

The Influence of Personality on Digital Photo Sharing

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Abstract

This study examined photographic communication within the uses and gratifications framework. Several personality factors were tested as predictors of motives for communicating via photographs. Memory, relationship maintenance, self-expression and relationship formation motives positively predicted photographic communication. Extraversion positively predicted most photo messaging use motives, while Neuroticism was a negative predictor of photo messaging use. The remaining three personality predictors, Agreeableness, Openness to Experience, and Conscientiousness also provided significant findings.

Mobile phone adoption and the widespread use of social networking sites have increased the frequency for which people communicate through photographs. The number of images being shared on a regular basis has led to a constant cycle of image creation and image viewing. Visual images have become one of the most popular texts that people read today. Young people post and share photos to form their online identities, the quality and quantity of these images provide them with social currency. While the body of literature on sending photographs through mobile devices and sharing photographs online is growing, the scholarly community requires

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a better understanding of how personality factors influence sending and sharing photographs through social networking sites.

The majority of online users now take advantage of photo and video technologies, with rapid adoption by young adults and women (Duggan, 2013). Furthermore, the number of teenagers who take pictures with their cell phone camera (83%) is similar to the number of teenagers who engage in text messaging (Lenhart, Ling, Campbell, & Purcell, 2010). Van House and Davis (2005) identified the main reasons people engage in photographic messaging as memory capture, self-expression, and to communicate. More hard-disk space on computers and greater transfer speeds have brought about the rise of photo-based social media sites. Social media platforms such as Facebook and Twitter are built to accommodate images, while their features primarily cater to text-based communication. More recent entrants into the social media market have successfully prioritized the role of images in communication, with Pinterest, Instagram and Snapchat offering comparatively few text-based features while emphasizing images. A recent Pew Research Center poll found 54% of Internet users post photos, while among cell phone users, 18% used Instagram while 9% used Snapchat (Duggan, 2013). The Pew data indicates a rise in visual communication among frequent users of social networking sites.

The pervasive adoption of these visual communication practices requires a more in-depth examination of how individual personality traits influence photographic messaging, in the forms of sending and social sharing. The study of how personality traits influence media behaviors is well documented in the communication literature. Krcmar and Kean (2005) outlined three broad categories of such research: studies that relate personality characteristic to media type, studies relating personality characteristics to media content, and studies relating personality characteristics to motives for media use. Relevant to the current study is the body of research examining the relationship between personality factors and motives for media use. This study will focus on one particular type of media use, photographic communication.

Photographic sharing is a form of visual communication that can involve sending images on a mobile device, posting photographs online, or even capturing images for intrapersonal communication or co-viewing. Improvements in camera-phone technology have

made photographic communication more prevalent. More importantly, social networking sites provide an easily accessible platform to share and develop relationships through images. The purpose of this research study is to gain a better understanding of the influence of personality factors on photographic communication. More specifically, we will explore how personality types may influence the frequency for which users capture, send, and share photographic messages.

Motives for Photographic Communication

Communication via technology requires active selection, intention, and involves interactivity (Ruggiero, 2000). For this reason, communication scholars have widely accepted the applicability of the uses and gratifications perspective to Internet-based communication (Caplan, Perse, & Gennaria, 2007) and more specifically to study social media (i.e., Hunt, Atkin, & Krishnan, 2012). The three primary objectives of uses and gratifications are to understand the motives for media behavior, to explain how individuals' use media to gratify needs, and to identify consequences of motives, needs, and behavior (Katz, Blumler, & Gurevitch, 1974; Rubin, 2002). Uses and gratifications research has identified that a person's media use fulfills both mediated and interpersonal needs (Papacharissi, 2008).

Rubin (2002) explained that a major contribution of uses and gratifications research has been identifying motives for media use. Prior research has demonstrated several motives for media use. Recently, new media research has identified expressive information sharing, passing time/habitual, entertainment, companionship, professional advancement, social interaction, new friendships, and cool and new trends as motives for using Facebook (Papacharissi & Mendelson, 2011). Research has extended the traditional Internet motives of entertainment, passing time, information seeking and relationship maintenance to social networking sites (Langstedt, 2013; Hunt et al., 2012). Hunt et al. also included a self-expression motive because of social media's various opportunities to post imagery as well as other creative forms of expression.

Most importantly, Van House and Davis (2005) found several motives for sending and sharing photo messages. The authors found several uses for camera phones: creating and maintaining social relationships, personal and group memory, self-expression, self-

presentation, and functional. Van House (2007) extended research on the intentions and social uses of camera phones to online photo sharing. Photo communication research has confirmed the influence of relationship maintenance, relationship formation, self-expression, self-presentation motives on frequency of sending and sharing (Hunt, Lin, & Atkin, 2014a; Hunt, Lin, & Atkin, 2014b). Oeldorf-Hirsch and Sundar (2010) researched the motivations for photo sharing and found social motives to be of greater influence than personal motives.

Prior research has assessed photo messaging and photo sharing frequency by integrating the Technology Acceptance Model (TAM) with motives for media use (e.g., Hunt et al., 2014a). The research study indicated that both perceived usefulness and relationship maintenance influence one's intentions to send and share photographs. The TAM focuses on the influence of two technological attributes, perceived usefulness and perceived use, on intentions and actual use of technology (Davis, 1989). The TAM is designed to be parsimonious and can easily be assessed in conjunction with other external variables (Park, 2010). Motives, such as relationship maintenance, are important indicators of photo sharing behavior.

Relationship maintenance is an important motive for using social networking sites (Sheldon, 2008). Acts meant to preserve existing relationships are examples of relationship maintenance (Duck, 1999). Relationship maintenance motives have also been linked to sending photographs and online photo sharing (Van House, Davis, Ames, Finn, & Viswanathan, 2005). People use new communication technologies as a method for maintaining relationships. Past studies found that people use email (Stafford, Kline, & Dimmick, 1999), blogs (Stefanone & Jang, 2008), and social networking sites (Sheldon, 2008) to maintain existing relationships. We predict that motives for maintaining relationships will influence how often people capture, send and share photographic messages.

A second use of photographic messages is for relationship formation. While older people use online platforms to connect to existing networks, younger people use online communication to connect with new acquaintances (Valkenburg, Schouten, & Peter, 2005). Initial interactions can be viewed as an exchange of information (Kellerman, 1986). When social actors encounter other people for the first time they engage in the acts of information seeking and information

provision (Kellerman, 1986; Douglas, 1990). Information provision through the sharing of photographs will influence initial interactions by providing cue-rich information to newly formed relationships. A study by Burke, Marlow, and Lento (2009) found that new users to social networking sites are more likely to post photos if members of their network were active posters of photos.

Self-expression via photo sharing can be characterized by posting photographs to represent one's point of view or creativity (Van House & Davis, 2005). Social media platforms and mobile applications provide multiple features for self-expression (Philips, 2008). Photography represents one of the most visual forms of self-expression on social networking sites. Photography allows the user to be artistic or to share an emotional image with their network. We predict that intentions to express oneself will influence how often users capture, send, and share photographs.

Self-presentation differs from self-expression. Self-presentation is characterized by the manner in which one posts photos as a way of representing themselves to be perceived by others (Van House & Davis, 2005). Self-presentation online involves the intentional, and sometimes strategic, construction of a self-image to shape the attitudes of others (Gonzales & Hancock, 2008; Ellison, Heino, & Gibbs, 2006; Schlenker, 2003). People may share images, such as self-portraits or images of one's belongings, as a means of visually representing themselves (Van House & Davis, 2005). Research has identified that through the technical features available on social networking sites, people have various opportunities to present themselves to their audience (DeAndrea, Shaw, & Levine, 2010; Zywicki & Danowski, 2008).

Memory is also an important motive for photographic communication. Photography is a tool for creating personal or shared memories (Van Dijck, 2008). Research has demonstrated that people record their lives through camera phone photography and post these images to share these memories online (Van House & Davis, 2005; Van House, 2007). People engage in photographic communication for individual memory tasks, such as personal and memory aids; as well as mutual memory tasks — which are meant to accomplish a shared goal (Kindberg et al., 2005).

These five motives for photographic communication will be as-

sessed in this study to determine which motives are the most salient for photographic communication. Based upon past work on new media motives the following research question is posed:

R1: Which motive has the strongest influence on how frequently people capture photos on their mobile phones?

Individual differences in photographic communication may be influenced by personality factors. In the next section, authors review the relevant personality factors and the relationships they are expected to have on motives for sending and sharing photos.

Personality Factors

Allport and Odbert (1936) found over 17,000 words descriptors for people listed in a dictionary. Over the subsequent three-quarter century, researchers have attempted to categorize these descriptors based on their similarity to, and relationship with, each other. The models that emerged offered a more parsimonious structuring of personality traits, with prominent models having either five (Costa & McCrae, 1985; Goldberg, 1981) or three (Eysenck, 1990) traits. Over time, perhaps the most widely accepted index of personality traits is the NEO-PI-R Inventory put forth by Costa & McCrae (1992b). The five personality factors in this model are Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientious, and will be used in this study.

Past studies have used the NEO-PI-R Inventory as a tool for examining motives for using new media. Butt and Phillips (2008) examined how personality factors impact mobile phone use. In their study, they found extraverts used mobile phones more for calling others and for stimulation. They also found that individuals high in Neuroticism and Extraversion and low in Conscientiousness and Agreeableness were more likely to use messaging (SMS) than the calling feature on their mobile phones. Zhou and Lu (2011) advocated for considering personality factors in the adoption of mobile devices. Their study results indicate that all five of the personality traits influence trust, while only Agreeableness and Conscientiousness influenced perceived usefulness of mobile commerce adoption.

Research on social networking sites have demonstrated mixed reviews on the impact of personality factors on use. Ross et al. (2009)

predicted that the NEO-PI-R personality factors would influence use of Facebook behavior. The authors found partial support for the Extraversion, Neuroticism, and Conscientiousness traits; but did not find support for the Agreeableness and Openness traits. There has been little research that connects personality traits with the acts of photo messaging and online photo sharing. One exception would be a qualitative study by Mendelson and Papacharissi (2010), which attributed photo posting to the trait narcissism. The authors clarify that narcissism might be considered a desire for social connection rather than selfish interests when posting information online. The current research hopes to shed light on the relationship between personality factors and motives for photo messaging as well as frequency of photo messaging.

Extraversion

Extraversion is composed of several facets, which include positive emotion, excitement seeking, gregariousness, assertiveness and activity. Several of these facets lend themselves to the current study, with gregariousness suggesting that a person enjoys interaction with others. A preference for interpersonal interactions among extroverts was evidenced by prior research (Elliott & Sapp, 1988; Fourqurean, Meisgeiger, & Swank, 1990); these studies found those high in Extraversion to prefer collaboration to observation as a means to obtain information. John and Srivastava (1999) found extraverts to be positive and energetic, while Watson and Clark (1997) found people high in Extraversion to be social and enthusiastic.

When examining the communication patterns of extraverts, previous studies suggest that convenient forms of communication are sought, with people high in Extraversion sending more text messages (Butt & Phillips, 2008) and emails (Wyatt & Phillips, 2005). With photo messaging used with similar ease, previous work suggests that Extraversion may positively relate to the medium's adoption and use.

Neuroticism

Neuroticism examines the emotional stability of an individual, and includes the facets of anxiety, anger/hostility, self-consciousness, vulnerability, depression and impulsiveness (Costa & McCrae, 1992a). Anxiety and self-consciousness suggest that a person will

generally be more nervous and avoid situations that may cause embarrassment. Similarly, Green and Brock (1998) suggested that neurotic people attempt to avoid situations in which they may feel vulnerable. Perhaps the outliers among the facets for Neuroticism are impulsiveness and anger/hostility. While attempting to avoid situations that may create anxiety, people high in Neuroticism are less able to control their desires (Costa & McCrae, 1985), which may put them in a vulnerable position.

Neuroticism has previously been a significant predictor of television use (Weaver, 1991), general Internet use (Amichai-Hamburger et al., 2002), and social media use (Correa, Hinsley, & de Zuniga, 2010). When examining the role of channel and Neuroticism, Swickert, Rosentreter, Hittner, and Mushrush (2002) found a negative relationship between Neuroticism and instant messenger use. Perhaps due to an increased level of control, Gill, Nowson, and Oberlander (2009) found those high in Neuroticism to participate in blogging. For purposes of this study, an examination of Neuroticism's underlying facets suggest people high on this trait may be reluctant to participate in photo messaging. Based on prior literature examining the relationships between personality factors and new media, the following hypotheses are postulated:

H1: Extraversion will positively relate to photo message use for (a) relationship maintenance, (b) self-expression, and (c) self-presentation.

H2: Neuroticism will negatively relate to photo message use for self-presentation.

Openness to Experience

Openness to experience describes an individual's preference for variety. McCrae (1987) identified people scoring high in this trait as having a desire to learn and have new experiences. Facets that are encompassed in this trait include "ideas" which suggest a person is willing to consider novel things, and "fantasy," which suggests the person is his or herself creative and imaginative. LePine, Colquitt and Erez (2000) found people high on the Openness trait to be both more willing and able to try things that are unfamiliar to them. Relevant to photo messaging is the facet of "aesthetics," which measures an individual's appreciation for the arts.

Finn (1997) found people high in Openness to be attracted to novel media. However, whether photo messaging should be considered novel or not is unclear. Examining this issue with regard to social network sites, Ellison, Steinfield, and Lampe (2007) questioned the utility of Openness as a predictor when what were initially novel features become mainstream. With photo messaging capabilities becoming a standard feature on most mobile phones, it is unclear whether Openness will predict use behavior for this communication tool.

Agreeableness

Agreeableness includes the facets of straightforward, trusting, altruistic, compliant, tender-minded and modest (Costa & McCrae, 1992a). More generally, agreeable people show concern for others and do not wish to express disagreement. Widiger, Trull, Clarkin, Sander-son, and Costa (2002) found that people high on this trait pursue the opinions of others, with Costa & McCrae (1990) identifying them as more dependent on others.

Cox (2010) found that agreeable people undertake impression management to a greater extent than other people. This suggests that people high in this trait will be more selective in what images and messages they allow to represent them. The facet of modesty may suggest a reluctance to send messages to avoid standing out. In contrast, the facet of compliance may suggest that a person high in Agreeableness will attempt to participate in activities their normative group undertakes, which may include photo messaging.

Conscientiousness

Conscientiousness examines a person's level of discipline, competence, dutifulness, deliberation, order, and achievement striving. As the facets suggest, Conscientious people are purposeful in their actions (Digman & Inouye, 1986; Costa & McCrae, 1992a), and being orderly and industrious allows them to carry out the intended actions (Peabody & de Raad, 2002; Roberts, Chernyschenko, Stark, & Goldberg, 2005). In contrast, those low in Conscientiousness are prone to procrastination (Johnson & Bloom, 1995).

When considering Conscientiousness' influence on photo messaging, whether a person high in Conscientiousness will use this communication method will likely depend on his or her perceptions

of its usefulness. If photo messaging is perceived as a tool that allows you to quickly convey information to a recipient there is a strong likelihood that it will be adopted. In contrast, if photo messaging is perceived as a tool for procrastination, a person high in Conscientiousness will likely not adopt this communication tool.

Prior research has demonstrated that the most meaningful relationships between personality factors and motives will be influenced by Extraversion and Neuroticism. In contrast, the traits of Openness to Experience, Agreeableness and Conscientiousness have been inconsistent predictors of media use. In an effort to expand the literature in this area, the second research question examines these potential influences:

R2: Which personality factors have the strongest influence on photographic communication?

Methods

Sample and Procedure

The study utilized an online survey hosted by QuestionPro.com. A total of 531 respondents, undergraduate students at a large Northeastern university, participated in the survey in the spring of 2012. The survey asked participants to answer questions pertaining to their personality traits, motives for sending and sharing photographs, and frequency of sending and sharing photographs. Male participants made up 52% of the sample. Regarding ethnicity, participants in this sample primarily reported being Caucasian (78%). The other ethnic categories represented were as follows: Asian (10%), African-American (5%), Hispanic/Latino (6%), American Indian (1%), and other (less than 1%).

Measures

Personality factors were measured using a 50-item variation of the NEO PI-R (Costa & McCrae, 1992). Each personality factor was measured with ten items using a seven point Likert-style scale ranging from strongly disagree to strongly agree. These scales have been used extensively in the psychology and communication literature to measure what are considered to be the “big five” personality factors. Nunally (1978) considered .7 to be a minimum acceptable level of internal consistency for this set of scales. By this metric, all scales used

in this study exceeded the minimum acceptable measure for internal consistency. The Extraversion scale had an alpha reliability of .88. The Neuroticism scale also had an alpha reliability of .88. The Agreeableness scale had an alpha reliability of .84. The Conscientiousness scale had an alpha reliability of a .83. The reliability for the Openness to Experience scale was a .78.

The scales that measure motives for using photo messaging originated in Internet-based uses and gratifications studies (e.g., Papacharissi & Rubin, 2000) but had been modified to reflect the motives for photo messaging in recent photo sharing research studies (Hunt et al., 2014a; Hunt et al., 2014b). Early studies used exploratory factor analysis to determine the underlying structures of each factor; this study took a confirmatory approach by using the pre-existing scales. Three items were used to measure the memory motive: "I send photo messages to construct memories for my friends or family," "I send photo messages to construct memories for myself," and "I send photo messages to remember things that I see." The alpha reliability of the memory scale was .86.

Self-expression was measured with three items: "I send photo messages to express myself," "I send photo messages to show what I am feeling," and "I send photo messages to express my creativity." The alpha reliability for the self-expression scale was .87. Self-presentation was also measured with three items: "I send photo messages to share images of myself," "I send photo messages to share aspects of my life," and "I send photo messages to share images of things that are important to me." The alpha reliability for the self-presentation scale was .80.

Relationship maintenance was measured using five items, with responses ranging from strongly disagree to strong agree. The items are: "I send photo messages to keep up with my friends or family," "I send photo messages as a way of communicating with my friends or family," "I use photo messaging as a way to stay in touch with friends and family," "I use photo messaging as a way of getting in touch with people," and "I use photo messaging as way of staying up to date with family and friends." The alpha reliability for the relationship maintenance scale was .93. Relationship formation was measured with four items: "I send photo messages to develop new relationships," "I send photo messages to friends that I recently met," "I send photo messages as a way of bonding with new friends," and "I send photo messages

as a way to reach out to new people.” The alpha reliability for the relationship formation scale was .88.

Frequency of use was measured consistent with past TAM studies (Davis & Venkatesh, 1996). Two questions were used to measure the frequency of sending photographs via mobile device, sharing photographs online, and capturing images. The first question for each photo-based behavior asked “How frequently do you send/share/capture photos on your mobile device?” and was answered on a 7-point scale, ranging from infrequently to frequently.

Table 1
Measures: Means, SDs and Reliabilities (N = 531)

Variable	M	SD	α
Extraversion	4.73	1.06	.88
Neuroticism	4.30	1.06	.88
Conscientiousness	4.67	.93	.83
Agreeableness	5.45	.79	.84
Openness to Experience	4.89	.76	.78
Relationship Maintenance	4.61	1.41	.93
Relationship Formation	3.36	1.36	.88
Self Presentation	4.53	1.37	.80
Self Expression	3.84	1.52	.87
Memory	4.82	1.37	.86

Note: The alpha reliabilities for the scales used in this study were consistent with prior research.

Respondents were then queried to “Indicate the choice by checking the box that best matches how often you send/share/capture photo messages on your mobile device;” the response categories were coded on a seven-point scale and included: not at all, less than once a week, about once a week, 2 or 3 times a week, 4 to 6 times a week, once a day, more than once a day. The combined scale measuring the frequency of use for photo messaging had an alpha reliability of .91.

Results

Hierarchical multiple regression analysis was used to test each of our hypotheses and research questions. R1 assessed which use motives might explain why users take pictures on their camera phones. To test the research question, a regression analysis was conducted with the five use motives (memory, relationship maintenance, relationship formation, self-expression and self representation) predicting the extent to which respondents used their camera phones. Results of this analysis found that four of the five motives do significantly predict camera phone use, with self-presentation the only insignificant predictor. In the final model, memory ($\beta = .278, p < .001$), relationship maintenance ($\beta = .235, p < .001$), self-expression ($\beta = .121, p < .01$) and relationship formation ($\beta = .096, p < .05$) all predicted camera phone use, and explained 36.3% of the variance. Hypotheses 1a and 1b predicted that Extraversion positively predicts relationship maintenance and self-expression motives for photo messaging. Results of H1a indicate that Extraversion ($\beta = .166, p < .001$) positively predicts photo messaging for relationship maintenance, supporting the hypothesis. H1b predicted that Extraversion would positively influence self-expression motives. The results of this analysis suggest that Extraversion does not influence self-expression ($\beta = .054, ns$), with the hypothesis not receiving support. H1c predicted that extraversion predicts self-presentation motives for photographic communication. The results of our analysis indicate that Extraversion influences self-presentation motives ($\beta = .119, p < .01$).

Hypothesis 2 explored the relationship between neuroticism and self-presentation motives. H2 predicted the negative influence of Neuroticism on self-presentation motives. The results indicated a significant negative influence of Neuroticism on self-presentation motives ($\beta = -.124, p < .01$). Therefore, H2 was supported.

R2 assessed how personality factors affect photo-messaging behavior. Results of this analysis indicated Extraversion ($\beta = .083, p < .05$) positively related to the number of images shared online. Results indicated a significantly negative relationship between Neuroticism and sharing photos online ($\beta = -.082, p < .05$), with the final model explaining 6% of the variance. Regarding the influence of personality factors on sending photos from a mobile device each week. Extraversion positively related to sending photos from a mobile device ($\beta =$

.144, $p < .01$). Neuroticism negatively related to mobile device use for sending photos ($\beta = -.185$, $p < .001$). The final model explained 9.7% of the variance.

The three other personality factors, Openness to Experience, Agreeableness, and Conscientiousness were also included in regression models with Extraversion and Neuroticism. Among these remaining predictors, Agreeableness was the most useful predictor, significantly predicting photo messaging for self-presentation ($\beta = .124$, $p < .01$). Agreeableness had a significant ($\beta = -.157$, $p < .001$), though negative, relationship with photo messaging. Conscientiousness positively predicted photo messaging for relationship maintenance motivations ($\beta = .103$, $p < .01$), while Openness to Experience predicted photo messaging for the purpose of self-expression ($\beta = .157$, $p < .001$). While each trait predicted at least one type of photo messaging, overall they were less useful as predictors when compared to Extraversion and Neuroticism.

Discussion

In this research study, researchers sought to determine how personality factors influence motives for sending and sharing photos. We also explored which motives were the strongest predictors of actual photo messaging behavior. As proposed, the most influential personality factor influencing photographic communication motives was Extraversion. People high in Extraversion were more motivated to maintain relationships via photographic communication and present themselves through photographs in mobile messages and online. This reinforces the notion that online and mobile media use is consistent with and supports our offline interpersonal behaviors, rather than being a substitute for them. Surprisingly, there was not a significant relationship between Extraversion and self-expression motives. This might indicate that people are very intentional in their photographic communication, which is more closely related to self-presentation. Uses and gratifications theory highlights the active role of media use (Ruggiero, 2000). Sending and sharing photos are active, intentional processes. Therefore, motivations for self-expression that tend to be more creative and artistic might indicate less intentionality and more spontaneous forms of photo sharing (Van House & Davis, 2005). Communicating through images is more closely tied to acts of pre-

sentation and used to maintain existing relationships, than creative endeavors.

The Extraversion factor also influenced the number of images shared online and the number of photo messages sent from a mobile device each week. This reinforces the idea that extraverted individuals are more social (Watson & Clark, 1997) when using communication technology (i.e., Ross et al., 2009; Butt & Phillips, 2008). In addition to Extraversion having a strong influence on motives for photographic communication, it also directly increased the frequency in which people send and share photographs. The other personality factor that had a strong influence on photographic communication was Neuroticism.

Neuroticism negatively impacted motivations for photographic communication, specifically self-presentation motives. Prior research has found that neurotic individuals do participate in blogging (Gill et al., 2009) but do not actively send instant messages as often as those low in Neuroticism (Swickert et al., 2002). Neuroticism also negatively influenced the frequency in which individuals share and send photographs. The negative influence of Neuroticism was stronger for sending photos messages from a mobile device than for online sharing. A plausible explanation may be that individuals high in Neuroticism, and therefore anxious to avoid embarrassment, are less likely to engage in photographic communication if it draws attention to their message. This might also indicate that neurotic individuals are more willing to share images online because it is common and accepted practice among their communication network (i.e., Burke et al., 2009). It draws less attention to oneself by imitating existing behavior rather than sending an isolated message.

In post-hoc analysis it was revealed that females were more likely to present themselves and maintain relationships through the use of photographic communication. Females also reported sending photo messages from a mobile device and sharing photos online more frequently than male participants. These findings are consistent with recent literature on social networking sites, that females are more active communicators online and through mobile devices (Lenhart & Madden, 2007; Papacharissi & Mendelson, 2010).

Capturing images on a mobile device is an important part of the process. Before one can send and share an image he or she often

must first capture the image. Mobile phones now have the camera capabilities that rival dedicated digital cameras. We posed a research question to determine how motives influence capturing images. Five motives from prior research (Van House & Davis, 2005) were examined: memory, relationship formation, relationship maintenance, self-expression, and self-presentation. The only motive that did not significantly predict capturing images was self-presentation. This finding indicates that people do not necessarily intend to take images of themselves for the purpose of self-presentation, though, they might later decide to use an image for this purpose. The most significant motive predicting image capture was memory. This highlights the intrapersonal nature of mobile phone photography. The second strongest motive predicting image capture was relationship maintenance. This finding demonstrates the importance of intentional image capture for interpersonal purposes. Sending and sharing images is a social form of communication made easy through mobile phone photography and social media (i.e., Hunt et al., 2014a).

In the examination of the other three personality factors, there were also interesting findings. Agreeableness was the most useful predictor of self-presentation motives. This may correspond to the findings of Cox (2010), who found people high in this trait more likely to undertake impression management. What is less clear is the negative relationship between Agreeableness and relationship formation. Individuals high in Agreeableness are generally more trusting and altruistic (Costa & McCrae, 1992a), which might have suggested a positive relationship would be present. Findings also indicated that Conscientiousness positively predicts photo-messaging for relationship maintenance purposes, which might signify the intentional actions of those high in Conscientiousness (i.e., Costa & McCrae, 1992a). Openness to Experience influenced using photo messaging as a form of self-expression. As Finn (1997) suggested those who are open might prefer novel forms of communication. In this case, photo messaging is not necessarily a novel form of communication having reached widespread adoption. However, using photo messaging to express oneself would still be a novel use of the new technology. The results of this study also have important theoretical implications. The relationships revealed in this study help extend uses and gratifications theory by demonstrating the importance of personality

characteristics on media choices and the frequency for which individuals engage in media behavior (i.e., Rubin, 2002). By replicating the reliability of the motives' scales and applying them to the context of photo sharing, this study strengthens the consistency of the theoretical premise of media technology motivations. Furthermore, by parceling out the specific personality characteristics influence on use of this new communication tool we are able to better understand how individual differences impact the level of audience activity. Extraverts will be more active in photo sharing while more neurotic individuals will be less likely to use this form of communication. Some of the findings regarding these personality factors are still exploratory at this point but will help direct future research in this area.

Limitations and Future Directions

This study has some limitations that should be considered. Sending photographic images on one's mobile device and online sharing were assessed; however, the specific types of messages sent were not assessed. By surveying users about the content of their photographic messages we could also examine relationships between motives and photographic content. Another limitation of this study was not finding out the barriers to photographic communication. Such barriers might include costs of mobile phones and multimedia messaging or the ease of use for sending images. Another potential limitation of this study is the college sample. While college students tend to be early adopters of technology, there is a benefit to studying how variance in age and other demographic differences influence photographic communication.

Future research on photographic communication should examine how dedicated mobile applications and websites influence the motives for sharing images. The technical features of dedicated websites and applications might promote sharing or community building through image sharing. Another area of future research would be to explore new motives for photographic communication. Researchers should also consider how other antecedents such as prior experience with photography or peer groups influence behaviors related to sending and sharing photographs.

Additional research might benefit the scholarly community if it examines how specific personality factors and motives impact the

subject of the image shared. If extraverted individuals are sharing photographs to maintain relationships, it would be important to learn the types of images those individuals are sharing. Given that individuals that score high on the neuroticism trait post fewer photos, it is important to understand the type of photos they do post online. As the number of social media platforms that focus on photographic communication continues to expand, future research might also explore if certain personality characteristics may be associated with using specific platforms. For example, it could be posited that the ability of Snapchat users to share an image briefly, with the image thereafter erasing itself, might be considered appealing for a person high in neuroticism or conscientiousness. In contrast, a person high in extraversion may be drawn to platforms where their posts are more enduring.

References

- Allport, G. W., & Odbert, H. S. (1936). Trait names: A psycho-lexical study. *Psychological Monographs*, 47, 211.
- Amichai-Hamburger, Y., Wainpel, G., & Fox, S. (2002). On the Internet no one knows I'm an introvert: Extraversion, introversion, and Internet interaction. *CyberPsychology & Behavior*, 5(2), 125–128.
- Burke, M., Marlow, C., & Lento, T. (2009, April). *Feed me: Motivating newcomer contribution in social network sites*. Paper presented to the annual conference for Human Factors in Computing Systems, Boston, MA.
- Butt, S., & Phillips, J.G. (2008). Personality and self-reported mobile phone use. *Computers in Human Behavior*, 24, 346–360.
- Caplan, S.E., Perse, E.M., & Gennaria, J.E. (2007). Computer-mediated technology and social interaction. In C.A. Lin & D.J. Atkin (Eds.), *Communication Technology and Social Change: Theory and Implications*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Correa, T. Hinsley, A., & de Zuniga, H.G., (2010). Who interacts on the Web? The intersection of users' personality and social media use. *Computers in Human Behavior*, 26, 247–253.
- Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory manual*. Odessa, FL: Psychological Assessment Resources.
- Costa, P. T., & McCrae, R. R. (1990). Personality disorders and the five-factor model of personality. *Journal of Personality Disorders*, 4, 362–371.
- Costa, P. T., & McCrae, R. R. (1992a). *Revised NEO personality inventory (NEO-PI-R) and the NEO Five-Factor inventory (NEO-FFI): Professional manual*. Odessa, FL: Psychological Assessment Resources Inc.

- Costa, P.T., & McCrae, R.R. (1992b). *Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI) manual*. Odessa, FL: Psychological Assessment Resources.
- Cox, B. D. (2010). *Differential functioning by high and low impression management groups on a Big Five Applicant Screening Tool* (Doctoral dissertation). Retrieved from <http://etd.auburn.edu/etd/handle/10415/2050>
- Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Davis, F. D., & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: three experiments. *International Journal of Human-Computer Studies*, 45, 19-45.
- DeAndrea, D.C., Shaw, A. S., & Levine, T.R. (2010). Online language: the role of culture in self-expression and self-construal on Facebook. *Journal of Language and Social Psychology*, 29(4), 425-442.
- Digman, J.M., & Inouye, J. (1986). Further specification of the five robust factors of personality. *Journal of Personality and Social Psychology*, 50, 116-123.
- Douglas, W. (1990). Uncertainty, Information-seeking, and Liking During Initial Interaction. *Western Journal of Speech Communication*, 54, 66-81.
- Duck, S. (1999). *Relating to Others* (2nd ed.). Philadelphia, PA: Open University Press.
- Duggan, M. (2013). Photo and Video Sharing Grow Online. Pew Internet and American Life Project. Retrieved from http://pewinternet.org/~media/Files/Reports/2013/PIP_Photos%20and%20videos%20online_102813.pdf
- Elliott, G. R., & Sapp, G. L. (1988). The relationship between the Myers-Briggs type indicator and the Grasha-Riechmann student learning styles questionnaire. *Journal of Psychological Type*, 14, 46-50.
- Ellison, N., Heino, R., & Gibbs, J. (2006). Managing impressions online: Self-presentation processes in the online dating environment. *Journal of Computer-Mediated Communication*, 11(2), article 2. Retrieved from <http://jcmc.indiana.edu/vol11/issue2/ellison.html>.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168.
- Eysenck, H.J. (1990). Biological dimensions of personality. In L.A. Pervin (ed.), *Handbook of Personality* (pp. 244-76). New York: Guilford Press.
- Finn, S. (1997). Origins of media exposure. *Communication Research*, 24(5), 507-529.
- Fourqurean, J., Meisgeier, C., & Swank, P. (1990). The link between learning style and Jungian psychological type: A finding of type bipolar preference dimensions. *Journal of Experimental Education*, 58(3), 225-237.

- Gill, A. Nowson, S. & Oberlander, J. (2009). *What are they blogging about?* Retrieved from <http://nowson.com/papers/GillNowOber-ICWSM09.pdf>.
- Goldberg, L. R. (1981). Language and individual differences: The search for universals in personality lexicons. In L. Wheeler (Ed.), *Review of Personality and Social Psychology*, Vol. 2. Beverly Hills, CA: Sage.
- Gonzales, A.L. & Hancock, J.T. (2008). Identity shift in computer-mediated environments. *Media Psychology*, 11, 167-185.
- Green, M. C., & Brock, T. C. (1998). Trust, mood, and the outcomes of friendship determine preferences for real versus ersatz social capital. *Political Psychology*, 19, 527-544.
- Hunt, D.S., Atkin, D.J., & Krishnan, A. (2012). The influence of computer-mediated communication apprehension on motives for Facebook use. *Journal of Broadcasting & Electronic Media*, 56(2).
- Hunt, D.S., Lin, C.A., & Atkin, D.J. (2014a). Communication social relationships via the use of photo-messaging. *Journal of Broadcasting & Electronic Media*, 58(2), 234-252.
- Hunt, D.S., Lin, C.A., & Atkin, D.J. (2014b). Photo-messaging: Adopter attributes, technology factors and use motives. *Computers in Human Behavior*, 40, 171-179.
- John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: Guilford.
- Johnson, J. L., & Bloom, A. M. (1995). An analysis of the contribution of the five factors of personality on variance in academic procrastination. *Personality and Individual Differences*, 18, 127-133.
- Katz, E., Blumler, J., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. Blumler, & E. Katz (Eds.), *The uses of mass communications: current perspectives* (pp. 19-32). Beverly Hills, CA: Sage.
- Kellerman, K. (1986). Anticipation of future interaction and information exchange in initial interaction. *Human Communication Research*, 33(1), 41-75.
- Kindberg, T., Spasojevic, M., Fleck, R., & Sellen, A. (2005). An in-depth study of camera phone use. *Pervasive Computing*, 4(2), 42-50.
- Krcmar, M., & Kean, L.G. (2005). Uses and gratifications of media violence: personality correlates of viewing and liking violent genres. *Media Psychology*, 7, 399-420.
- Langstedt, E. (2013). An examination of the role of the communicator on gratifications attained on social networking sites. *The Journal of Social Media in Society*, 2(1), 126-144.

- Lenhart, A., Ling, R., Campbell, S., & Purcell, K. (2010). Teens and mobile phones: text messaging explodes as teens embrace it as the centerpiece of their communication strategies with friends. Pew Internet and American Life Project. Retrieved from <http://pewinternet.org/Reports/2010/Teens-and-Mobile-Phones.aspx>
- Lenhart, A., & Madden, M. (2007). Teens, privacy & online social networks: How teens manage their online identities and personal information in the age of MySpace. Pew Internet & American Life Project. Retrieved from <http://www.pewinternet.org/Reports/2007/Teens-Privacy-and-Online-Social-Networks.aspx>
- LePine, J. A., Colquitt, J. A., & Erez, A. (2000). Adaptability to changing task contexts: Effects of general cognitive ability, conscientiousness, and openness to experience. *Personnel Psychology*, 53, 563-594.
- McCrae, R. R. (1987). Creativity, divergent thinking, and openness to experience. *Journal of Personality and Social Psychology*, 52, 1258-1265.
- McCrae, R.R., & Costa, P.T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52, 81-90.
- Mendelson, A., & Papacharissi, Z. (2010). Look at us: Collective narcissism in college student Facebook photo galleries. In Z. Papacharissi (Ed.), *The networked self: Identity, community and culture on social network sites*. London: Routledge.
- Oeldorf-Hirsch, A., & Sundar, S.S. (2010, June). *Online photo sharing as mediated communication*. Paper presented at the annual conference of the International Communication Association, Singapore.
- Papacharissi, Z. (2008). Uses and gratifications. In D.W. Stacks & M.B. Salwen (Eds.), *An Integrated approach to communication theory and research* (2nd ed., pp.137-152). New York: Taylor & Francis.
- Papacharissi, Z., & Mendelson, A. (2011). Toward a new(er) sociability: Uses, gratifications and social capital on Facebook. In S. Papathanassopoulos (Ed.), *Media perspectives for the 21st century* (pp. 212–230). London: Routledge.
- Papacharissi, Z., & Rubin, A. M. (2000). Predictors of Internet use. *Journal of Broadcasting & Electronic Media*, 44, 175-196.
- Park, N. (2010). Adoption and use of computer-based voice over Internet protocol phone service: Toward an integrated model. *Journal of Communication*, 60, 40-72.
- Peabody, D., & de Raad, B. (2002). The substantive nature of psycholexical personality factors: A comparison across languages. *Journal of Personality and Social Psychology*, 83, 983–997.
- Phillips, D. (2008). The psychology of social media. *Journal of New Communications Research*, 3(1), 79-85.

- Roberts, B. W., Chernyshenko, O. S., Stark, S. E., & Goldberg, L. R. (2005). The structure of conscientiousness: An empirical investigation based on seven major personality questionnaires. *Personnel Psychology*, *58*, 103–139.
- Ross, C., Orr, E.S., Sisc, M., Arseneault, J.M., Simmering, M. J., & Orr, R. (2010). Personality and motivations associated with Facebook use. *Computers in Human Behavior*, *25*, 578-586.
- Rubin, A.M. (2002). The uses-and-gratifications perspective of media effects. In J. Bryant & D. Zillman (Eds.), *Media effects: advances in theory and research* (pp. 525-582). Mahwah, NJ: Lawrence Erlbaum Associates.
- Ruggiero, T.E. (2000). Uses and gratifications theory in the 21st century. *Mass Communication and Society*, *3*(1), 3-37.
- Schlenker, B.R. (2003). Self-presentation. In M.R. Leary & J.P. Tangney (Eds.), *Handbook of self and identity*. New York, NY: Guilford Press.
- Sheldon, P. (2008). Student favorite: Facebook & motives for its use. *South-western Mass Communication Journal*, *23*, 39-55.
- Stafford, L., Kline, S. L. & Dimmick, J. (1999). Home e-mail: Relational maintenance and gratification opportunities. *Journal of Broadcasting & Electronic Media*, *43*(4), 659-669.
- Stefanone, M.A., & Jang, C. (2008). Writing for friends and family: the interpersonal nature of blogs. *Journal of Computer-Mediated Communication*, *13*, 123-140.
- Swickert, R. J., Rosentreter, C. J., Hittner, J. B., & Mushrush, J. E. (2002). Extraversion, social support processes, and stress. *Personality and Individual Differences*, *32*, 877–891.
- Valkenburg, P.M., Schouten, A.P., & Peter, J. (2005). Adolescents identity experiments on the Internet. *New Media & Society*, *7*(3), 383-402.
- Van Dijck, J. (2008). Digital photography: communication, identity, memory. *Visual Communication*, *7*(1), 57 -76.
- Van House, N.A. (2007, April). *Flickr and public-image sharing: distant closeness and photo exhibition*. Paper presented to the annual conference for Human Factors in Computing Systems, San Jose, CA.
- Van House, N.A., & Davis, M. (2005). *The social life of cameraphone images*. Presented at the Seventh International Conference on Ubiquitous Computing in Tokyo, Japan.
- Van House, N.A., Davis, M., Ames, M., Finn, M., & Viswanathan, V. (2005, April). *The uses of personal networked digital imaging: an empirical study of cameraphone photos and sharing*. CHI '05 extended abstracts on human factors in computing systems.
- Watson, D., & Clark, L. A. (1997). Extraversion and its positive emotional core. In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 767-794). San Diego: Academic Press.

- Weaver J. B. III (1991). Exploring the links between personality and media preferences. *Personality and Individual Differences*, 12, 1293-1299.
- Widiger, T. A., Trull, T. J., Clarkin, J. F., Sanderson, C., & Costa, P. T. (2002). A description of the DSM-IV personality disorders with the five-factor model of personality. In P. T. Costa and T. A. Widiger (Eds.), *Personality disorders and the five factor model of personality* (2nd ed., pp. 89-99). Washington, DC: American Psychological Association.
- Wyatt, K. & Phillips, J. G., (2005). *Internet use and misuse in the workplace*. Proceedings of OZCHI 2005, 25, 23-25.
- Zhou, T., & Lu, Y. (2011). The effects of personality traits on user acceptance of mobile commerce. *International Journal of Computer-Human Interaction*, 27(6), 545-561.
- Zywica, J., & Danowski, J. (2008). The faces of Facebookers: Investigating social enhancement and social compensation hypotheses; predicting Facebook and offline popularity from sociability and self-esteem, and mapping the meanings of popularity with semantic networks. *Journal of Computer-Mediated Communication*, 14, 1-34.