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## **Personality Impressions on Twitter**

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The creation and increasing popularity of social media websites have changed the way people around the world interact with one another. Instead of face-to-face exchanges, people now often interact using technology-based mediums, such as social media websites. These websites provide individuals the ability to share their identities with others, whether close friends or complete strangers, without ever engaging in face-to-face interactions. This change in interaction style raises many questions regarding the kind of information people use to make judgments of others and how they do so. Having our information available to the world allows others, such as potential employers, business contacts, new friends, and even potential romantic partners, to get to know us without ever needing to meet in person. Thus, it is important to understand which types of cues people use when forming judgments and whether these judgments are consistent across various observers.

Past research on face-to-face interactions has investigated these questions quite extensively, but fewer studies have addressed the issues in the social media environment. This study investigates whether a

person's Twitter (social media) profile can convey a coherent and interpretable impression to observers. The study also investigates the type of information, such as personality or physical qualities, observers of a Twitter user's profile agree about, if any.

### **Thin Slicing**

Previous research has investigated how people can make judgments of others with limited information and the degree to which consensus is achieved for such judgments. The act of making judgments from limited information about other people has been studied through a methodology called thin slicing, which involves drawing inferences about other people based on short excerpts of social behavior (Vartanian et al., 2012). In other words, thin slices represent small windows of information taken from a larger social context. Since initial judgments of others are largely based on first impressions, thin slicing helps us understand how we arrive at such judgments and to what degree these judgments agree with other observers or with how people perceive themselves.

In a meta-analysis of thin slicing literature, Ambady and Rosenthal (1992) found that thin slices of social behavior shorter than 30 seconds were just as informative as those that were close to 5 minutes in duration. This held true across clinical and social psychology studies as well as across different forms of social contexts. The different forms of social contexts included in the study were: nonverbal, which comprised visual (depictions of the face, body, or face and body) and vocal (tone of voice); verbal, which comprised speech and transcripts; and audiovisual, which combined visual and verbal (Ambady & Rosenthal, 1992). Results from this study suggest that more information does not lead to more informative inferences, nor does the kind of context used have an impact on inferences made.

Gosling, Ko, Mannarelli, and Morris (2002) investigated the extent to which observers can use information from a person's environment to make inferences regarding what that person is like. The study was based on the idea that people leave traces of themselves in spaces they regularly inhabit. To investigate that idea, researchers had observers rate an individual's personality based on that individual's personal environment (office space or bedroom). Observer impressions were then compared to an individual's self-report and reports from that individual's friends. The results indicated that observers could consistently and accurately form impressions of another person's personality. More specifically, observers showed highest consistency and accuracy in inferring openness (i.e., having broad interests, imaginative, insightful), conscientiousness (i.e., organized, thorough, thoughtful), and extraversion (i.e., sociable, assertive, and energetic), but to a lesser degree in agreeableness (i.e., kind, sympathetic, or affectionate) (Gosling et al., 2002). These findings suggest that people do not need to meet in person to form certain personality impressions but that they can, in fact, form these impressions with as little information as observing a personal environment.

The findings of the earlier studies provide support for the notion that neither in-person nor extended periods of contact are necessary to form accurate and consistent judgments of other people. Other studies have reported similar findings using online environments. Vazire and Gosling (2004) investigated whether previous findings regarding the ability of people to form accurate judgments of others with limited amounts of information would extend online to personal websites. More specifically, they explored whether personal websites would provide information necessary for observers to make inferences regarding the creator's personality as well as the accuracy of such inferences and whether the inferences reflected the creator's ideal-self (i.e., an overly positive representation of the creator).

The authors' accuracy criteria consisted of self-reports and informant reports. By comparing impressions that observers made based on personal websites with self-report data available from the website creators and informant report data from people who knew the website creators well, the researchers found that observers formed consistent inferences about the creator of a personal website. In addition, the researchers also used self-reports from the website creators regarding their ideal-selves. After controlling for accuracy (self and informant ratings), the authors correlated the ideal-self reports with the observer reports. Vazire and Gosling (2004) found that inferences made by observers were representative of the creators' true personalities rather than their ideal selves.

Vazire and Gosling (2004) compared their findings to the previous study conducted by Gosling et al. (2002) regarding personal environments. The comparison revealed that both physical and virtual environments convey roughly the same amount of information across personality traits. Vazire and Gosling concluded that "observers can learn at least as much about someone from viewing their website as they can from the person's bedroom, office, or a thin slice of behavior" (Vazire & Gosling, 2004, p. 129). Their findings provided evidence that previous (off-line) findings can be generalized to a person's online presence.

The personal websites that Vazire and Gosling (2004) examined are flexible in their customization, meaning that a website creator had a great deal of control when making the site, just as a person would have control when decorating an office or bedroom. This factor may imply that personal websites closely represent the offline environment. However, because thin slicing research has been validated for aspects of the online environment, it is necessary for researchers to explore other settings in which generalizations may be made. As with personal websites, social media websites are a platform where people can share personal information

with others. The difference with social media websites is that they provide a less flexible environment, one in which all users have limited options for customization. On social media websites, users fill out templates that are the same for all users rather than creating an entirely unique site. This homogenous nature of social media websites provides a uniquely uniform environment to extend generalizations about thin-slice research. Using social media websites will help researchers control for environmental aspects that have been highly variable in past studies.

In an effort to incorporate the variety of findings of multiple disciplines into one source, Wilson, Gosling, & Graham (2012) performed a literature review on Facebook research. The researchers cited studies in which observers rated Facebook users' personalities based only on their profiles. The observer ratings were compared to a user's ideal-self rating as well as an accuracy criterion that consisted of a user's self-report and reports from informants who knew the user offline. The results indicated that observer ratings correlated strongly with the accuracy criterion but not with the ideal-self ratings. This result suggests that Facebook profiles convey information necessary for observers to form accurate impressions and that Facebook users are portraying their offline personality fairly well (Wilson et al., 2012). In addition to these findings, Wilson et al. (2012) also cited research that has investigated how narcissists portray themselves on Facebook. Since narcissists typically practice self-promotion offline, it would make sense for narcissists to practice self-promotion online as well. Results showed that narcissists did portray an idealized personality but that observers saw through the facade and judged the user as narcissistic (Wilson et al., 2012).

Therefore, the research to date has shown a progression of validating the notion that people can indeed make well informed impressions of other people's personalities, even with small amounts of information, whether

from face-to-face interactions or social media websites.

## **Current Study**

The current study focused on generalizing past findings related to thin slicing research to Twitter, a microblogging service and one of the most popular social media sites in the world (Qiu, Lin, Ramsay, & Yang, 2012). Research shows that microblogs are generally used for sharing information such as daily routines, inner feelings, events, and brief conversations. What makes Twitter unique compared to other highly popular social media websites (such as Facebook) is that information is intended to be shared over a large network rather than restricted to a set group of “friends” (Qiu, Lin, Ramsay, & Yang, 2012). Twitter, like other social media websites, uses specific terminology: “tweets” are short messages users share with their subscribers; subscribers on Twitter are “followers.” Just as a person has “followers,” they also “follow” other people, companies, events, and celebrities.

## **Methods**

### **Participants**

Participants were recruited through the Amazon Mechanical Turk (MTurk) marketplace ( $N = 131$ ) and the University of Oregon Human Subjects Pool (HSP;  $N = 89$ ). Altogether, 220 participants took part in the study: 37.3% male, 62.7% female, with an age range of 18 – 69 ( $M = 29.14$ ,  $SD = 11.13$ ). For an individual breakdown of demographics for HSP and MTurk, refer to Tables 1, 2, and 3 below. The study was issued in the form of an electronic survey. Participants from MTurk received compensation of approximately \$4.00 per hour for their participation, and HSP participants received partial course credit.

Table 1 *Sex, Age, English as First Language, Social Economic Status*

|              | Sex |     | Mean Age | Age Range | English First Language |    | Mean(SD) SES ladder (scale range: 1-10) |
|--------------|-----|-----|----------|-----------|------------------------|----|-----------------------------------------|
|              | M   | F   |          |           | Yes                    | No |                                         |
| <b>Sona</b>  | 15  | 74  | 20.3     | 18-47     | 78                     | 12 | 6.37 (1.6)                              |
| <b>MTurk</b> | 67  | 64  | 35.2     | 19-69     | 119                    | 12 | 5.02 (1.7)                              |
| <b>Total</b> | 82  | 138 | 27.75    | 18-69     | 197                    | 24 | 5.7 (1.65)                              |

Table 2 *Ethnicity (may select more than one)*

|              | Black | Asian | Hispanic | Native American | White | Other | Non-White % |
|--------------|-------|-------|----------|-----------------|-------|-------|-------------|
| <b>Sona</b>  | 3.3%  | 19%   | 8%       | 2.2%            | 69%   | 4.4%  | 36.9%       |
| <b>MTurk</b> | 5.3%  | 15%   | 2%       | 1%              | 80%   | 0%    | 23.3%       |
| <b>Total</b> | 8.6%  | 34%   | 10%      | 3.2%            | 149%  | 4.4%  | 60.2%       |

Table 3 *Twitter and Other Social Media Use*

|              | Twitter Usage |            |                       | Other Social Media Usage |        |           |
|--------------|---------------|------------|-----------------------|--------------------------|--------|-----------|
|              | Mode          | Median     | Mean                  | Mode                     | Median | Mean      |
| <b>Sona</b>  | Never         | Never      | > 1x/Month - 1x/Month | Daily                    | Daily  | Daily     |
| <b>MTurk</b> | Never         | 2-3x/Month | 2-3x/Month            | Daily                    | Daily  | 2-3x/week |

## Materials

In terms of this study, “target user” refers to the Twitter users whose profiles were part of the data used for stimuli. A Twitter “profile,” which comprised pictures, a username, a short statement, recent activity, and frequency of activity, refers to the stimuli presented to independent observers (participants). The target user data was pulled from an existing data set gathered by the Department of Computer Science at the University of Oregon. Target user data was randomly selected from the original pool

and was required to meet particular parameters to be included in this study. Those parameters included having at least 20 tweets, at least 25 followers, at least 25 friends, English as the set language, and located in a North American time zone. Target user data was manually screened for organizations or group pages that consisted of more than one entity. This screening helped to ensure that the target users were real individuals and to block those who may have diluted social networks (such as celebrities and others who may have an unusually high number of followers).

The personality measure used in this study was the Big Five Inventory-10 (BFI-10; Rammstedt & John, 2007). The BFI-10 is a well-validated measure of the human personality factors of extraversion, agreeableness, conscientiousness, neuroticism, and openness. The principal advantage of using this measure is that it offers reliable measurements in much less time than other Big Five Inventory models. Questions in the survey that were part of the BFI-10 asked participants to indicate the degree to which they agreed with posed questions and, in that way, to rate the target user. These questions were answered on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Participants were asked additional questions regarding the targets perceived likability, intelligence, humor, arrogance, attractiveness, materialism, age, social economic status, gender, and race. Participant demographic information was also recorded.

## **Procedure**

Participants were recruited to the study via MTurk or the University of Oregon Human Subjects Pool. After agreeing to participate, participants received instructions and a brief overview describing the study and what it would entail. When they began the study, participants were shown a target user's Twitter profile information (see Figure 1). After participants were shown one of the stimuli, they were asked to assess the type of person they

perceived the particular Twitter user to be. This consisted of the BFI-10 and additional questions regarding personal qualities. Participants went through this process four more times (all with random sets of profiles). After participants finished assessing five stimuli, they filled out the demographic portion of the study, were thanked for their participation, and were accredited their monetary or academic credit compensation.

Figure 1 Twitter Profile Stimulus



## **Analytic Strategy**

Analysis of the data used SPSS Mixed in a random effects ANOVA in which the variance components for observers (participants) and target users were estimated separately. All models were tested using restricted maximum likelihood estimations. This multilevel model with random effects for profile and observer allowed us to obtain estimates of variance attributable to profiles and observers. Following Shrout and Fleiss (1979) and Shrout (1993), those variance components were then used to calculate intraclass correlations (ICC), which were used as the measure of consensus. The ICCs can range from zero to one, with zero indicating no agreement and one indicating perfect agreement.

## **Results**

The primary focus of this study was to examine the degree to which third party observers could gain a sense of Twitter users' personality characteristics. The personality characteristics included the BFI-10 measure and additional questions that served to tease apart nuances of personality the BFI-10 did not quite capture. Since it was important for observers never to have seen or reportedly know the target users who were part of this study, cases in which observers indicated knowing a particular target user were excluded from the analysis ( $n = 17$ )<sup>1</sup>. The ICCs were calculated for two distinct categories: target consensus and observer effect. Target consensus refers to how much of the variability in the ratings was due to the target user profile itself (i.e., the extent to which observers agreed with each other about a particular target); observer effect refers to how much the variability of the ratings was due to the observer rating the

<sup>1</sup> These 17 instances represent single observations of one participant rating one target. Because all participants indicated that they knew no more than one of the targets that they rated (and each participant rated each target), removing these observations does not change the number of participants.

profile (i.e., the extent to which particular observers made idiosyncratic ratings of a target). With the exception of openness, target consensus was greater than the observer effect for all of the Big Five factors. The average degree of consensus across all Big Five factors was .22, whereas the average observer effect was .13. (Refer to Table 5 for the means of each factor.) These means were computed by transforming correlations using Fisher's *r*-to-*z* procedure before averaging the ICCs. (For the complete set of variance estimates and ICCs for all measured personality characteristics, refer to Table 4.)

## **Discussion**

This study examined the degree to which independent observers could agree on personality judgments of Twitter users. Supporting previous research, results of this study indicate that independent observers can indeed form consistent judgments of social media users with a limited amount of information. Results of this study also provide additional findings regarding personality characteristics that have not been included in past research. Across the board, the amount of variance attributable to the targets was higher than that attributable to the observers, indicating that variance in the judgments was largely due to information provided by the profiles rather than independent observer biases. In line with past research, certain characteristics of the Big Five Inventory showed higher rates of target consensus than others. More specifically, conscientiousness showed the highest rate of target consensus followed by agreeableness and extraversion. Neuroticism showed a relatively low rate of target consensus but was still higher than observer effect, a result that is in agreement with past literature. The most distinct difference between results from past research and this study was that openness had a large observer effect and low target consensus. It is unclear why this discrepancy occurred, but its occurrence may provide an avenue for future research to investigate.

Table 4 *Variance Estimates and Consensus*

| Big Five Factor   | Characteristics        | Variance Estimates |        |          |       | ICC              |                 |
|-------------------|------------------------|--------------------|--------|----------|-------|------------------|-----------------|
|                   |                        | Perceiver          | Target | Residual | Total | Target Consensus | Observer Effect |
| Extraversion      | Reserved               | 0.10               | 0.17   | 0.75     | 1.02  | 0.17             | 0.10            |
| Extraversion      | Outgoing               | 0.08               | 0.16   | 0.56     | 0.80  | 0.19             | 0.11            |
| Agreeableness     | Trusting               | 0.07               | 0.17   | 0.53     | 0.77  | 0.22             | 0.08            |
| Agreeableness     | Cold                   | 0.17               | 0.18   | 0.75     | 1.10  | 0.16             | 0.15            |
| Conscientiousness | Thorough               | 0.10               | 0.26   | 0.55     | 0.91  | 0.28             | 0.11            |
| Conscientiousness | Lazy                   | 0.10               | 0.21   | 0.61     | 0.92  | 0.23             | 0.11            |
| Openness          | Imagination            | 0.17               | 0.13   | 0.60     | 0.90  | 0.15             | 0.19            |
| Openness          | Few artistic interests | 0.23               | 0.10   | 0.80     | 1.14  | 0.09             | 0.21            |
| Neuroticism       | Nervous                | 0.08               | 0.08   | 0.64     | 0.79  | 0.10             | 0.10            |
| Neuroticism       | Relaxed                | 0.08               | 0.13   | 0.57     | 0.78  | 0.16             | 0.11            |
|                   | Age                    | 5.18               | 44.63  | 18.11    | 67.92 | 0.66             | 0.08            |
|                   | Arrogant               | 0.11               | 0.33   | 0.83     | 1.28  | 0.26             | 0.09            |
|                   | Impulsive              | 0.12               | 0.21   | 0.64     | 0.98  | 0.22             | 0.13            |
|                   | Funny                  | 0.14               | 0.10   | 0.64     | 0.88  | 0.11             | 0.16            |
|                   | Center of attention    | 0.12               | 0.26   | 0.76     | 1.14  | 0.23             | 0.10            |
|                   | Intelligent            | 0.13               | 0.25   | 0.52     | 0.89  | 0.28             | 0.14            |
|                   | Assertive              | 0.07               | 0.07   | 0.74     | 0.88  | 0.08             | 0.08            |
|                   | Liking                 | 0.12               | 0.17   | 0.50     | 0.79  | 0.22             | 0.15            |
|                   | Attractive             | 0.15               | 0.18   | 0.48     | 0.81  | 0.22             | 0.18            |
|                   | Self-Esteem            | 0.07               | 0.13   | 0.73     | 0.93  | 0.14             | 0.07            |
|                   | SES                    | 0.72               | 0.80   | 1.41     | 2.93  | 0.27             | 0.25            |
|                   | Trustworthy            | 0.08               | 0.17   | 0.51     | 0.76  | 0.22             | 0.10            |

*Note:* Variance estimates were obtained using REML estimation. Target consensus indicates the degree of agreement among multiple raters of a single profile. Observer effects indicate the amount of variance in ratings attributable to a given rater.

*Table 5 Big Five Mean ICC*

| <b>Factor</b>     | <b>Mean ICC</b>             |                        |
|-------------------|-----------------------------|------------------------|
|                   | <b>Target<br/>Consensus</b> | <b>Observer Effect</b> |
| Extraversion      | 0.18                        | 0.10                   |
| Agreeableness     | 0.20                        | 0.12                   |
| Conscientiousness | 0.26                        | 0.11                   |
| Openness          | 0.12                        | 0.20                   |
| Neuroticism       | 0.13                        | 0.10                   |
| Total             | 0.22                        | 0.13                   |

*Note:* Means computed by transforming correlations using Fisher's r-to-z procedure before averaging the ICCs.

The exploratory nature of this study sought to see if past literature regarding social media websites and thin slicing would also generalize to Twitter. Future research may be able to tease apart the different aspects an observer sees and uses to make judgments. In addition to the Big Five personality factors, other, more nuanced, characteristics were also examined in this study. The highest rates of target consensus were seen in perceived age of target user, intelligence, social economic status, and arrogance. Age was significantly higher than all the other characteristics but not surprisingly so as a majority of the profiles shown to observers included profile pictures. The other three characteristics that showed high target consensus, however, are quite interesting. The notion that independent observers similarly judge a Twitter user's intelligence, social economic status, and arrogance may be unsettling to some people. These results show that complete strangers can make inferences about aspects that not only define a person's personality but also reveal how people identify with themselves and others. The lowest rates of target consensus were seen in perceived assertiveness, sense of humor, and target user self-

esteem. This indicates that the target user profiles did not convey enough information for independent observers to come to a consensus on these characteristics.

The results of this study show that thin slicing research (the ability of an observer to make reliable judgments from small pieces of information) is generalizable to Twitter. Just as previous studies of other social media have found, Twitter provides enough information for an independent observer to gain a sense of what a particular user is like. The observer does not need to meet the Twitter user in person or even witness that person's body language. These findings imply that a Twitter user profile alone conveys a distinct impression to potential employers, business contacts, new friends and even potential romantic partners. In addition to previous research, this study also extends the literature by introducing personal qualities, other than the Big Five, for which independent observers can form coherent impressions. The next step in this research will be to tease apart aspects of Twitter that convey useful information to observers. This could be done by looking at Twitter users' social networks (friends and followers) to explore whether the people surrounding the users are genuinely indicative of who the users are and what they are like.

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