A Picture is Worth a Thousand Posts: An Exploratory Examination of Personality Traits and Profile Picture Content

Alyss M. Hudson & Jonathan S. Gore

Abstract

Despite significant interest in the Big Five personality traits and their association with Facebook, research on the Big Five personality traits and profile picture content, and gender differences in those associations, has been overlooked. We hypothesized that personality traits will be associated with the content of the individual's profile pictures, and that this association will differ between men

Alyss Hudson is a PATH Certified Therapeutic Riding Instructor for Central Kentucky Riding for Hope. Dr. Jonathan Gore, professor of psychology, is Director of the Office of Undergraduate Research at Eastern Kentucky University. Correspondence can be directed to jonathan.gore@eku.edu.

and women. Participants (n = 158) were first asked to log into their Facebook account, access their profile pictures, and categorize the content of their profile pictures. Participants then completed an online personality survey at a later date. The results showed that having a high proportion of profile pictures of oneself with a close other was associated with high levels of extraversion and agreeableness. Gender differences also existed in the association of agreeableness and openness with high proportions of pictures of oneself only as well as high proportions of pictures of close others only.

I f Facebook were its own country, its population would rival the single most populous country on Earth, with a total of 1.28 billion active users (Facebook Inc., 2017). That's roughly equal to China's population. Cell phones, along with the widespread use of social networking sites, have increased the frequency for which people communicate through photographs (Hunt & Langstedt, 2014). Facebook involves social connections, education information, regular updates, both personal and playful, and posting pictures for other Facebook users to view (Nosko, Wood, & Molema, 2010). The number of images being shared on a regular basis has led to a constant cycle of image viewing making it one of the most popular texts that people read today (Hunt & Langstedt, 2014).

Some pictures can be used as a "profile picture," which could be considered an implied declaration of who the person is. Profile pictures are often the first item viewed on an individual's profile page, and it is reasonable to assume

that a lot of time and thought is put into selecting this particular picture for other users to see (Hum et al., 2011). When people choose a profile picture, it is assumed that it is an announcement of who they are, whether that is a picture of themselves, of other people, or even of a physical object such as a guitar. Facebook profile pictures can therefore be considered a "photo-biography," which is a method for measuring the self-concept. Hormuth (1990) describes the self-concept as a way to define oneself, and it is based on who people surround themselves with, the places where they live, and where they call "home." All of these contribute to the understanding of self. Profile pictures often times will include elements from the social and physical environment. It is still unclear what profile pictures tell us about the person. The purpose of this study is to examine how profile picture content relates to personality traits.

Personality and Gender Differences in Facebook Use

There are many factors that influence people's choices of their Facebook profile picture content; one of these factors is their personality. Researchers have identified numerous personality traits and individual difference variables, but the most prevalent theory is the Five Factor Model of personality (Muscanell & Guadagno, 2012). The five personality factors, which are often referred to as the Big Five, are extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience.

McCrae and Costa (1999) describe major categories of personality traits in the Five Factor Model. Extraversion represents an individual's level of sociability and outgoingness (Muscanell & Guadagno, 2012). Agreeableness re-

flects the extent to which an individual engages in and endorses interpersonal cooperation (Muscanell & Guadagno, 2012). Individuals who score high in agreeableness forgive easily, believe in cooperation, but sometimes have a reputation of being known as a pushover. Individuals who score high in conscientious are those who have a strong sense of purpose and high aspiration levels. These individuals have leadership skills and long-term goals, and they are highly organized. Neurotic individuals often show sadness, hopelessness, and guilt. These individuals often have low self esteem, irrational perfectionistic beliefs, and pessimistic attitudes. Those who score high in openness to experience are often characterized by a need for variety, novelty, and change. These individuals are interested in traveling and having many different hobbies.

Since the inception of social media, there have been many studies that show how each personality trait associates with its use. For example, people who score high in openness use Facebook as one of many ways to connect with others (Carpenter, Green, & LaFlam, 2011). Those open to experiences use Facebook to enhance one's social activities and relationships because these individuals are curious to learn what others enjoy. Conscientiousness correlates with the organization of an individual's Facebook wall page in terms of announcing events, socializing, expressing emotions, and reporting academic content (Ivcevic & Ambady, 2012). Extraverted individuals tend to present themselves in a less restrained manner on social networking sites (e.g. choosing to present photos with more experimental colors and lots of background) compared to introverts (Kramer & Winter, 2008; Muscanell & Guadagno, 2012). Agreeable individuals were more likely

to use Facebook to seek acceptance and maintain connections, whereas neurotic individuals disclosed more information about themselves, and used Facebook to present hidden and ideal self-aspects (Seidman, 2013). Thus, personality accounts for some of the reasons why people use Facebook in different ways.

Gender differences may also account for variations in Facebook use. For example, women are motivated by self-presentation and they are more concerned with how people perceive them, whereas men use social networking for collecting information on current friends and establishing social networks for their career (Haferkamp, Eimler, Papadakis, & Kruck, 2012). Men are also more willing to initiate friendships with female users rather than with male users (Wang, Moon, Kwon, Evans, & Stefanone, 2010). Women spend more time on picture presentation, whereas men tend to check the number of friends that their friends have (McAndrew & Jeong, 2012). To date, only one study examined the interaction of personality traits and gender. Muscanell and Guadagno (2012) found that women low in agreeableness reported using instant messaging features of social networking sites more often than women high in agreeableness, whereas men low in openness reported playing more games on social networking sites compared to men high in openness.

In summary, there are many studies that show how each of the Big Five personality traits are related to how Facebook is used. However, there is little research examining how Facebook profile picture content relates to the individual's personality. Many studies have looked into how personality traits correlate with social media use, but most of these studies only focus on either personality differences

in online social networking use or gender differences in self-presentation and motivation. Only a few have examined gender differences in the association between personality and how Facebook is used. Kramer and Winter (2008) examined the relationship between social networking sites and extraversion. The researchers found that users with high extraversion scores choose photos in a different style that's less constrained compared to choosing photos with serious facial expressions without backgrounds. Even though the relationship between social networking sites and extraversion has been examined, there are several other personality traits that were overlooked: agreeableness, conscientiousness, neuroticism, and openness to experience.

The Current Study

Social media sites are used for reconnecting with old friends and distant family members, but they are also used to develop new relationships, ranging from personal to professional. In these instances, it is important to identify parts of the profile that are indicative of personality traits, so that the perceiver can either pursue the relationship further or avoid it. This makes it essential for more studies to be conducted on individual differences in profile picture content. Despite the examination of the relationship between the personality, social networking sites, and gender differences, there is little examination of the association between all five personality factors, profile picture content, and gender differences. Given this information, the current study examines how profile picture content relates to personality, and whether personality relates to profile picture content differently for men and women. By

including the Big Five personality traits, it will give a clearer understanding of which personality traits will be associated with an individual's profile picture for both men and women. This leads to the hypothesis that personality traits will be associated with the content of the individual's profile pictures, and that this association will differ between men and women.

Method
Participants and Procedure

The participants in this study were 324 undergraduate students (79 males, 245 females). To create equal groups, we obtained a random sample of 79 females from the larger sample. This resulted in a final sample of 158 (50% male, 50% female). The majority were Caucasian (88%). The age ranged from 18 through 46 with an average age of 20.88 years old. The majority of participants spent at least one hour a day on Facebook, with the number of hours ranging from 0 to 15 (M = 2.85, SD = 2.58). As an incentive, participants were awarded outside activity course credits.

On the day the study was conducted, each participant had a unique identification number. The participants were informed that this study had two parts. The researchers mentioned that only people who could attend both sessions should participate. After IRB approval was received for the project, participants were given an informed consent statement to read and sign. Afterward, participants were asked to log into their Facebook account and access their profile pictures. The participants were asked to complete the Profile Picture Coding Sheet based on each picture regarding content. After completion of the

coding sheet, the participants were given a debriefing form for Part One and given a verbal description for the online survey for Part Two. The participants logged into the online data collection system to complete an online personality survey. At the end of the online survey, the participants received a debriefing statement.

Materials

Profile Picture Content. Participants were asked to complete a profile picture coding sheet to indicate the primary content for each of their profile pictures. The participants were given a sheet with 20 picture code options to indicate the content of their photos. The number of photos coded varied between each participant. For this study, we focused on the three most common types: "me alone," "me with close other(s)", and "someone or some people I'm close to." For each participant, a total number of picture options for the indicated content was counted. The number of pictures counted within a domain were then divided by the total number of profile pictures, so that each score represented the proportion of each domain for all their profile pictures. This resulted in three separate scores: Self Only (M = 0.40, SD = 0.25), Self with Close Others (M = 0.41, SD = 0.28), Close Others Only (M = 0.08, SD = 0.13).

Big Five Traits. Participants were asked to complete an online 44-item version of the Big Five Personality measure (John, Donahue, & Kentle, 1991). Participants rated short phrases based on how the participants described themselves on a 5-point Likert scale (1 = disagree strongly, 5 = agree strongly). The five personality traits obtained in this questionnaire indicated participants' levels of Extraversion (M = 3.29, SD = 0.73, α = .85), Agree-

ableness (M = 3.71, SD = 0.60, α = .82), Conscientiousness (M = 3.62, SD = 0.53, α = .73), Neuroticism (M = 3.01, SD = 0.73, α = .82), and Openness (M = 3.41, SD = 0.53, α = .76).

Results
Confirmatory Factor Analysis for the Big Five Inventory

We examined the loading of the Big Five Inventory items onto their hypothesized factor through confirmatory factor analysis using LISREL 8.72. The fit of the model was assessed using the chi-square statistic and the following cutoff criteria proposed in the literature: SRMR ≤ 0.10, RMSEA ≤ 0.06, and CFA ≥ 0.90 (Hu & Bentler, 1999; Kline, 2005; Martens, 2005). To test the factor structure, factor loadings were estimated for each item (e.g., "Is talkative") and its corresponding latent factor (e.g., Extraversion). The correlations among the factors were estimated as well. The model fit the data well, χ^2 (855) = 1434.03, p < .01, SRMR = 0.10, RMSEA = 0.06, CFI = 0.91. All of the items significantly loaded onto their hypothesized factors, except for one item on the Conscientiousness subscale and one item on the Openness to Experience subscale (see Table 1).

Gender Differences

An independent samples t-test was conducted to examine gender differences in regards to personality trait and their profile picture content. Sex was entered as the independent variable and personality traits and profile picture content were entered as the dependent variables. Our results showed that women had higher neuroticism than men (Mmen = 2.86, SD = 0.70, Mwomen = 3.14, SD = 0.74,

Table 1

Items Loadings from the Confirmatory Factor Analysis

Item	Factor	Standardized Factor Loadings
Is talkative	Extraversion	.74**
Is reserved (reversed)	Extraversion	.55**
Is full of energy	Extraversion	.54**
Generates a lot of enthusiasm	Extraversion	.68**
Tends to be quiet (reversed)	Extraversion	.69**
Has an assertive personality	Extraversion	.48**
Is sometimes shy, inhibited (reversed)	Extraversion	.52**
Is outgoing, sociable	Extraversion	.88**
Tends to find fault with others (reversed)	Agreeableness	.35**
Is helpful and unselfish with others	Agreeableness	.45**
Starts quarrels with others (reversed)	Agreeableness	.45**
Has a forgiving nature	Agreeableness	.48**
Is generally trusting	Agreeableness	.56**
Can be cold and aloof (reversed)	Agreeableness	.55**
Is considerate and kind to almost everyone	Agreeableness	.65**
Is sometimes rude to others (reversed)	Agreeableness	.61**
Likes to cooperate with others	Agreeableness	.54**
Does a thorough job	Conscientiousness	.56**
Can be somewhat careless (reversed)	Conscientiousness	.25*
Is a reliable worker	Conscientiousness	.55**
Tends to be disorganized (reversed)	Conscientiousness	.29**
Tends to be lazy (reversed)	Conscientiousness	.35**
Perseveres until the task is finished	Conscientiousness	.53**
Does things efficiently	Conscientiousness	.47**
Makes plans and follows through with them	Conscientiousness	.41**
Is easily distracted (reversed)	Conscientiousness	.09

Note. *p* < .05, **p* < .01.

Table 1 Continued

Items Loadings from the Confirmatory Factor Analysis

Item	Factor	Std Factor Load
Is depressed, blue	Neuroticism	.51**
Is relaxed, handles stress well (reversed)	Neuroticism	.83**
Can be tense	Neuroticism	.51**
Worries a lot	Neuroticism	.71**
Is emotionally stable, not easily upset (reversed)	Neuroticism	.79**
Can be moody	Neuroticism	.56**
Remains calm in tense situations (reversed)	Neuroticism	.58**
Gets nervous easily	Neuroticism	.62**
Is original, comes up with new ideas	Openness	.51**
Is curious about many different things	Openness	.39**
Is ingenious, a deep thinker	Openness	.52**
Has an active imagination	Openness	.54**
Is inventive	Openness	.52**
Values artistic, aesthetic experiences	Openness	.44**
Prefers work that is routine (reversed)	Openness	.02
Likes to reflect, play with ideas	Openness	.44**
Has a few artistic interests (reversed)	Openness	.23*
Is sophisticated in art, music, litera-ture	Openness	.34**

Note. *$p < .05$, **$p < .01$.

$t(156) = 2.52$, $p < .05$; $d = 0.40$), and women had more picture of themselves with close others than men (Mmen = 0.36, SD = 0.28, Mwomen = 0.46, SD = 0.25, $t(153) = 2.22$, $p < .05$; $d = 0.36$).

Associations among Personality Traits and Profile Picture Content

To test the hypothesis that personality traits are associated with the content of the individual's profile picture, a bivariate correlation analysis was conducted between each of the Big Five personality traits and each profile pictures category (e.g. Self Only, Self with Close Others, Close Others Only). The results showed that Self with Close Others was positively associated with Extraversion ($r = .22$, p <.01) and Agreeableness ($r = .17$, p <.05), and there was a marginally significant negative association with Openness ($r = -.11$, p = .08). Close Others Only was negatively associated with Neuroticism ($r = -.16$, p < .05). There were no significant associations between Self Only and personality traits. In general, the results suggest that the number of pictures an individual had with other people was the most consistently associated with personality traits.

To test the hypothesis that there are differences between men and women in the correlation between personality traits and profile picture content, a second series of correlations was conducted for men and women separately (see Table 2). For both men and women, a Self with Close Others was positively associated with Extraversion and Agreeableness. For men, Self Only was positively associated with Openness and Close Others Only was negatively associated with Openness. For women, Self Only was negatively associated with Agreeableness, whereas Close Others Only was positively associated with Agreeableness and negatively associated with Neuroticism.

Table 2

Gender Differences in the Relationship between Personality and Profile Picture Content

Personality Traits	Proportion of Profile Picture Content					
	Self Only		Self With Close Other		Close Other Only	
	M	F	M	F	M	F
Extraversion	-.10	.07	.28**	.18*	-.04	.03
Agreeableness	.04	-.20*	.18*	.23*	-.05	.18*
Conscientiousness	-.07	-.12	.05	.12	.07	.07
Neuroticism	.05	-.01	-.13	.08	.02	-.29**
Openness	.21*	-.06	-.11	-.11	-.20*	-.05

$**p < .01$, $*p < .05$

Discussion

The inclusion of others in one's profile pictures signifies that the owner of the account has a sociable personality (i.e., high extraversion and high agreeableness). There were also gender differences in how profile picture content related to personality traits. For male account owners, whether they have a high number of profile pictures of just themselves or just other people may allow others to decipher his willingness to experience new things. For female account owners, whether they have a high number of pictures of just themselves or just other people may allow others to decipher her interpersonal warmth and friendliness.

Implications

As mentioned earlier, social media sites are used both to maintain old relationships and to develop new ones. It is therefore important to identify which elements in the owner's profile are indicative of relevant personality traits. As one of the first pieces people examine in a new relationship through social media, we have found that profile pictures are one of those elements that provide information about the owner's sociability. This study confirms that the Big Five personality traits are associated with profile picture content and there are differences between men and women. Previous research has shown that correlations exist between the Big Five personality traits and the use of Facebook (Carpenter et al., 2011; Muscanell & Guadagno, 2012; Seidman, 2013), but only certain elements of Facebook have been examined. The current study built upon previous research by examining gender differences in regards to profile picture content and personality. By adding these into the study, we are able to provide a clearer picture into how profile picture content is related to individual differences in personality and gender.

Profile pictures involving others indicate the individual's tendency to connect with others and maintain positive relationships. Women tended to have more pictures of themselves with close others than men did, which provides further evidence for the primacy of close relationships for women (Cross & Madson, 1997). Agreeableness involves socially desirable qualities, so individuals are motivated to look good in the eyes of others (Graziano & Tobin, 2002). As Facebook profile pictures serve as a photo-biography to be seen by others, the profile pictures may serve as indicators of a social desirability motive (or lack thereof). Be-

cause having several pictures with close others is a good sign, perceivers may safely assume that pursuing a relationship with a Facebook account owner with these kinds of pictures would be worthwhile. This allows women and highly agreeable people to form and maintain close relationships. Conscientiousness had no relationship with profile picture content. Perhaps this is because people high and low in conscientiousness use similar content in their pictures, or may use content that we did not assess.

Limitations and Future Directions

Our methodology had some limitations. College students, because of the possible awareness of the importance of Facebook content to employers, may be creating an online identity that is both professional and appropriate for entering the job market (Hum et al., 2011). As a result, some of the profile picture content may have been "fixed" in preparation for going into the job market. Future research should attempt to capture profile picture content prior to the owner selecting only the most professional pictures, or gathering a wider range of ages. The sample was also predominantly Caucasian. Future research could benefit from a more diverse sample.

Another limitation is that we do not know how central to people's self-concept the profile pictures actually are. The degree to which each picture is self-descriptive was never rated, and that could make a big difference in knowing which ones count more than others. Future research should assess that in order to ascertain the centrality of those pictures in describing the self-concept to others. There are also limitations in using self-report measures of personality, particularly in terms of desirable traits such

as sociability. Future research should employ ratings from multiple sources to assure the accuracy of the personality trait ratings.

It was also unclear whether any of the pictures were "go to" profile picture that the account owners go back to every so often, nor did we assess the new trend of temporary profile pictures that associate with world events or significant days (e.g. attacks on France or Sisters' Day). Future research should assess which pictures were temporarily used as opposed to those that are used as the default pictures. Associations among personality traits and the default pictures would likely be stronger than the associations with the temporary pictures.

We also did not examine how accurate a perceiver is able to judge the owner's personality traits. Future research could make an effort to investigate whether or not an outsider could accurately judge someone's profile picture content and whether or not the judgment matched the individual's personality in regards to the Big Five personality traits. Researchers could pick a man and woman who are relatively the same age and same attractiveness, with a variety of profile pictures, and see what people have to say about their profile picture content in regards to their personality.

Conclusion

The current study examined how the Big Five personality traits relate to profile picture content and whether there was a difference between men and women. The results of this study showed that Big Five personality traits are associated with profile picture content and that those associations differed between men and women. Using the

information from this study, employers may be able to better predict the personality of the individual. Those who have many pictures with other people is a good sign that the person is sociable and friendly. Rather than searching through posts and information pages, people may consider that when a person has several pictures of themselves with close others in their profile picture folder, this is valuable social information and worth a thousand posts.

References

Carpenter, J. M., Green, M. C., & LaFlam, J. (2011). People or Profiles: Individual differences in online social networking use. *Personality and Individual Differences, 50,* 538-541.

Cross, S. E., & Madson, L. (1997). Models of the self: Self-construals and gender. *Psychological Bulletin, 122*, 5-37.

Facebook Inc. (2017). Facebook Reports First Quarter 2017 Results. Retrieved from https://investor.fb.com/investor-news/press-release-details/2017/Facebook-Reports-First-Quarter-2017-Results/default.aspx

Graziano, W.G. & Tobin, R. M. (2002). Agreeableness: Dimension of personality or social desirability artifact? *Journal of Personality, 70*, 695-728.

Haferkamp, N., Eimler, S. C., Papadakis, A., Kruck, J. V. (2012). Men are from Mars, Women are from Venus? Examining gender differences in self presentation on social networking sites. *Cyberpsychology, Behavior, and Social Networking, 15*, 91-98.

Hormuth, S. E. (1990). *The ecology of the self: Relocation and self-concept change*. European monographs in social psychology.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria

versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

Hum, N. J., Chamberlin, P. E., Hambright, B. L., Portwood, A. C., Schat, A. C., & Bevan, J. L. (2011). A picture is worth a thousand words. *Computers in Human Behavior, 27*, 1828-1833.

Hunt, D. S., & Langstedt, E. (2014). The influence of personality and digital photo sharing. *The Journal of Social Media in Society, 3*, 42-64.

Ivcevic, Z. & Ambady, N. (2012). Personality impressions from identity claims on Facebook. *Psychology of Popular Media Culture*, *1*, 38-45.

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *The Big Five Inventory--Versions 4a and 54*. Berkeley, CA: University of California,Berkeley, Institute of Personality and Social Research

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press.

Kramer, N. C. & Winter, S. (2008). Impression management 2.0. *Journal of Media Psychology: Theories, Methods, and Applications, 20*, 106-116.

Martens, M. P. (2005). The use of structural equation modeling in counseling psychology research. *The Counseling Psychologist, 33*, 269-298.

McAndrew, F. T. & Jeong, H. S. (2012). Who does what on Facebook? Age, sex, and relationship status as predictors of Facebook use. *Computers in Human Behaviors, 28*, 2359-2365.

McCrae, R. R., & Costa, P. T., Jr. (1999). The Five Factor Theory of Personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research, 2nd edition*. New York: Guilford.

Muscanell, N. L. & Guadagno, R.E. (2012). Make new friends or keep the old: Gender and personality differences in social networking use. *Computers in Human Behavior, 28*, 107-112.

Nosko, A., Wood, E., & Molema, S. (2010). All about me: Disclosure in online social networking profile: The case of Facebook. *Computers in Human Behavior, 26*, 406-418.

Seidman, G. (2013). Self presentation and belonging on Facebook: How personality influences social media use and motivations. *Personality and Individual Differences, 54*, 402-407.

Wang, S. S., Moon, S., Kwon, K. H., Evans, C.A., & Stefanone, M. A. (2010). Faceoff: Implications of visual cues on initiating friendship on Facebook. *Computer in Human Behavior, 26*, 226-234.