTurk can potentially be linked to information about you on your Amazon public profile page, depending on the settings you have for your Amazon profile. We will not access any personally identifiable information about you that you may have put on your Amazon public profile page. We will store your mTurk worker ID separately from the other information you provide to us.

Whom can I contact if I have a question?

If you have questions about your rights as someone taking part in research, contact the Appalachian Institutional Review Board Administrator at 828-262-2692 (days), through email at irb@appstate.edu or at Appalachian State University, Office of Research Protections, IRB Administrator, Boone, NC 28608.

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By continuing on to the survey, you acknowledge you have read and agree to the descriptions and terms outlined in this consent form, and voluntarily agree to participate in this research.

Vita

Nic Rhoades was born in Wilmington, NC, to Lynn and Jerry “Dusty” Rhoades in 1991. Nic graduated from Union Pines High School in 2010 and received a B.A. in psychology from the University of North Carolina Asheville in 2014. Nic is scheduled to receive a M.A. in Experimental Psychology from Appalachian State University in August of 2017.