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Who Posts Selfies and Why?:

Personality, Attachment Style, and Mentalization as Predictors of Selfie Posting on Social Media

Nancy Adler

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements
for the degree of Doctor of Philosophy, The City University of New York

2017

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by
Nancy Adler

This manuscript has been read and accepted for the
Graduate Faculty in Psychology to satisfy the dissertation
requirement for the degree of Doctor of Philosophy.

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ABSTRACT

Who Posts Selfies and Why?:
Personality, Attachment Style, and Mentalization as Predictors of Selfie Posting on Social Media

By

Nancy Adler

Advisor: Elliot Jurist

This study examines the phenomenon of selfie posting on social media and its relationship to narcissism, the Dark Triad, impulsivity, attachment style, rejection sensitivity, and reflective functioning. The sample was made up of 499 participants who completed an online survey consisting of personality measures and open- and closed-ended questions about selfie posting behavior. Data were analyzed using a negative binomial regression model.

Results: The study found that individuals with high levels of the Dark Triad trait of psychopathy post more selfies on social media than do individuals with low levels of the trait. The Dark Triad trait of narcissism was also found to be significantly related to selfie posting, with narcissistic men posting significantly more selfies than narcissistic women. Furthermore, the study found that individuals with high levels of motor and non-planning impulsivity posted significantly more selfies than individuals with lower levels of those traits. This study also found a (marginally non-significant) trend whereby vulnerable narcissism and anxious attachment were predictive of increased selfie posting. Participants with higher levels of reflective functioning were found to post fewer selfies on social media, as were individuals high in rejection sensitivity. Grandiose narcissism, subclinical narcissism, avoidant attachment, and attentional impulsivity were not found to be significantly related to increased selfie posting on social media. Open-ended questions revealed some interesting anecdotal material about possible motivations for posting selfies on social media. In sum, the study's findings shed light on a number of traits that are predictive of selfie posting on social media. Clinical implications, limitations, and directions for future research are discussed.

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CHAPTER 1: INTRODUCTION

The taking and posting of “selfies” is a wildly popular phenomenon among young adults in today’s society. According to Oxford Dictionary Online (2013), a selfie is “a photograph that one has taken of oneself, typically one taken with a smartphone or webcam and shared via social media.” Numerous editorialists and social commentators have equated selfies with a generational trend toward self-obsession and self-indulgence, and the selfie has come to represent the purported selfishness and sense of entitlement of the era (Wagner, 2015, Twenge & Campbell, 2009). While it may be tempting or obvious to dismiss this phenomenon as yet another trivial manifestation of cultural and generational self-obsession, the immense popularity of selfies suggests that there may be some interesting psychological motivations underlying the trend. Although the selfie is a relatively new development, self-portraiture is an age-old tradition viewed as a respectable form of self-expression (Saltz, 2014). The selfie, in contrast, is not often considered an art form, perhaps due to its instantaneousness, ease of creation, and ubiquity, but selfies and self-portraits overlap in that they are both forms of self-representation (Stephan, 2015). Just as self-portraits can offer insight into an individual, selfies, too, may provide a window into one’s psyche.

My inspiration for exploring the individual behind the selfie originated from my work with a psychotherapy patient named Eva¹. Eva was an aspiring photographer in her mid-20’s. She spent a lot of time during our sessions discussing her postings on Instagram, a social image-sharing application for smartphones. Eva posted photos and wrote captions with care and forethought, taking into consideration her mood state, her audience, and what she hoped to convey. During her treatment with me, she was involved in a turbulent romantic relationship and often would stop speaking to her partner for weeks or even months at a time. During these periods, she used Instagram as a means of passive communication with him. She would travel to the far reaches of New York City for unique photographs

¹ Name has been changed to protect patient’s confidentiality

to show him that she still had her sense of adventure and was getting along fine without him. She posted pictures of newly encountered acquaintances, several of whom were handsome men, to communicate that she didn't need him anymore, and sometimes with the intention that they might incite jealousy. But in the moments when she felt most vulnerable, Eva described how she would post selfies, often in fashionable outfits striking glamorous poses, in hopes that she would lure him back to her.

Like Eva, I am a member of the Millennial generation. I grew up using computers and came of age in a time when the Internet became a crucial aspect of daily life. Currently, I use social media and have accounts on Instagram and Facebook, where I post my own photos and peruse those shared by others. Around the same time that Eva spoke about posting selfies, I began to realize that selfies were appearing in my Instagram and Facebook feeds in increasing numbers, posted by everyone from former classmates to celebrities. Eva gave me some insight into the reasons she chose to post selfies, but I wondered about other people's motivations. Were others as deliberate when they took their selfies, and were they as purposeful when posting them? I wondered if certain people were more inclined to post selfies than others: perhaps individuals with certain personality traits have a greater tendency to post them, or have particular patterns of posting them. Is an individual more inclined to post selfies when experiencing relationship turmoil, like Eva? Does posting selfies serve as a mechanism of self-soothing? Perhaps we can distinguish the selfie-posting behavior of individuals who tend to feel insecure in relationships from those who experience a greater level of relationship security?

In the past decade, there has been a burgeoning literature on the motivations, personality correlates, and outcomes of social media and technological communication. A number of journals have sprung up targeting this new research, including the *Journal of Social Media in Society* and *Cyberpsychology, Behavior, and Social Networking*. Despite the proliferation of articles in this realm, very little research has specifically examined the posting of selfies. In fact, at the time I began this

dissertation, there were only two peer-reviewed articles on selfies, which were published by communication and social psychology researchers in 2015 (Fox & Rooney, 2015, Sorokowski et al., 2015).

In this project, I seek to better understand the phenomenon of the selfie from a clinical perspective and to identify whether certain personality traits are predictive of increased selfie-posting behavior. I believe that studying selfies may shed light on ways in which narcissism is expressed in modern society. Because selfies have become a widespread form of self-expression, I anticipate that this research will be applicable across a number of disciplines, from clinical psychology to personality theory to sociology. From a clinical perspective, a more nuanced understanding of the underlying dynamics of selfie posting would enable therapists to better help patients who post large numbers of selfies. If frequent selfie posting is in fact linked to personality difficulties, then clinicians, with the consent of patients, may be able to use this information to identify individuals at risk for psychopathology. Understanding the conscious and unconscious motivations behind selfie posting may also illuminate current mechanisms of identity experimentation. Furthermore, understanding what motivates individuals to post selfies may inform personality theories about narcissism and narcissistic personality disorder. From a sociological perspective, research on social media sharing may help to inform the ongoing debate about whether narcissism is on the rise in today's society. At present, the underlying motivations behind selfie posting are not well established in the literature. However, the ubiquity of the phenomenon suggests that selfie posting is an important avenue for understanding generational trends and psychological motivations, and it may have important implications for clinical work, theory, and research.

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

In an attempt to better understand the individual characteristics of those who frequently post selfies, the present study will assess the relationship of selfie-posting behavior to pathological narcissism, the Dark Triad (narcissism, psychopathy, and Machiavellianism), attachment style, rejection sensitivity, and the capacity for mentalization. The following literature review is divided into eight broad sections, which are further subdivided. I will begin by introducing selfies and how they became so prominent in today's society. I will then discuss selfies in the context of social media, with a particular focus on Instagram. The next section will consider the role of narcissism in shaping the current cultural landscape, which has come to embrace the use of social media and selfie posting. I will then examine the varying types of narcissism, ranging from normal to pathological and from grandiosity to vulnerability. The subsequent section will define and examine the construct of the Dark Triad, including ways that it is measured. The related construct of impulsivity will then be explored. This will be followed by a segment reviewing attachment theory in infancy and adulthood, which will lead into a unit on the concept of rejection sensitivity. In the final review section, I will review the literature on mentalization. Lastly, I will outline my research questions and their corresponding hypotheses.

1. The Selfie in the Context of Social Media

The Rise of the Selfie

The first usage of the word *selfie* to describe a photograph taken by oneself dates to Australia in 2002, when a man posted to an internet forum a photograph he had taken of himself on his cell phone, apologizing "about the focus, it was a selfie" (Oxford Dictionaries Online, 2013). The word *selfie* did not become widespread until almost a decade after it was first used, with the popularity of the term increasing 17,000% from October 2012 to October 2013 (Oxford Dictionaries Online, 2013). While a number of non-English-speaking countries have adopted the English word *selfie*, many others have

created their own words to describe the self-taken smartphone photograph, including France's *autoportrait*, Albania's *shkrepje*, Korea's *selka*, and Sweden's *egobild* (Oxford Dictionaries Online, 2013).

The word *selfie* was added to the Oxford Dictionary Online in 2013, when it was recognized as the dictionary's "Word of the Year" (Oxford Dictionaries Online, 2013). As of June 2015, over 290 million photos on Instagram were labeled with the hashtag "#selfie," and far more selfies were posted that were not identified as such. A number of products have been developed in the past couple of years to increase the ease of selfie-taking, most notably the "selfie stick," an extendable metal rod to which one attaches a smartphone to increase the range of one's arm for selfie taking ("Selfie stick," 2015). The current era has been dubbed the "age of the selfie" by art critic Jerry Saltz (2013), who noted that selfies differ from traditional self-portraiture in their spontaneity and informal presentation. Furthermore, the immediate distribution of the selfie into one's chosen social network typically communicates to others one's current location, activity, and appearance, and often additional information, ranging from one's opinion to one's mood state (Saltz, 2013).

Instagram: A Primary Platform for the Selfie

Instagram is a mobile application that was launched in October of 2010 and is currently available for use with all major smartphone operating systems. Like other forms of social media, Instagram is an application that enables users to create and share content instantaneously with other users through social networking. It is among the top five most popular social media applications, alongside Facebook, Twitter, LinkedIn, and Pinterest (Pew Research Center, 2015).

Instagram differs from other types of social media because it is the only well-known platform focused exclusively on posting photographs. Users have the option of taking or uploading photographs, manipulating them by using filters, cropping, and other effects, adding captions, "tagging" people to identify individuals in the photos, and sharing the photos on the application. Additionally, users can view

photos created and posted by others in their social network, and they can comment on or “like” others’ photos that appear in their “feed.”

Instagram, purchased by Facebook in 2012, is the fastest growing major social network among adults in the United States, with 53% of American young adults ages 18 - 29 on Instagram as of September 2014 (Pew Research Center, 2015). A study conducted by a group of researchers at Arizona State University identified eight predominant categories of photos posted on Instagram. These include selfies, friends, food, gadget, pet, fashion, activity, and captioned photos, which include photos with embedded text. They randomly selected 50 active Instagram users and examined the 20 most recent photos for each. Of the 1,000 photos that were examined, the greatest proportion were selfies (24.2%), followed closely by photos of friends (22.4%) (Hu, Manikonda, & Kambhampati, 2014).

Although there are no explicit rules for posting on Instagram, there is an expectation that individuals will post photos very soon after they are taken. The hashtag #latergram is often used to denote that a photo was taken earlier than it was posted (Marwick, 2015). There is also a trend of posting “throwback” photos from years earlier or from when the user was a child. These photos are often given a hashtag such as #throwback, #throwbackthursday, or #flashbackfriday. While a fairly constant stream of updates is considered normal on other forms of social media including Facebook and Twitter, Instagram encourages less frequent posting. According to Alice Marwick (2015), a researcher at Fordham University who has written about common practices on social media, it is considered poor etiquette by many users to post several photos in succession on Instagram, and most users post no more than a few photos per day.

Motivations for Selfie Posting

As selfie posting is a fairly recent phenomenon, the reasons behind why individuals choose to post selfies are not fully understood. A group of researchers based in Korea and in Florida sought to gain

a deeper understanding of selfie-posting behavior, and they conducted 148 in-depth interviews with selfie-posters during which participants were asked about what motivates them to post selfies on social media. The researchers then analyzed the transcripts for content, from which they identified 66 motivations for selfie posting. These motivations were analyzed for face validity and overlap, and they were ultimately reduced to 19 items comprising a scale of “Motivations for posting selfies on social networking sites.” The 19 items were found to load onto four factors or primary motivations, which include Attention Seeking, Communication, Archiving, and Entertainment (Sung, Lee, Kim, & Choi, 2016).

The authors of the study also wanted to see whether these motivations for posting selfies actually predicted selfie-posting intention and frequency. They found that Attention Seeking, Communication, and Archiving all significantly predicted the intention to post selfies on social media, but that none of the motivations predicted actual selfie-posting frequency. Only narcissism (as measured by the NPI-13) was found to significantly predict the frequency of selfie posting. The authors indicate that various yet-unidentified factors may intervene to prevent motivated individuals from following through with their intention to post selfies, and that narcissism is a better predictor of selfie posting on social media (Sung et al., 2016).

Social Media’s Implications for Identity

In their book “The App Generation,” researchers Howard Gardner and Katie Davis (2013) explain how the identities of youth and young adults are shaped and expressed through apps on their smartphones. Apps, short for “applications,” are software programs designed to run on mobile devices. Several apps provide a platform for online self-expression. Apps have enabled traditionally private aspects of one’s identity to be easily broadcast to others. For instance, the Moodscope app enables one to track his or her mood state over time, the 80 Bites app is used to monitor how much food one has consumed, and Timehop serves as a stand-in for memory to remind individuals (and those in their social

network) of photos, videos, and status updates they took or posted online in years past (Gardner & Davis, 2013).

Social media platforms, including Instagram, Facebook, and Twitter, are focused around the individual user's profile and serve as a means of packaging the self for presentation to others (Gardner & Davis, 2013). The user profile on Instagram includes a profile picture, an optional "bio," a website, a list of followers, and a list of individuals that the user is following, as well as the most recent photos posted. One has the option of making his or her profile public or private. If one's profile is set to private, then only those individuals that the user has accepted as followers may view his or her content. According to Gardner and Davis (2013), young people tend to strategically shape their online self-presentation by carefully choosing what information to underscore, downplay, embellish, or omit altogether. For instance, an individual may choose to portray himself or herself as confident and happy despite struggling privately with depression or anxiety (boyd, 2014).

Furthermore, danah boyd (2014), a social media scholar and researcher, argues that regardless of what photographs users choose to display or how they control their privacy settings, they cannot predict who will actually view their photos among an endless stream of shared content. She maintains that because of this, individuals are left to grapple with who can see their photos, who actually sees them, and how others interpret the content. Boundaries can be unclear in the digital realm, and it is virtually impossible for individuals to control how their content will be perceived by others. Individuals are largely unaware of others' perceptions of their social media postings, though there are certain exceptions, such as when others "like" one's post or leave a comment. One's self-presentation is never constructed in a vacuum, and thus others in society play a major role in how one's content is perceived (Goffman, 1956). While one may have anticipated that a photo posted would be perceived as funny to a group of classmates or friends, that same photo may be perceived in a different context by family members or work colleagues, who may find it to be crude or offensive. While struggling to make sense

of their identities and their place in society, it can be very difficult for teenagers and young adults to navigate the many nuances and complexities of online communication (boyd, 2014).

Sherry Turkle is a professor and researcher whose work focuses on the potential pitfalls of apps and digital technology for today's society. Turkle believes that the building of a persona for a social media site or an avatar for a virtual game may, over time, begin to feel like identity itself. She remarks that young people are growing up "tethered" to their smartphones and electronic devices, introducing complications that did not exist decades before. She argues that while adolescents can use technology as a way to experiment with their identity, the same technology can also stunt their ability to express themselves emotionally, as their constant connection to their devices may interfere with their ability to create an authentic sense of self. Furthermore, when individuals are constantly connected, there is less downtime, privacy, or space for self-reflection. Cell phones and the expectation of connectivity make it increasingly difficult for adolescents to separate from their parents or from their friends (Turkle, 2011).

The Impact of Social Media on Intimacy

A number of scholars and researchers have theorized about the impact of technology on human intimacy. Social media can be quite alluring, as it offers digital connection to humans who are, by nature, vulnerable and lonely (Turkle, 2011). Although individuals are constantly connected to one another through smartphones and social media, such technology enables individuals to hide their true selves, creating the "illusion of companionship without the demands of friendship" (p. 1, Turkle, 2011). As technology comes to replace face-to-face communication, the boundaries between intimacy and solitude are shifting. While some scholars believe that the virtual intimacy created through technology degrades true human experiences of connection (Turkle, 2011), others argue that those who seek it can find genuine intimacy and connection on social networking sites (boyd, 2014). However, many scholars agree that certain forms of digital communication lack the vulnerability required to deepen relationships

(Gardner & Davis, 2013). In addition, non-stop connection to digital technology has created an expectation that one will be accessible at all hours of the day. Increasingly, people feel that they must have an acceptable excuse to not respond to a call, text, or email right away (Turkle, 2011).

Although some may argue that individuals in the digital age are more productive than ever, Turkle (2011) points out that this productivity is achieved through multitasking and being constantly plugged-in to technology. The title of her book, "Alone Together," captures the sense of superficial connection that is created as a by-product of digital productivity: individuals are continually connected but rarely have the full attention of one another. According to Gardner and Davis (2013), the central developmental task of young adulthood is to form deep, long-term relationships with others. The constant but often surface-level connection fostered by digital communication and social media applications has the potential to undermine this developmental task, and it can leave individuals feeling lonely, isolated, and disconnected (Gardner & Davis, 2013).

2. Narcissism

How Narcissism Became a Cultural Epidemic

According to Elizabeth Lunbeck (2014), it was in the 1970s that American social critics first began citing narcissism to explain a number of societal problems. The *New York Times* dubbed the '70s "the Age of Narcissism," and cultural commentators turned to psychoanalysis and the works of Freud from the early 20th Century to help explain society's struggles (Lunbeck, 2014).

Christopher Lasch was among the most influential social critics of the 1970s, and he based many of his theories on Freud's principles. In his book, *The Culture of Narcissism* (1979), he pointed to narcissism as both a cause and a side-effect of society's rampant self-preoccupation, flight from commitment, and spiritual questioning. He latched onto the more pathological aspects of Freud's theories on narcissism, using them to highlight the downsides of the country's affluence and abundance

(Lasch, 1979). The author and journalist Tom Wolfe termed the period the “Me Decade” in a cover story for New York Magazine in 1976, describing the increasing self-focus of Americans as “narcissistic” (Wolfe, 1976). Although cultural critics in the 1970s initially referred to narcissism as extreme self-absorption, the term evolved over the decade, ultimately coming to symbolize the downside of American consumerism and its underlying emptiness, isolation, and superficiality (Lunbeck, 2014).

Lasch’s bestselling book and the assertions of a number of social theorists of the ’70s have been criticized in later decades. Elizabeth Lunbeck, in her book *The Americanization of Narcissism*, argues that in their narrow focus on the pathological facets of narcissism, American social critics of the 1970s missed entirely the healthy, adaptive aspects of a focus on the self. Similarly, the psychoanalyst Michael Maccoby (1978) criticized Lasch’s assertion that narcissism was more prevalent in the present day than in the past, arguing, “everyone has narcissistic tendencies.” Jessica Benjamin (1988) critiques Lasch’s gendered perspective of the origins of narcissism in society. She points to Lasch’s claim that narcissism emerged from the breakdown of traditional patriarchal values and the weakening of paternal authority. Benjamin argues that Lasch’s perspective is one-sided, as he fails to account for a number of other influences impacting contemporary families, including fewer children per family and increased paternal involvement in early stages of parenting. Furthermore, she criticizes Lasch’s view of paternal authority as an alternative to narcissism, arguing that he fails to acknowledge the fear and submission that are aroused by paternal power (Benjamin, 1988).

The “Me Me Me Generation”

The so-called “Me Decade” (Wolfe, 1976) of the 70’s has many similarities to the present generation of young people most frequently referred to as Generation Y or the Millennial Generation. Although researchers and theorists differ on the exact parameters of the generation, the most commonly cited birth range of Gen Y is from 1982 – 1999 (Twenge, 2014). In the year 2017, members of

this group range in age from 17 to 35. Although there is a significant age difference between the youngest and oldest members, Twenge (2014) explained that many generational trends are linear, and thus those born more recently express higher levels of Millennial traits.

A host of nicknames have been given to this generation, from the “Me Me Me Generation” (Stein, 2013) to “Generation Me” or “GenMe” for short (Twenge, 2014), to “Generation Selfie” (Wagner, 2015), all of which highlight an increased focus on the self. This phenomenon has also been dubbed the “Narcissism Epidemic,” which became the title of a popular book in 2009 (Twenge & Campbell, 2009). Twenge (2014) attributes this shift in self-focus in part to the parenting of the “Baby Boomers,” who came of age in the 1970s. With the introduction of birth control and the legalization of abortion, societal focus began to shift away from the burdens of reproduction and child-rearing and more towards individual preferences and the ability to make individualistic lifestyle choices. This was accompanied by a society-wide effort to boost the self-esteem of children, with the introduction of strategies and emphasis on the importance of increasing children’s self-esteem in school curricula, magazines, television shows, and books. It became increasingly common to give each child in a sporting competition a trophy, regardless of his or her performance, and teachers were encouraged to provide “unconditional validation” to their students, regardless of behavior or academic achievement (Twenge, 2014). This trend is reflected in grade inflation, with data indicating that the number of “A students” nearly doubled from 19% in 1976 to 37% in 2012 (Twenge, 2014). According to Twenge (2014), these tactics promoted feelings of narcissism and entitlement rather than having the desired effect of boosting self-esteem.

Recent research suggests that both self-esteem and narcissism have increased in the age of the Internet and smartphone technology. Twenge and Foster (2010) performed a meta-analysis of the scores of nearly 50,000 American college students assessed between 1982 and 2009 on the Narcissistic Personality Inventory (NPI), a measure of narcissism in non-clinical populations. They found a clear trend of narcissism increasing over time, with college students in 2009 scoring significantly higher in

narcissism than college students in 1982 (Twenge & Foster, 2010). A number of cultural changes have been found to reflect the generational shift toward increased self-focus. For instance, in a study examining over one million American books from the Google Books database from 1960 to 2008, there was a 42% increase in the use of first-person singular pronouns (*I, me, mine, my, myself*) and a 10% decrease in first-person plural pronouns (*we, us, our, ours, ourselves*) during that same time period (Twenge, Campbell, & Gentile, 2013). Similarly, a study by DeWall and colleagues (2011) analyzed the lyrics of the *Billboard* Top 10 hit songs from 1980 to 2007. They found a significant increase in the use of first-person singular pronouns (self-focused lyrics) over time and a significant decrease in the use of first-person plural pronouns (other-focused lyrics) over time (DeWall et al., 2011).

Opposing Views of the So-called "Narcissism Epidemic"

Just as there were challenges to 1970s social commentators' contention that narcissism was increasing, there is significant backlash to the contemporary notion that teenagers and young adults are more narcissistic than those of past generations. While there are data supporting the notion of an increase of narcissism over time, Lunbeck (2014) argues that much of that data is based on flawed methodology. She notes that the vast majority of studies that argue for a rise in narcissism rely on the NPI. However, a number of psychologists have contended that this instrument does not assess for pathological narcissism (Lunbeck, 2014). For instance, one would score higher on narcissism on the NPI if he or she endorsed the statement, "I see myself as a good leader" over the statement, "I am not sure if I would make a good leader." Critics of the NPI argue that the first statement ("I see myself as a good leader") is indicative of high self-esteem, confidence, psychological health, and assertiveness, but not of pathological narcissism. Accordingly, a number of researchers have argued that the NPI assesses a healthy subtype of narcissism and not a pathological form (Lunbeck, 2014).

In response to Joel Stein's (2013) Time Magazine cover story labeling Millennials as the "Me Me Me Generation," Elspeth Reeve (2013) argued, "It's not that people born after 1980 are narcissists—it's that young people are narcissists," and she contended that individuals eventually outgrow their narcissistic tendencies with increasing age. Reeve provided evidence that several generations of young people have been described as similarly narcissistic when compared to their elders. Among a number of articles, she cited a cover story from *The Atlantic* published in 1907 in which the increase in failed marriages was attributed to "the worship of the brazen calf of the Self" (Reeve, 2013).

According to Scott Hess (2011), the current generation is being blamed simply for using for the new technology. In his Ted^x talk on "Millennials: Who They Are and Why We Hate Them," Hess (2011) asked, "Can you imagine if the Boomers had YouTube, how narcissistic they would've seemed? ... Can you imagine how many frickin' Instagrams of people playing in the mud during Woodstock we would've seen?" In a far earlier age, the author Logan Pearsall Smith (1931) noted that "the denunciation of the young is a necessary part of the hygiene of elderly people, and greatly assists in the circulation of their blood." Although Smith wrote these words over eighty years ago, they can be applied just as aptly today to the Millennial generation that is so frequently chided for being narcissistic, lazy, and entitled.

The Origins of Narcissism

Havelock Ellis is credited with coining the term *narcissism* in the late 19th century to refer to a state of self-admiration and absorbed introspection (Ellis, 1927). The term was adopted from classical mythology, from the well-known myth about Narcissus whose excessive self-love ultimately led to his demise.

In his seminal work, *On Narcissism*, Sigmund Freud (1914) defined narcissism as an accumulation of libidinal energy that has not yet been invested in anything outside the self. According to Freud, *primary narcissism* is comparable to the state in infancy of egocentrism and self-love, before one

is able to see beyond one's limited perspective or connect with others. Freud viewed narcissism as being present in everyone and crucial to survival, but he also believed that healthy development "consists in a departure from primary narcissism" (p.100), suggesting that it must be overcome during the course of one's development (Freud, 1914).

By the mid-20th Century, psychoanalysis was largely moving away from Freud's drive-based assumptions and toward self-psychology and the recasting of personality disorders as "disorders of the self" (Kohut & Wolf, 1978). At this time, there was increasing support for the notion that narcissism can present with a range of expressions from primitive to adaptive (Lunbeck, 2014). Heinz Kohut (1966) was a psychoanalyst who rejected Freud's developmental model and reframed narcissism as a healthy dimension of selfhood, highlighting its positive aspects and linking it to ambition, creativity, and compassion. He saw primary narcissism as a state of undifferentiated union with the mother rather than a state of self-absorption. Furthermore, Kohut believed that adaptive expressions of narcissism were closely tied to self-esteem, arguing that a strong sense of self-worth was crucial to one's emotional well-being. Although his view of narcissism was predominantly positive, he did acknowledge the existence of unhealthy expressions of narcissism, such as when one fails to integrate grandiose aspects of the self with a realistic awareness of one's weaknesses (Kohut, 1966).

Otto Kernberg, a psychoanalyst and practitioner, equated what he termed normative narcissism to self-esteem, and he believed that it was qualitatively different from pathological narcissism in adulthood. To Kernberg, normative narcissism involves integrating good and bad images of the self into a realistic self-concept, whereas pathological narcissism is characterized by an unrealistic, idealized self-image (Kernberg, 1970). Kernberg focused predominantly on the darker aspects of narcissism and wrote extensively about pathological narcissism. Kernberg's understanding of narcissism emerged from his larger work on borderline personality organization, and he wrote about the deceptively charming nature of a malignant narcissist who elicits admiration from individuals whom he later exploits (Kernberg, 1970).

Malignant narcissism is considered to be the most severe form of narcissistic pathology, characterized by the infiltration of the grandiose self with ego-syntonic aggression, paranoia, and antisocial features (Kernberg, 1984). It was the Kernbergian narcissist which became popularized in the media in the 1970's, primarily by social critics who latched onto his theories to describe the self-absorption of the "Me Decade" (Lunbeck, 2014).

Presently, most theorists agree that narcissism has both normal and pathological expressions which reflect one's psychological needs, coping mechanisms, and level of personality organization (Pincus & Lukowitsky, 2010). While a number of theorists and clinical researchers support the view that narcissism represents a single continuum ranging from normal to pathological (e.g., Russ, Shedler, Bradley, & Westen, 2008; Cooper, 2005; Ronningstam, 2005), some others postulate that adaptive and pathological narcissism may be two distinct dimensions of personality (e.g., Pincus & Lukowitsky, 2010). According to Cain, Pincus, and Ansell (2008), normal narcissism is more frequently assessed in social psychology research, whereas pathological narcissism is more frequently assessed in clinical research and practice.

Narcissistic Grandiosity versus Narcissistic Vulnerability

It is generally accepted that there are two primary phenotypes of narcissism: grandiosity and vulnerability. A grandiose narcissistic individual is known for having one or more of the following characteristics: fantasies of unlimited power and adulation; distorted representations of self and other; an entitled attitude and inflated self-image; a lack of empathy, intense aggression and envy; and a tendency to exploit others. The grandiose narcissist tends to regulate self-esteem through denial of inferiority, claims of entitlement, overt self-enhancement, anger at unmet expectations, and devaluation of those who threaten self-esteem (Pincus & Lukowitsky, 2009). Gabbard (1989) wrote about "oblivious narcissists," who lack awareness about the discrepancy between their expectations and

reality, as well as how this conflict affects their interpersonal relationships. The concept of grandiose narcissism has been well represented in the DSM's definition of Narcissistic Personality Disorder (NPD) since it was introduced in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980).

Narcissistic vulnerability is less widely recognized than narcissistic grandiosity, though it has been described in the literature in a number of different ways, from Hendin and Cheek's (1997) "hypersensitive narcissist" to Masterson's (1993) "closet narcissist" to Gabbard's (1989) "hypervigilant narcissist" to Akhtar & Thomson's (1982) "covert narcissist." Most theoreticians agree that on the surface, the vulnerable narcissist presents as shy and restricted, possibly with an outward expression of empathy. However, underneath that façade lies a fragile, hidden core that is organized around grandiose expectations and feelings of entitlement. Unlike grandiose narcissists, vulnerable narcissists have greater difficulty modulating self-esteem, and they often rely on external feedback and validation from others to help manage their self-esteem. Furthermore, vulnerable narcissistic individuals tend to experience conflict around their feelings of entitlement, and they attempt to disavow these expectations, often leading to hostile and angry outbursts which are followed by shame and sadness. As a result of their fluctuating emotions, they appear outwardly labile, and they often experience significant interpersonal anxiety because of their fragile core (Dickinson & Pincus, 2003). The features of vulnerable narcissism were virtually absent from the criteria of NPD in the third and fourth editions of the DSM, but many of its core traits are captured in DSM-5 (Skodol, Bender, & Morey, 2013).

Measurement of Narcissism

Since its introduction in the late 1970s, the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979) has been the most widely recognized measure of narcissism. There were seven original subcomponents of narcissism, which are Authority, Superiority, Exhibitionism, Entitlement, Vanity,

Exploitativeness, and Self-Sufficiency (Raskin & Terry, 1988). It was developed alongside the DSM-III's criteria of Narcissistic Personality Disorder. Although the measure was developed in conjunction with personality disorder criteria, the NPI has been used predominantly in nonclinical samples and in empirical studies conducted by social and personality psychology researchers (Pincus & Lukowitsky, 2010). Although the NPI dominates the empirical literature on narcissistic personality traits, only a minority of the total studies using the NPI were conducted by clinical researchers using clinical populations (Cain, Pincus, & Ansell, 2008).

The NPI has been criticized by a number of clinicians because it assesses primarily adaptive characteristics, and scores on the NPI have been found to be negatively associated with depression and positively associated with achievement, motivation, and self-esteem (Brown et al., 2009). As a result, some clinical researchers have suggested that the NPI is a measure of non-distressed adaptive narcissism (Pincus & Lukowitsky, 2010) or subclinical narcissism (Paulhus & Williams, 2002) instead of its intended use as a measure of narcissistic pathology. Furthermore, the NPI, as with the DSM-III criteria for NPD, has been criticized for primarily assessing traits of grandiose narcissism while disregarding vulnerable narcissistic traits (Pincus & Lukowitsky, 2010).

In response to these shortcomings of the NPI, Pincus and colleagues (2009) developed the Pathological Narcissism Inventory (PNI; Pincus et al., 2009). The PNI is a 52-item questionnaire which generates a single measure of clinical narcissism, as well as seven individual sub-components of narcissism. The components include Contingent Self-Esteem, Hiding the Self, Devaluing, and Entitlement Rage, Exploitativeness, Grandiose Fantasy, and Self-Sacrificing Self-Enhancement. Confirmatory factor analyses revealed two higher-order components reflecting narcissistic grandiosity and narcissistic vulnerability (Pincus et al., 2009).

Narcissism and Social Media

Not surprisingly, there is a growing body of literature and research indicating that the trend of increasing self-focus over generations is manifested in the realm of social media in the present generation. One study found that Facebook users have higher levels of narcissism (as measured by the NPI) than non-users (Ryan & Xenos, 2011). Similarly, Buffardi and Campbell (2008) found that college students who scored high in narcissism on the NPI had more self-promoting content on their Facebook walls, more Facebook friends, and more self-promoting profile pictures. Furthermore, the Facebook pages of those users who scored highest in narcissism were judged by strangers as being more narcissistic (Buffardi & Campbell, 2008). A recent meta-analysis combined 19 independent studies that examined the relationship between social networking site use and narcissism. They found that narcissism was consistently associated with increased social networking site use, with high levels of narcissism found to be predictive of the number of photographs posted, the number of comments written, the number of status updates, and the number of friends or people followed (Dhir, Pallesen, Torsheim, & Andreassen, 2016).

Another study found that individuals with high levels of narcissism as measured by the NPI were more likely to post self-promoting content on Twitter and to have more friends on Facebook (McKinney, Kelly, & Duran, 2012). Carpenter (2012) found that individuals who scored high in the Grandiosity-Exhibitionism subscale of the NPI demonstrated more self-promoting behaviors on Facebook, including posting frequent status updates, sharing photographs of oneself, and frequently changing one's profile picture (Carpenter, 2012). A study comparing the expression of narcissism on Facebook and Twitter found that college students who post on Twitter have higher levels of Superiority, whereas individuals who post on Facebook have higher levels of Exhibitionism (Panek, Nardis, & Konrath, 2013).

While approximately 30-40% of face-to-face conversation involves people talking about themselves, approximately 80% of social media updates are focused on the self (Dunbar, Marriott, & Duncan, 1997; Naaman, Boase, & Lai, 2010). Recent functional magnetic resonance imaging (fMRI)

research indicates that disclosing information about oneself may be intrinsically rewarding, as it activates the brain regions of the mesolimbic dopamine system, the same area that responds to primary rewards such as food and sex (Tamir & Mitchell, 2012). The researchers found this effect only for information disclosed about the self, including one's own personality traits and opinions, but not for information disclosed about others. The authors purport that this behavior may be adaptive, in that it may engender social bonds and alliances with others (Tamir & Mitchell, 2012).

Narcissism and Selfie Posting

In the past two years, a number of studies have emerged examining the relationship between narcissism and selfie posting on social media. A recent study conducted by Sorokowski and his colleagues (2015) in Poland examined the relationship between four facets of narcissism (as assessed by the NPI) and selfie posting in men and women. They examined three categories of selfies, including "own selfies," "selfies with a romantic partner," and "group selfies." They asked participants to count and report all types of selfies in addition to all non-selfie photos posted on social media in the previous 30 days. Although women were found to post more selfies of all three types than men, their selfie-posting behavior was found to be generally unrelated to their narcissism scores. The only facet of narcissism that significantly predicted selfie posting among women was Admiration Demand, which is said to reflect a need to be famous, noticed, and admired, and it was found to predict the frequency with which women posted own selfies as well as selfies with a romantic partner. On the other hand, men's narcissism scores were found to positively predict posting of all three types of selfies. Three of the four sub-scales of narcissism significantly predicted selfie-posting among men. These were Leadership, Vanity, and Admiration Demand. The only facet of narcissism which was not predictive of selfie-posting among men was Self-sufficiency. Their findings indicate that narcissistic personality traits are predictive of selfie posting among men (Sorokowski et al., 2015).

In another study, Eric Weiser (2015) found that narcissism (as measured by the NPI) was significantly associated with the frequency of selfie posting among both men and women. Weiser (2015) found that gender moderated the relationship between several facets of narcissism and the frequency of selfie posting. In the case where there was a high level of the Entitlement/ Exploitativeness facet, men were found to post more selfies than women. In the case where there was a high level of the Leadership/ Authority facet, women were found to post more selfies than men. Based on these findings, the author suggested that narcissistic men might use selfie posting for the purpose of self-enhancement and validation. Furthermore, he speculated that narcissistic women who perceive themselves to be powerful and dominant over others may use selfie posting to satisfy their needs for agency without incurring social penalties. Age was not found to be a significant moderator (Weiser, 2015).

A study by Kim and Chock (2016) examined the relationship between narcissism (as measured by the NPI-16) and the posting of solo selfies and group selfies in adults ages 18 - 65. Narcissism was found to be positively and significantly correlated with both types of selfie posting (Kim & Chock, 2016). The authors did not find any significant gender differences, though they noted a significant interaction effect of age, indicating that younger participants with narcissistic traits posted selfies at a higher frequency than did older participants with narcissistic traits. This may be related to the fact that younger participants are more immersed in the world of social media than are older participants. Narcissism (assessed using the NPI-13) was also found to predict selfie-posting frequency in both men and women in the aforementioned study by Sung and colleagues (2016).

Not all studies examining the relationship between narcissism and selfie posting have found strong evidence linking narcissism with the phenomenon of selfie posting. A recently published study by Barry and colleagues (2017) examined the relationship between the number of selfies posted on Instagram in a 30-day period and pathological and non-pathological narcissism. They found a general lack of association between narcissism and selfie posting. However, they noted two significant

relationships between specific dimensions of narcissism and specific categories of selfies. Specifically, vulnerable narcissism was positively associated with physical appearance selfies, and grandiose narcissism was negatively associated with affiliation selfies. Based on these findings, they speculated that other constructs may be more predictive of selfie posting on Instagram (Barry et al., 2017).

Indications for the Present Study

I anticipate that narcissism will be positively associated with selfie posting in men, as this has been found in both Polish males (Sorokowski et al., 2015) and American males (Weiser, 2015; Fox & Rooney, 2015). Because vulnerable narcissists tend to rely on external validation and feedback from others (Dickinson & Pincus, 2003), I expect to find that individuals high in vulnerable narcissism will post more selfies than individuals high in grandiose and subclinical narcissism, as doing so is likely to yield external reinforcement in the form of “likes.”

3. The Dark Triad and Impulsivity

The Dark Triad of Personality

The “Dark Triad” was originally conceived of by Paulhus and Williams in 2002 as a constellation of three personality variables that are conceptually distinct but overlap empirically. The personality variables they identified are 1. narcissism, 2. Machiavellianism, and 3. psychopathy, which they noted are aversive and callous but fall within the normal range of functioning. According to Furnham and colleagues (2013), the Dark Triad construct was created because many researchers had found that the three personality variables resembled one another conceptually, but each had become so expansive in scope that their distinctions became muddled. In order to tease apart each of the triad traits, Paulhus and Williams (2002) conducted extensive research to evaluate the degree of distinctiveness of the components of the Dark Triad both empirically and conceptually.

Often considered the most malevolent trait of the Dark Triad, psychopathy is characterized by high levels of impulsivity and thrill seeking behavior along with low levels of empathy (Cleckley, 1976). According to Jones and Paulhus, a deficit in self-control is central to both the criminal and noncriminal conception of psychopathy. As a result, psychopaths tend to be impulsive and focused on the present. For instance, they may lie to achieve immediate gains, ignoring potential long-term adverse consequences (Jones & Paulhus, 2014).

Machiavellianism was named after the philosophy of Niccolo Machiavelli, the 16th Century Italian political writer who described, with brutal frankness, the unscrupulous and deceitful way that many politicians operate. The original questionnaire measure of Machiavellianism was developed by Christie and Geis (1970) and was based on the general understanding of a Machiavellian-type personality. “Machs” (i.e. individuals who score high in Machiavellianism) are said to be cynical, unprincipled, rely on interpersonal manipulation to succeed, and lack morality (Furnham et al., 2013). Whereas psychopaths act impulsively, abandon friends and even family, and pay little attention to their reputations, Machs plan ahead, build alliances, and are invested in maintaining a positive reputation (Jones & Paulhus, 2014).

Narcissism is another key component of the Dark Triad (see review of narcissism above in section 3). According to Jones and Paulhus (2014), it is the grandiose expression of narcissism that is represented in the Dark Triad. Specifically, it is grandiosity that is said to lead narcissistic individuals in an endless pursuit of ego-reinforcement that often results in self-destructive behavior. Narcissists have a tendency to exaggerate their competence but also tend to believe their pretensions. Ego-reinforcement is considered the primary motive behind narcissistic behavior. (Paulhus & Williams, 2002). Compared with narcissism as described in the previous section, which is considered to have both healthy and pathological expressions, the Dark Triad trait of narcissism implies a bias toward psychopathology, as it

is viewed alongside other aversive and callous traits (Pincus & Lukowitsky, 2010; (Paulhus & Williams, 2002).

According to Furnham and colleagues (2013), some individuals possess more than one of the Dark Triad traits. The three factors of the triad have been consistently found to be positively correlated, suggesting that they may have a common underlying element. Some common elements identified by researchers have included disagreeableness, lack of empathy (callousness), and interpersonal antagonism. Furthermore, individuals high in Dark Triad traits have been found to have deficits in self-control, a tendency toward short-term mating strategies, and selfishness (Furnham et al., 2013). All three traits of the Dark Triad have also been linked to the use of deception and other “cheater” strategies (Jonason et al., 2014). According to Paulhus and Abild (2011), all three members of the Dark Triad have been found to have high levels of agency and low levels of empathy. Psychopathy can be distinguished from the other two triad members by its high levels of impulsivity, and narcissism stands apart for its high levels of self-enhancement (Paulhus & Abild, 2011).

Measurement of the Dark Triad

Prior to Paulhus and Williams’ (2002) introduction of the Dark Triad as a construct, each personality variable of the Dark Triad was measured individually. In the past 10 years, four different measures have been developed, two of which currently dominate research on the Dark Triad (Farnham et al., 2013).

The *Dirty Dozen* was introduced by Jonason & Webster in 2010 and is a brief measure with only twelve items, four from each of the three triad members (The Dirty Dozen; Jonason & Webster, 2010). There is some disagreement about the utility of the measure. While some researchers find it useful for assessing the construct (e.g., Rauthmann, 2012), others have been critical, saying that it is too short to adequately do so (e.g., Jones & Paulhus, 2014).

The *Short Dark Triad* (SD3) is the most recent measure to be introduced, and it was developed by one of the original researchers who coined the “Dark Triad” term (Jones & Paulhus, 2014). It consists of 27 items total, 9 items to assess each triad member. It has been employed successfully by a number of researchers. Although longer than the *Dirty Dozen*, the *SD3* is considered to be a good compromise between the desirability of minimizing the number of questions, and being inclusive enough to ensure reliability and validity (Paulhus & Abild, 2011).

The Dark Triad and Social Media

Although it is a fairly recent construct, the Dark Triad has been studied in the context of social media and specifically in relation to selfie posting. Jesse Fox and Margaret Rooney (2015) examined trait predictors of selfie posting and photo editing among a nationally representative sample of men in the United States. Their predictor variables included the Dark Triad (narcissism, psychopathy, and Machiavellianism) as assessed by the Dirty Dozen, and trait self-objectification as measured by the Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998), which assesses whether one places greater value on appearance-based traits (e.g., physical attractiveness) or competence-based traits (e.g., health). The researchers found that men with higher levels of self-objectification (i.e., value appearance over competence) and men with higher levels of narcissism tend to spend more time on social media applications and more frequently edit their photos than individuals with lower levels of self-objectification and narcissism. Furthermore, they found that men higher in narcissism and psychopathy reported more frequent selfie posting than men lower in these traits. This study was the first to provide empirical evidence indicating that narcissism and psychopathy are associated with the posting of selfies (Fox & Rooney, 2015).

Indications for the Present Study

In line with the findings of previous researchers (Fox & Rooney, 2015), I expect to find that psychopathy and narcissism will be predictive of selfie posting. Jesse Fox and Margaret Rooney (2015) noted that Machs tend to plan ahead and to be more strategic than psychopaths and narcissists, and thus they may recognize that social media, because of its wide broadcasting, is far too crude a method for achieving influence over a particular targeted individual. Because the previous study used a constricted and limited measure of the Dark Triad with only four items per construct, it is possible that the measure did not adequately capture the scope of Machiavellianism and its many nuances (Fox & Rooney, 2015). For this reason, I will use the Short Dark Triad, which its authors consider to be a more robust measure of the Dark Triad (Jones & Paulhus, 2014). Because prior research only studied a sample of men, I plan to investigate women as well to examine whether gender differences exist in the relationship between traits of the Dark Triad and selfie posting.

Impulsivity and its Measurement

The concept of impulsivity has been defined as a “predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individuals or to others” (p. 385; Stanford et al., 2009). In other words, impulsivity generally encompasses a tendency to act without thinking ahead and an inability to inhibit an inappropriate behavioral response (Reynolds et al., 2006). It is related to the Dark Triad in that impulsivity is a defining feature of psychopathy. From a societal standpoint, impulsivity can be viewed as counterproductive, and it has been associated with several harmful behaviors including aggression, substance abuse, gambling, overeating, and overspending (Stanford et al., 2009). In 1985, Ernest Barratt re-conceptualized impulsivity from a uni-dimensional trait to a multi-factored construct composed of three sub-traits: Cognitive Impulsiveness, which refers to making quick decisions, Motor Impulsiveness, which refers to acting without thinking, and Non-planning impulsiveness, which refers to a lack of forethought (Barratt, 1985). When the BIS-11 was introduced in 1995, Cognitive Impulsiveness was re-

labeled Attentional Impulsiveness by Patton and colleagues (1995), and it was redefined as an inability to focus attention or concentrate, in order to accommodate the findings of new psychometric data (Patton et al., 1995). Impulsivity as a construct can be studied using both behavioral measures and self-reporting instruments. For the purpose of this study, I will focus on self-report measures.

The *Barratt Impulsiveness Scale- 11* is the eleventh revision of the most widely-used measure of impulsivity (BIS-3; Patton et al., 1995). It consists of 30 statements describing common impulsive or non-impulsive behaviors and preferences. Respondents are asked to rate each on a four-point scale of how frequently they experience each (Patton et al., 1995).

The *I-7* is a 54-item questionnaire which assesses impulsiveness, venturesomeness, and empathy (Eysenck et al., 1985). The impulsivity subscale consists of 19 yes/no questions related to one's inclination to act on impulse (Eysenck et al., 1985).

Impulsivity and Social Media

To date, two studies have been conducted examining impulsive behavior in the realm of social media. The first, published in 2016 by Mustafa Savci and Ferda Aysan, used a sample of 307 Turkish university students. Participants were asked various questions about their social media use, such as whether Facebook is a regular part of their routine, and whether they would feel disconnected from friends if they were unable to use Facebook. The authors found that attentional impulsivity, motor impulsivity, and non-planning impulsivity, as measured by a shortened version of the BIS-11, were positively and significantly related to social media use. (Savci & Aysan, 2016). The second study examined 316 Chinese adults ranging in age from 18 to 40. Participants completed a questionnaire assessing addictive tendencies toward social networking sites and a Chinese version of the I7. The researchers found that impulsivity is a psychological risk factor of addictive behaviors on social networking sites (Wu et al., 2013).

Indications for the Present Study

Consistent with the study by Savci and Aysan (2016) which found that impulsivity is linked to social media use, I expect to find that attentional impulsivity, motor impulsivity, and non-planning impulsivity will be predictive of selfie posting.

4. Attachment

Attachment Theory

Attachment theory is based on psychoanalyst and theoretician John Bowlby's notion that attachment behaviors begin in infancy, when closeness to a caregiver is essential to an infant's survival. Early attachment behaviors include clinging, crying, and searching frantically to prevent separation from the attachment figure who provides support, protection, and care. According to Bowlby (1988), the emotional attachment between the primary caregiver and the infant during the first year of life is crucial to a child's cognitive development, and it plays a major role in the child's ability to create and sustain meaningful interpersonal relationships throughout one's lifetime. Bowlby posited that disruption in the primary attachment relationship negatively impacts a child's development and personality organization and that such disruption is linked to later psychological disturbance (Bowlby, 1980).

Bowlby proposed that an infant is biologically driven to seek safety from available attachment figure(s) and will develop a style of attachment that is the best adaptation toward obtaining care. When a child is able to maintain close proximity with at least one attachment figure and one's basic needs are met, he or she will be able to use the primary caregiver as a "secure base" from which to explore the world and engage in autonomous play, with the confidence that he or she may return at any time to his or her caregiver for physical and emotional support. When these conditions are not met, a child may be reluctant to explore and may have a hard time gaining a sense of autonomy and security (Ainsworth, Blehar, Waters, & Wall, 1978).

The characteristics of an infant's relationship with his or her caregiver slowly develop into an internal working model of thoughts, emotions, and behaviors about oneself and others (Craik, 1943, Bowlby, 1988). This internal model contains attachment-related knowledge from the past and continues to develop throughout one's lifetime, helping to regulate an individual's attachment-relevant behavior. One's internal working model is essentially an unconscious mental representation of the primary attachment figure, which serves as a model for later interpersonal relationships and provides the developing child with a sense of what one can anticipate from others. When attachment figures are available in times of need, a child develops a sense of security and confidence, and the attachment system functions well. However, unavailable or rejecting attachment figures can cause self-doubt and uncertainty about one's feelings which persist across the lifespan (Mikulincer, Shaver, Sapir-Lavid, & Avihou-Kanza, 2009). Bowlby argued that internal working models remain relatively stable across one's lifespan, although there is the potential for change later on through a romantic or therapeutic relationship (Bowlby, 1969).

According to Mary Ainsworth, there are three primary styles of infant attachment: secure, anxious-ambivalent, and avoidant. Ainsworth developed the Strange Situation procedure to identify infants' primary attachment styles. The procedure involves separating an infant from his primary attachment figure and then reuniting the two to see how the infant reacts. Securely attached infants become distressed when caregivers leave the room, but upon the caregiver's return, infants actively seek them out and are comforted by their presence. Infants with an anxious-ambivalent style of attachment become extremely distressed upon separation and have trouble being comforted by the caregiver upon his or her return. Infants with an insecure-avoidant style of attachment do not appear to experience distress after being separated, and, once reunited, they actively avoid seeking contact with the caregiver (Ainsworth, 1979).

Adult Attachment and its Measurement

Both Bowlby (1979) and Ainsworth and colleagues (1978) believed that the quality of early attachment has an ongoing influence on one's life. In 1985, Mary Main and her colleagues translated Ainsworth's styles of infant-mother attachment into corresponding styles of attachment in adulthood. They identified four styles of adult attachment. *Autonomous* adults value attachment relationships and describe them in a way that is coherent, consistent, and non-defensive. *Dismissing* adults tend to minimize or deny negative aspects of their early attachment relationships, providing contradictory accounts that appear defensive and show lapses in memory. *Preoccupied* adults appear to be preoccupied with their attachment figures, often speaking incoherently when discussing their attachment figures and demonstrating ambivalence concerning their past attachment representations. Lastly, *Unresolved/ Disorganized* adults have signs of unresolved trauma from loss or abuse in early attachment relationships (George, Kaplan, & Main, 1985).

As the importance of adult attachment became more widely recognized and researched in the late 20th Century, a number of investigators began studying whether adult attachment style could be identified and studied in romantic relationships. Hazan and Shaver (1987) identified a link between childhood and adult attachment in a study of romantic love. Securely attached adults, similar to the infant classification, were found to identify their romantic relationships as trusting, supportive, happy, and longer lasting. Preoccupied adults were found to be analogous to Ainsworth's anxious-ambivalent infants and to experience extreme feelings of obsession, and of desire for union, as well as emotional volatility toward their intimate partners. Avoidantly attached adults were found to have a general fear of intimacy and were distrusting that others would provide care. Similar to infants in this category, they presented with extreme self-reliance and independence as an adaptation to deal with their mistrust of others (Hazan & Shaver, 1987).

Since Ainsworth's (1978) original conceptualization of infant attachment styles, a number of measures have been developed to assess this construct. For the purpose of this study, I will focus on measures of adult attachment. There are two major approaches to assessing attachment in adulthood.

The first is used primarily by clinical and developmental psychologists, and is based on narrative interviews. The most recognized interview measure is the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985), which categorizes adults into one of four attachment styles based on a series of questions assessing one's mental representations of their early attachment experiences.

The second approach to assessing adult attachment is most frequently endorsed by social psychologists, who developed self-report measures as a means of assessing attachment more succinctly in surveys. One of the most widely used measures in this group is the Experiences in Close Relationships Scale- Revised (ECR-R; Brennan, Clark, & Shaver, 1998) which consists of 36 self-report items and yields two scores—one of attachment avoidance and one of attachment anxiety. Attachment avoidance refers to one's tendency to distance oneself from a romantic partner as a result of mistrust. Attachment anxiety refers to one's fears that a romantic partner will be unavailable or inconsistent in times of need. A 12-item version of this measure was created by Wei and colleagues (2007).

Attachment in Social Media

A handful of studies have been conducted examining adult attachment in the context of social media. Oldmeadow and his colleagues (2013) sought to examine the relationship between attachment (as measured by the ECR) and Facebook use in 617 adults. They found that individuals with high levels of attachment anxiety used Facebook more frequently, were more likely to use Facebook when feeling negative emotions, and were more concerned about how they were perceived by others on Facebook. Individuals high in attachment avoidance, on the other hand, were found to use Facebook less, had less positive attitudes toward Facebook, and were less open to it. The authors concluded that Facebook and

other social media applications can serve attachment functions and may be particularly appealing to individuals with high levels of attachment anxiety (Oldmeadow et al., 2013).

Another study by Marshall and colleagues (2013) tested attachment anxiety and avoidance (as measured by the ECR-R) as predictors of jealousy and surveillance behaviors on Facebook (e.g., frequently checking a significant other's Facebook page). They found that individuals with high levels of attachment anxiety were more likely to exhibit surveillance and jealousy behaviors on Facebook, whereas individuals high in attachment avoidance were less likely to exhibit these behaviors. They found that level of trust in the relationship and level of jealousy partially mediated the association between attachment anxiety and Facebook surveillance. Those who lacked trust in their partner and had heightened levels of jealousy were more likely to check their significant other's Facebook page (Marshall et al., 2013).

Indications for the Present Study

I anticipate that individuals who are insecurely attached, including anxiously and avoidantly attached individuals, will be found to post more selfies than securely attached individuals. Because it has been shown that anxiously attached individuals tend to use Facebook more frequently, post more when feeling negative emotions, are more concerned about how they are perceived by others on Facebook (Oldmeadow et al., 2013), and demonstrate greater surveillance and jealousy behavior on Facebook (Marshall et al., 2013) compared with people with other attachment styles, I expect to find that individuals with an anxious style of attachment will also post more selfies than will avoidantly or securely attached individuals.

5. Rejection Sensitivity

Rejection Sensitivity and its Measurement

The expectations that one has regarding acceptance and rejection are a central aspect of one's internal working model, and they play a significant role in shaping one's attachment relationships (Bowlby, 1969). Geraldine Downey is a social psychologist who researches beliefs and expectations about acceptance and rejection in the context of romantic relationships. Along with her colleagues, Downey (1998) defines rejection sensitivity as "the disposition to anxiously expect, readily perceive, and overreact to rejection" (p. 545). Rejection sensitivity is theorized to result from early experiences of rejection or unresponsiveness, which impacts future expectations about rejection (Downey et al., 1998). Rejection-sensitive individuals expect that they will be rejected by others, interpret ambiguous cues as rejecting, and tend to overreact to real or imagined situations of rejection (Downey et al., 1998).

Downey and colleagues (1998) hypothesized that individuals who are sensitive to rejection may behave toward their romantic partners in ways that promote rejection and eventual breakup, creating a self-fulfilling prophecy. They tested this hypothesis using a diary study in which individuals were asked to respond daily for 28 days to questions about relationship conflict, satisfaction, their thoughts of ending the relationship, and their perceptions about whether their partner was accepting or rejecting.

They also measured rejection sensitivity using the Rejection Sensitivity Questionnaire (RSQ; Downey & Feldman, 1996), which assesses one's propensity to perceive rejection in romantic relationships. The investigators found that women high in rejection sensitivity are more likely to elicit rejection from their partners. In particular, they found that relationship conflict activated a process through which women's rejection expectancies led to conduct which increased the likelihood that their partners would reject them, with partners reporting high levels of relationship dissatisfaction and thoughts of ending the relationship following conflict. Furthermore, one year after the study, they found that 44% of couples with a female partner high in rejection sensitivity had broken up, compared with only 15% of couples with a female partner low in rejection sensitivity (Downey et al., 1998).

A series of three studies by Ayduk and colleagues (1999) found that women high in rejection sensitivity tend to react with hostility in situations that activate anxious expectations of rejection. They concluded that women high in rejection sensitivity are not habitually more hostile than women low in rejection sensitivity, but rather that hostility is elicited in situations when these individuals perceive rejection (Ayduk et al., 1999).

Rejection Sensitivity and Attachment

According to Finzi-Dottan and colleagues (2011), insecurely attached individuals tend to be more sensitive to rejection than securely attached individuals. They posited that anxiously attached individuals exhibit high levels of rejection sensitivity because their fear of rejection often operates as a self-fulfilling prophecy. Furthermore, they speculated that avoidantly attached individuals are likely to avoid intimate relationships as a means of protecting themselves from rejection (Finzi-Dottan et al., 2011). In other words, individuals who are insecurely attached tend to create self-fulfilling prophecies in which they induce the very rejection they fear.

Rejection Sensitivity and Social Media

Farahani and his colleagues (2011) sought to examine the relationship between rejection sensitivity and Facebook use in a group of university students in Iran. They found that individuals disposed to anxiously expect rejection spend more time using Facebook than individuals with low levels of rejection sensitivity. This was the case for both men and women with high levels of rejection sensitivity. They concluded that individuals who are highly sensitive to rejection are more inclined to use Facebook and other social networking websites because the virtual world does not provoke as much anxiety regarding rejection as face-to-face interaction (Farahani et al., 2011). This finding is consistent with research by Oldmeadow and colleagues (2013), who found that individuals with high attachment anxiety used Facebook more frequently and were more likely to use it when feeling negative emotions.

Indications for the Present Study

Consistent with the findings of Farahani and colleagues (2011) that individuals with high levels of rejection sensitivity tend to spend more time on Facebook than individuals with low levels of rejection sensitivity, I expect to find that people disposed to anxiously expect rejection post more selfies than people with low levels of rejection sensitivity. This is also consistent with the notion that rejection sensitive individuals tend to create self-fulfilling prophecies in which they induce a rejection about which they are fearful (Finzi-Dottan et al., 2011), with frequent selfie posting creating the impression of insecurity and ultimately serving to promote the feared rejection.

6. Mentalization

The Capacity for Mentalization

Mentalization refers to the capacity to perceive and interpret the feelings, beliefs, needs, thoughts, motivations, and desires of oneself and others (Bateman & Fonagy, 2012). The act of mentalization is largely non-conscious and intuitive, requiring one to imagine the mental activity of another or the unconscious motive behind one's own behavior. In other words, mentalizing occurs automatically and mostly outside of conscious control, in response to social interactions. One's impressions of others' mental states provide important information about the underlying motivations of behavior (Bateman & Fonagy, 2012). A genuine capacity to mentalize, while acknowledging the impossibility of *completely* knowing the mind of another, nevertheless strives to achieve a *reasonably accurate* model of another person's mind states (Fonagy et al., 2016). Mentalization refers to both the fathoming of one's own mental states as well as the fathoming of others' mental states (Jurist, 2005).

According to Bateman and Fonagy (2006), explaining behavior in terms of perceived mental states of others is more uncertain and ambiguous compared with explanations based on the physical environment. A mentalizing stance is merely a conception of reality rather than reality itself, and thus it

tends to produce outcomes that are less clear than a stance focusing on physical circumstances. Mentalizing can aid in emotion regulation, as one's emotions are directly related to one's ability or inability to recognize specific desires or goals in oneself and in others. Mentalized affectivity refers to the specific aspect of mentalization that relates to affect regulation (Jurist, 2005). According to Elliot Jurist (2005), mentalized affectivity involves the capacity to reflect on affective states and to consider how present and future emotions, both real and imagined, are experienced in the context of past occurrences. Mentalized affectivity is crucial to emotion regulation, as it facilitates the identification and modulation of affect (Bateman & Fonagy, 2006).

A number of studies have found a link between mentalization and secure attachment, with the quality of one's early attachment relationship being predictive of one's capacity for mentalization. (Raikes & Thompson, 2006). Fonagy and colleagues (2002) initially formulated the hypothesis that mentalization develops from secure attachment. However, Elliot Jurist (forthcoming) argues that this notion that mentalization emerges from secure attachment is overly simplistic, and he points to research indicating that mentalization has a distinct trajectory separate from attachment, noting that mentalization and attachment do not always correspond (Fonagy & Target, 2008; Gergely & Unoka, 2008).

Over the past several years, mentalization has developed into a central theoretical concept in the study of personality pathology. The operationalized version of mentalization for the purpose of research is referred to as Reflective Functioning (RF), and it has been used extensively to assess the quality of mentalization in the context of narratives (Fonagy, Luyten, & Strathearn, 2011). A deficit in the capacity to mentalize has been associated with Borderline Personality Disorder (BPD), and Mentalization Based Treatment (MBT) was developed to treat borderline patients by helping them develop a mentalizing capacity to better navigate interpersonal relationships (Bateman & Fonagy, 2006).

The Measurement of Mentalization/ Reflective Functioning

There are two major methods for assessing reflective functioning empirically. The first involves coding narratives using the RF (Reflective Functioning) scale, an approach that measures reflective functioning on the basis of the Adult Attachment Interview (AAI) narratives. It has been adapted for use with other interviews, including the Parent Development Interview (PDI) as well as the Pregnancy Interview (PI). Each passage in the interview is scored on an 11-point scale ranging from negative to exceptional based on one's ability to reflect on the mental states of self and others in an interpersonal context (Fonagy et al., 2008).

Because this assessment method is time-consuming and expensive, a new method for assessing reflective functioning was recently developed by Fertuck and colleagues (2012). The computerized version of the RF scale (CRF; Fertuck et al., 2012) is more efficient and may be available for use with alternative narrative data sources. A computerized text analysis system does not require raters to be trained, and thus it is considered to be more portable and easier to circulate within the research community.

A third method for measuring the capacity for RF is a self-report measure known as the Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016). The RFQ is an 8-item self-report measure which asks questions about one's ability to identify and interpret behavior on the basis of the perceived mental states of oneself and others. It distinguishes between hypermentalizing, or a tendency to attribute a high level of certainty to one's interpretation of mental states without sufficient evidence, and hypomentalizing, or a high level of uncertainty about the mental states of oneself and others (Fonagy et al., 2016).

Indications for the Present Study

Although reflective functioning has never before been examined in the context of social media, low reflective functioning has been linked to insecure attachment, difficulties with self-regulation, Borderline Personality Disorder, and Narcissistic Personality Disorder (Diamond et al., 2014). Consistent with research linking attachment anxiety and narcissism to increased selfie posting, I anticipate that low reflective functioning will be predictive of increased selfie posting on social media (Oldmeadow et al., 2013; Marshall et al., 2013; Weiser, 2015; Kim & Chock, 2016; Sung et al., 2016; Fox & Rooney, 2015).

7. Research Questions and Hypotheses

A review of the literature indicates that narcissism, the Dark Triad of personality (narcissism, psychopathy, and Machiavellianism), impulsivity, attachment, and rejection sensitivity are all associated with the sharing of information on social media. Because selfies are frequently shared on social media, it is likely that these aforementioned variables will be related to a high frequency of selfie posting. To date, only a handful of studies have assessed selfie posting behavior empirically, examining selfie posting and its relationship to narcissism and to traits of the Dark Triad. Because the capacity for mentalization has not yet been examined in relation to social media, this facet of the current study will be exploratory in nature. Below I will detail the six key questions to be explored and their corresponding hypotheses:

Question 1: Do individuals with high levels of narcissism post more selfies than individuals with low levels of narcissism?

Hypothesis 1a: Vulnerable and grandiose narcissism, measured by the PNI, as well as subclinical narcissism, measured by the NPI, will predict higher levels of selfie posting.

Hypothesis 1b: Gender will moderate the relationship between the three types of narcissism and selfie posting, such that the relationship between narcissism and selfie posting will be stronger among men.

Question 2: Do individuals with high features of Dark Triad traits post more selfies than individuals low in Dark Triad traits?

Hypothesis 2a: Psychopathy and narcissism, measured by the SD3, will predict higher levels of selfie posting.

Hypothesis 2b: Gender will moderate the relationship between the traits of the Dark Triad and selfie posting, such that the relationship between narcissism and selfie posting and the relationship between psychopathy and selfie posting will be stronger among men.

Question 3: Does impulsivity predict selfie posting behavior?

Hypothesis 3a: Attentional impulsivity, motor impulsivity, and non-planning impulsivity, as measured by the BIS-11, will predict higher levels of selfie posting.

Question 4: Does attachment style predict selfie posting behavior?

Hypothesis 4a: Attachment insecurity, measured by the ECR-S, will predict higher levels of selfie posting.

Hypothesis 4b: Attachment anxiety will predict higher levels of selfie posting than will attachment avoidance.

Question 5: Does rejection sensitivity predict selfie posting behavior?

Hypothesis 5a: Rejection sensitivity, measured by the RSQ, will predict higher levels of selfie posting.

Question 6: Does reflective functioning predict selfie posting behavior?

Hypothesis 6a: Higher levels of reflective functioning, measured by the RFQ, will predict lower levels of selfie posting. (This question and hypothesis are exploratory in nature, as no published past research has been conducted in related areas.)

CHAPTER 3: METHODS

Participants

Participants in this study were 499 individuals between the ages of 18 and 29. The age range was selected based on the developmental period of “emerging adulthood,” which Jeffrey Arnett (2014) defines as a “new period of life for young people in the United States and other industrialized societies, lasting from the late teens through the mid- to late twenties” (p. 4). According to Arnett (2014), this period is characterized by identity exploration, optimism, instability in work, school, and family life, and a focus on the self without the constraints of marriage, children, or a career. Furthermore, a significantly greater percentage of individuals between ages 18-29 use Facebook, Instagram, and Twitter compared with other adult age groups (Duggan & Brenner, 2012).

Participants were recruited via a variety of techniques. The majority of participants were undergraduate students at the City College of New York who were recruited through the psychology research subject pool and were able to participate in the study in exchange for course credit. Additional participants were recruited via postings on Facebook and Reddit and through email. Participants were required to be living in the United States and to be proficient in English to partake in the study.

Procedure

This study used an online survey questionnaire to collect data from participants. The survey was converted into an electronic file and uploaded to Qualtrics (www.qualtrics.com), a web-based data system specializing in social science Internet research. Data was stored on a secure server which could only be accessed by the principal investigator. Interested participants who followed the link to the survey were presented with a detailed description of the study, requirements for eligibility, and information regarding informed consent, which reminded participants that they could exit the survey at any time. Participants were informed that if they completed the survey, they would have the option of

being included in a drawing to win one of five \$50 iTunes gift cards. After reading the informed consent information, participants had the option to click “yes” to consent and continue with the survey or to click “no” to decline participation and discontinue the study.

Participants who consented to participate in the study were directed to a page stating that the study would take approximately 30-45 minutes to complete, and that they should only begin the survey if they would be able to spend this time completing it without interruption. Those who responded “no” were asked to discontinue and return to take the study at a later time. Those who respond “yes” were presented with a screener to ensure that they met the age, English proficiency, and U.S. residency requirements. Participants who met all of the criteria were presented with the survey questions. Participants were able to terminate participation at any time by clicking the “Exit Survey” button at the bottom of each page. At the end of the survey, participants had the option of entering their email address (which was not linked to their survey responses) for a chance to win one of five \$50 iTunes gift cards. Regardless of whether participants entered the raffle or not, they were directed to a page thanking them for their participation and providing referral information in the unlikely event that they experienced distress while taking the survey.

Measures

Demographic Information

Standard demographic questions were asked, including age, race, ethnicity, gender, biological sex, sexual orientation, annual household income, and relationship status. Participants who were currently in a romantic relationship were asked to report on the number of months that they had been in their current relationship.

Posting Behavior

Participants were asked about their use of social media applications over the previous two weeks. They were asked to count and report the number of unique selfies posted across social media applications in the previous 14 days. Adapted from the Oxford Dictionary definition of a selfie (Oxford Dictionaries Online, 2013), the operationalized definition which was presented to participants in the study was: “a self-taken photograph (of you alone or in the presence of others) taken at arm’s length, in a mirror, or with a selfie stick or other apparatus, and shared on social media”. Individuals reported on the total number of selfies posted across social media applications. In addition, individuals were also asked a number of open-ended questions about their motivations for posting selfies. These included questions such as “Why do you choose to post selfies on social media? If you do not post selfies, why not?” and “Has your view of yourself changed since you began posting selfies on social media? If so, how?”

Pathological Narcissism

The Pathological Narcissism Inventory (PNI; Pincus et al., 2009) is a 52-item questionnaire that assesses seven facets of pathological narcissism and generates scores for both narcissistic grandiosity and narcissistic vulnerability. Of the seven scales, the three that assess narcissistic grandiosity include Exploitativeness (EXP), Grandiose Fantasy (GF), and Self-Sacrificing Self-Enhancement (SSSE). The four scales assessing vulnerability include Contingent Self-Esteem (CSE), Hiding the Self (HS), Devaluing (DEV), and Entitlement Rage (ER). According to Pincus and colleagues (2009), Grandiose PNI subscales are associated with domineering, intrusive, vindictive, and overly nurturant interpersonal problems. Vulnerable PNI subscales are associated with cold, exploitable, and socially avoidant interpersonal problems (Pincus et al., 2009).

Confirmatory factor analytic results have demonstrated support for the PNI as an effective and useful seven-factor construct with good internal consistency (α 's typically range from .80 to .93) (Pincus, 2013). EXP, GF, and SSSE were identified as a higher order component reflecting narcissistic grandiosity. CSE, HS, DEV, and ER were identified as a higher order component representative of narcissistic vulnerability. The PNI was found to be negatively correlated with self-esteem and empathy and positively correlated with shame, aggression, and indicators of borderline personality organization (Pincus et al., 2009).

Subclinical Narcissism

The short version of the *Narcissistic Personality Inventory* (NPI-16; Ames, Rose, & Anderson, 2006) is a condensed version (16 items) of the original 40-item measure (NPI-40; Raskin & Terry, 1988) and is used to assess trait narcissism in a non-clinical population. The NPI-16 was developed for use in studies in which the length of the original measure might limit its use. Each of the 16 items presents two self-attitude statements, and respondents are asked to select the statement that applies to them most (Ames et al., 2006). The NPI-16 was found to have an acceptable internal consistency ($\alpha = .72$) relative to the original measure ($\alpha = .84$). The NPI-16 was found to be positively correlated with measures of extraversion, openness, self-esteem, and self-monitoring, demonstrating good convergent validity (Ames et al., 2006).

The Dark Triad

The *Short Dark Triad* (SD3; Jones & Paulhus, 2014) consists of 27 items in total, 9 each to assess the subscales of narcissism, psychopathy, and Machiavellianism. Because it is a relatively recent measure, only preliminary validation data have been collected. The investigators performed exploratory structural equation modeling over the traditional confirmatory factor analysis, and they found that all items loaded on their hypothesized factors. The researchers then correlated each subscale to standard

measures of narcissism, psychopathy, and Machiavellianism to assess for concurrent validity. They found that each subscale correlated .68 or better with its standard counterpart, and when disattenuated for measurement error, correlations ranged from .82 to .92. They concluded that all measures of the SD3 show a strong correspondence with their criterion counterparts and that the SD3 demonstrates robust psychometric properties across samples (Jones & Paulhus, 2014).

Impulsivity

The *Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995)* is a self-report measure assessing the personality and behavioral construct of impulsiveness. The current version is composed of 30 items describing common impulsive behaviors and preferences. Items are scored on a four-point scale ranging from “Rarely/ Never” to “Almost Always/ Always.” The authors identified three higher-order factors, which reflect Barratt’s (1985) three-factor theory of the structure of impulsivity: Attentional Impulsiveness, Motor Impulsiveness, and Non-planning Impulsiveness (Patton et al., 1995). The measure has been found to have high internal consistency ($\alpha=.83$) and to be strongly correlated with a number of other measures of impulsivity (Stanford et al., 2009).

Attachment

The *Experiences in Close Relationships Scale—Short Version (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007)* is a self-report measure of attachment that has been shortened from the original 36-item version. Participants are asked to read 12 statements and respond on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) on how much each statement applies to them generally in their romantic relationships. Half of the items comprise a scale of attachment-related avoidance, which measures the tendency to distance oneself in romantic relationships as a result of mistrust. The other half comprises a scale of attachment-related anxiety, which measures a fear of rejection, unavailability, and abandonment in romantic relationships. Wei and colleagues (2007) found that the ECR-S has

equivalent test-retest reliability and construct validity to the original 36-item measure. The internal consistency for both the anxiety scale ($\alpha = .78$) and the avoidance scale ($\alpha = .84$) were not found to be as strong as in the original, though they are considered acceptable for use with a college-age population (Wei, Russell, Mallinckrodt, & Vogel, 2007).

Rejection Sensitivity

The *Rejection Sensitivity Questionnaire (RSQ; Downey & Feldman, 1996)* is an 8-item measure in which participants are asked to read a number of hypothetical situations and rate their anxiety about the outcome of each situation on a 6-point scale ranging from 1 (very unconcerned) to 6 (very concerned). For each item, individuals are also asked to rate the perceived likelihood that the other person would respond in an accepting manner on a 6-point scale ranging from 1 (very unlikely) to 6 (very likely). The test-retest reliability was found to be .83 over a two to three week period and .78 over a period of four months (Downey & Feldman, 1996). The variable has been analyzed both continuously and as a dichotomy, delineating individuals with scores above the median as High Rejection Sensitivity (HRS) and individuals with scores below the median as Low Rejection Sensitivity (LRS).

Mentalization/ Reflective Function

The *Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016)* is an 8-item self-report measure that assesses one's capacity to perceive and interpret the intentional mental states of others. Participants are asked to read a number of statements and to rate the extent to which they agree with each statement on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Validation studies of this measure supported a two-dimension model. The *Certainty of Mental States* subscale assesses certainty about mental representations of self and others, while the *Uncertainty of Mental States* subscale assesses hypomentalizing, or concrete thinking characterized by an inability to develop nuanced models of the mental states of oneself and others. The test-retest reliability over a three week

period was .75 for *Uncertainty of Mental States* and .84 for *Certainty of Mental States*. Estimates of internal consistency ranged from .63 for to .67 in a non-clinical sample and from .65 to .77 in a sample of patients with diagnoses of Borderline Personality Disorder (Fonagy et al., 2016). A high level of uncertainty about the mental states of oneself and others, as indicated by a high score on the *Uncertainty of Mental States* subscale and a low score on the *Certainty of Mental States* subscale, is indicative of less adaptive functioning and suggests a lower level of reflective functioning (Badoud et al., 2015).

Data Collection and Analysis

Statistical analyses were conducted using SPSS version 21 and Stata version 14.2. Tests of normality determined that variables were not normally distributed. The primary outcome variable, i.e., the total number of selfies posted, was transformed via a log transformation in order to mitigate the potentially distorting influence of any outliers. However, the primary outcome variable was not able to be normalized due to the large number of zeros in the dataset. Because a standard linear regression model assumes normally distributed data, a number of tests were performed to assess which type of count regression model would best fit the data. Three count models were considered as possible candidates: (1) a Poisson regression model, (2) a negative binomial model and (3) a zero-inflated negative binomial model. The three count models were compared in Stata via residual analysis and other criteria to determine which of the models would provide an acceptable fit to the data. The Poisson model assumes that the mean and variance of the dependent variable will be equal. However, the dependent variable, the total number of selfies posted, was overdispersed, violating that assumption. Thus, not surprisingly, in every comparison among these models, and for each hypothesis, the Poisson model failed to provide as satisfactory a fit to the data as either of the negative binomial variants. A number of evaluative fit criteria were then used to determine which of the two negative binomial variants would best fit the data. The discrepancies between the observed and fitted counts generated

by each model were compared, and the standard negative binomial model provided as good a fit as the zero-inflated negative binomial model, or else provided a better fit. Given that fact, and in the interest of parsimony, the simpler, standard negative binomial model was used to test the hypotheses. Negative binomial regression is often employed to examine data that are not normally distributed with an excess number of zeros (Cameron & Trivedi, 2007).

Means of Hypothesis Testing

The first hypothesis is that higher levels of vulnerable narcissism, grandiose narcissism, and subclinical narcissism will predict higher levels of selfie posting. Gender was hypothesized to moderate the relationship between narcissism and selfie posting, such that narcissistic males would post more selfies than would narcissistic females. Vulnerable narcissism was expected to predict higher levels of selfie posting than grandiose and subclinical narcissism. To test these hypotheses, a negative binomial regression was conducted. Gender was tested as a moderator between each type of narcissism and the total number of selfies posted in the past two weeks.

The second hypothesis, that individuals with high levels of Dark Triad traits will post more selfies than will individuals low in these traits, was tested using negative binomial regression to determine whether psychopathy, narcissism, and/or Machiavellianism predict selfie posting. Gender was tested as a moderator between each of the traits of the Dark Triad and the total number of selfies posted.

The third hypothesis is that individuals with higher levels of impulsivity will post more selfies than will individuals with low levels of impulsivity. To test this hypothesis, negative binomial regression was conducted to assess whether attentional impulsivity, motor impulsivity, and non-planning impulsivity are predictive of selfie posting.

The fourth hypothesis, that higher levels of attachment insecurity will predict higher levels of selfie posting, was tested using negative binomial regression to determine whether attachment anxiety

and/or avoidance predict the volume of selfie posting. The effect sizes were compared to determine whether attachment anxiety is more predictive of selfie posting than is attachment avoidance.

The fifth hypothesis is that higher levels of rejection sensitivity will predict higher levels of selfie posting. This hypothesis was tested using negative binomial regression to determine whether rejection sensitivity is predictive of selfie posting.

The sixth hypothesis, that high reflective functioning will predict lower levels of selfie posting, was tested using negative binomial regression.

CHAPTER 4: RESULTS

Demographic and Clinical Characteristics of the Sample

The sample consisted of 499 participants. Of those participants, 314 identified their biological sex as female and 185 identified their biological sex as male. 302 participants identified their gender as female, 181 as male, 2 as trans female, 5 as trans male, and 9 as other. The average age of the sample was 22 (SD= 3.7) with a range from 18 to 29 years of age. Of the total participants, 46% self-identified as White, 8% as Black, 22% as Asian, 6% as more than one race, and 18% as other. 24% of the sample identified their ethnicity as Hispanic/ Latino, and 76% were not Hispanic/Latino. 85% of the sample identified their sexual orientation as heterosexual, 4% as gay or lesbian, 8% as bisexual, and 3% as other. With regard to relationship status, 38% of the sample reported being in a romantic relationship (28% dating and 10% married or in a domestic partnership) and 62% were not in a relationship (61% single and 1% divorced).

Regarding level of education, 9% of the sample had completed a postgraduate degree, 7% had completed some postgraduate work, 18% had completed college, 39% had completed some college, 1% had completed trade/technical/ vocational training, 24% had graduated from high school or received a GED, and 1% had completed some high school. 38% of the sample was employed, 47% identified as full-time students, 9% identified as unemployed and seeking work, 3% were not working by choice, and 2% were self-employed. With regard to their family household income, 22% were under \$25,000, 23% were between \$25,000 and \$50,000, 13% were between \$50,000 and \$75,000, 8% were between \$75,000 and \$100,000, 13% were between \$100,000 and \$150,000, and 20% were over \$150,000. 52% of the sample was comprised of City College of New York students who learned about the study through the City College Subject Pool, 21% learned about the study via Reddit, 14% via Facebook, 9% via email, and 3% via other means. See Table 1 for a breakdown of the sample's demographic characteristics.

Table 1 *Descriptive Statistics of the Study Sample (N=499)*

<i>Sex</i>		<i>N</i>	<i>%</i>
	Female	314	63%
	Male	185	37%
<i>Gender</i>			
	Female	302	61%
	Male	181	36%
	Trans Female	2	0%
	Trans Male	5	1%
	Other	9	2%
<i>Race</i>			
	White	231	46%
	Black	38	8%
	Asian	110	22%
	More than 1 race	29	6%
	Other	91	18%
<i>Ethnicity</i>			
	Hispanic/Latino	118	24%
	Other	381	76%
<i>Sexual Orientation</i>			
	Heterosexual	425	85%
	Gay or Lesbian	19	4%
	Bisexual	38	8%
	Other	17	3%
<i>Relationship Status</i>			
	Single, never married	306	61%
	Dating	140	28%
	Married/ Domestic Partnership	50	10%
	Divorced	3	1%
<i>Education</i>			
	Postgraduate Degree	47	9%
	Some Postgraduate Work	34	7%
	College Graduate	89	18%
	Some College	197	39%
	Trade/ Technical/ Vocational Training	7	1%
	High School Graduate or GED	121	24%
	Some High School	4	1%
<i>Employment</i>			
	Employed	191	38%
	Student	237	47%
	Unemployed and Looking For Work	44	9%
	Unemployed and Not Looking For Work	15	3%

	Self-Employed	9	2%
	Other	3	1%
<i>Income</i>			
	< \$25,000	108	22%
	\$25,000 - \$34,999	61	12%
	\$35,000 - \$49,999	55	11%
	\$50,000 - \$74,999	67	13%
	\$75,000 - \$99,999	39	8%
	\$100,000 - \$149,999	63	13%
	\$150,000 or more	101	20%
	Missing	5	1%
<i>Recruitment Source</i>			
	CCNY Subject Pool	261	52%
	Reddit	107	21%
	Facebook	72	14%
	Email	44	9%
	Other	15	3%
		<i>Mean</i>	<i>SD</i>
<i>Age (years)</i>		22	3.7

Correlations Among Variables

Prior to hypothesis testing, a preliminary set of analyses was conducted to test for possible confounding variables. A correlation matrix between the total number of selfies posted, demographic information (age, gender, ethnicity, and family income) and the variables examined in hypothesis testing, including narcissism (vulnerable, grandiose, and subclinical), the Dark Triad (psychopathy, narcissism, and Machiavellianism), impulsivity (attentional, motor, and non-planning), attachment (anxiety and avoidance), rejection sensitivity, and reflective functioning (Certainty of mental states and Uncertainty of mental states) was computed. Any demographic variables that were found to be significantly correlated with the total number of selfies posted and other variables of interest were controlled for in the corresponding hypothesis testing. The relationships among the variables are summarized in Table 2 below.

Descriptive Statistics of the Variables Examined in Hypothesis Testing

Descriptive statistics were computed for all variables of interest, including the mean scores, medians, standard deviations, and the score ranges. The dependent variable, the total number of selfies posted, ranged from 0 to 146 in a two-week period, with a mean of 3.7 (SD = 11.53). Due to the potential for outliers to distort the findings, a logarithmic transformation was computed for the total number of selfies posted. The log transformation of the dependent variable reduced the skewness of the variable from 7.65 to 1.37. The mean of the log transformation of the total number of selfies was .75 (SD = 1.03). The log-transformed average number of selfies posted is consistent with other studies on selfie posting (Barry et al., 2017). Of note, over half of the study participants (274 of 499) did not post any selfies during the two-week time period assessed. The means, medians, and standard deviations for the variables assessed by the Pathological Narcissism Inventory (PNI), the Short Dark Triad (SD3), the Barratt Impulsiveness Scale (BIS-11), the Experiences in Close Relationships Scale (ECR-S), and the Rejection Sensitivity Questionnaire (RSQ) are fairly consistent with available descriptive data in undergraduate and/or adult populations (Pincus et al., 2009; Jones & Paulhus, 2014; Patton et al., 1995; Wei et al., 2007; Berenson et al., 2009). However, the average score for subclinical narcissism as measured by the NPI-16 was somewhat low, with a mean of .26 (SD = .19) as compared with means ranging from .31 (SD = .19) to .40 (SD = .19) across four studies (Ames et al., 2006). This suggests that the participants in the present study may have lower levels of subclinical narcissism than the general population. Because the new version of the RFQ was only recently published, there is no previous research available with which to compare the descriptive statistics of the present study. This study's descriptive statistics of the variables of interest are displayed in Table 3.

Table 3 Descriptive Statistics of Study Variables (N=499)

	Mean	Median	Std. Dev.	Minimum	Maximum	Skew	Kurtosis
Total Selfies	3.70	0.00	11.53	0.00	146.00	7.65	75.20
Log Transformed Total Selfies	0.75	0.00	1.03	0.00	4.99	1.37	1.38
Narcissistic Grandiosity (PNI)	2.81	2.85	0.75	0.00	4.93	-0.32	0.47
Narcissistic Vulnerability (PNI)	2.21	2.22	0.89	0.00	4.64	0.04	-0.38
Subclinical Narcissism (NPI)	0.26	0.25	0.19	0.00	0.94	0.72	0.01
Dark Triad Narcissism (SD3)	2.77	2.78	0.59	1.11	4.56	-0.11	0.05
Dark Triad Machiavellianism (SD3)	3.05	3.00	0.70	1.00	4.89	-0.14	0.05
Dark Triad Psychopathy (SD3)	2.15	2.11	0.62	1.00	4.33	0.42	-0.12
Attentional Impulsivity (BIS-11)	17.11	17.00	4.12	8.00	32.00	0.55	0.45
Motor Impulsivity (BIS-11)	21.24	21.00	4.16	12.00	40.00	0.58	1.20
Non-planning Impulsivity (BIS-11)	23.17	23.00	4.99	12.00	40.00	0.18	-0.26
Attachment Anxiety (ECR-S)	3.95	4.00	1.24	1.00	7.00	0.10	-0.42
Attachment Avoidance (ECR-S)	2.97	3.17	1.15	1.00	6.50	0.01	-0.67
Rejection Sensitivity (RSQ)	7.68	7.38	4.55	0.00	29.75	0.96	1.78
Certainty of Mental States (RFQ)	0.79	0.50	0.77	0.00	3.00	0.94	0.01
Uncertainty of Mental States (RFQ)	0.71	0.50	0.63	0.00	2.83	0.98	0.53

Hypothesis 1 Analysis

The first hypothesis predicted that individuals with higher levels of vulnerable, grandiose, and subclinical narcissism would exhibit increased selfie posting compared with individuals with low levels of these traits. Gender identity was hypothesized to moderate the relationship between narcissism and selfie posting, such that the relationship would be stronger among men. Consistent with a number of recent studies on personality and selfie posting, gender identity was examined over biological sex as a moderating variable (Weiser, 2015; Sung et al., 2016; Kim & Chock, 2016).

In order to test this hypothesis, four “main effects”, i.e., gender identity, vulnerable narcissism, grandiose narcissism and subclinical narcissism along with the three interactions between gender identity and each of the three narcissism variables were used to predict the total number of selfies posted using a negative binomial count regression model. None of these interactions were found to be significant, and thus the final model included only the main effects.

The four predictor variables, including vulnerable narcissism, grandiose narcissism, subclinical narcissism, and gender identity, taken as a set, are significantly related to, or predictive of, the number of total selfies posted during the past two weeks [$LR\chi^2(4) = 19.74, p < .001, \text{Pseudo } R^2 = .01$]. According to Cohen (1988), the magnitude of this pseudo R^2 is a small effect size.

Gender was found to be statistically significant ($b = .63, p = .004$). Substantively, this finding indicates that controlling for the effects of the three narcissism variables, females report significantly higher levels of selfie posting than do their male counterparts. None of the individual narcissism predictors was found to be significant at the .05 level. However, a trend toward statistical significance was noted for narcissistic vulnerability, which is suggestive of a relationship between vulnerable narcissism and selfie posting ($b = .23, z = 1.75, p = .08$). In effect size terms, each one-unit increase in narcissistic vulnerability results in a 25.5% increase in the expected number of selfies posted. These findings are displayed in Table 4.

Table 4 Negative Binomial Regression of Narcissism and Selfie Posting

	Coef. b	Std. Error SE b	z	p > z	[95% Conf. Interval]		% Change Effect Size
Gender	0.63	0.22	2.87	<.01**	0.20	1.06	87.60
Narcissistic Grandiosity	0.29	0.19	1.50	0.13	-0.09	0.67	33.80
Narcissistic Vulnerability	0.23	0.13	1.75	0.08	-0.03	0.48	25.50
Subclinical Narcissism	0.27	0.64	0.42	0.68	-0.99	1.53	30.70

* $p < .05$ ** $p < .01$ *** $p < .001$

Hypothesis 2 Analysis

The second hypothesis predicted that individuals high in traits of the Dark Triad, including narcissism, psychopathy, and Machiavellianism, would exhibit higher levels of selfie posting than individuals with low levels of these traits. Gender identity was hypothesized to moderate the relationships between the traits of the Dark Triad and selfie posting, such that the relationships would be stronger among men.

In order to test this hypothesis, the four focal main effects, including gender identity, narcissism, psychopathy, and Machiavellianism, along with the three interactions between gender identity and each of the three Dark Triad variables, were used to predict the total number of selfies posted, again using a negative binomial count regression model. In addition, race, operationalized as two dummy variables, non-white vs. white (the reference category) and mixed/other vs. white, was included as a control variable because it was found to be significantly related to both the dependent variable and at least one of the independent variables in the model.

Only one of the three gender identity x Dark Triad interactions was found to be statistically significant, i.e., narcissism x gender identity. Given these findings, the other gender identity x Dark Triad interactions were deleted from the model in order to include the main effects of the remaining Dark Triad variables, psychopathy and Machiavellianism, in the final model along with race.

As a whole, the final model was found to be significantly related to the total number of selfies posted [$LR\chi^2(7) = 43.41, p < .001, \text{Pseudo } R^2 = .02$]. As in the previous model, the predictive power for this model is small (Cohen, 1988). In addition to replicating the gender identity x narcissism interaction found in the initial model, the main effect of psychopathy was found to be a statistically significant predictor of the total number of selfies posted ($b = .52, z = 2.67, p < .01$). Substantively, for each one-unit increase in psychopathy, there is a 68.5% increase in the expected number of selfies posted. Race was also found to be a statistically significant predictor of the total number of selfies posted during the past two weeks [$\chi^2(2) = 18.76, p < .001$]. Both individuals identifying as non-white ($b = .67, z = 2.68, p < .01$) and individuals identifying as mixed race or other ($b = 1.07, z = 4.07, p < .001$) report posting significantly more selfies than do whites.

Furthermore, the interaction between narcissism and gender identity was statistically significant ($b = -.90, z = -2.56, p = .01$), indicating that gender identity moderates the relationship between

narcissism and the number of selfies posted. The effect of narcissism on selfie posting for males was statistically significant ($z = 2.66, p = .008$), whereas the corresponding effect for females was not statistically significant ($z = -.40, p = .69$). For males, each one-unit increase in narcissism leads to a 125% increase in the expected number of selfies posted. For females, a one-unit increase in narcissism results in an 8% decrease in the expected number of selfies posted, but, again, this effect is not statistically significant for females. These findings are summarized in Table 5 and Figure 1.

Table 5 *Negative Binomial Regression of the Dark Triad and Selfie Posting*

	Coef. b	Std. Error SE b	z	p > z	[95% Conf. Interval]		% Change Effect Size
Non-White	0.67	0.25	2.68	<.01**	0.18	1.17	
Mixed/ Other	1.07	0.26	4.07	<.01***	0.56	1.59	
Machiavellianism	0.04	0.17	0.22	0.83	-0.30	0.38	3.80
Psychopathy	0.52	0.20	2.67	<.01**	0.14	0.91	69.00
Gender	3.28	1.02	3.22	<.01***	1.28	5.27	
Narcissism	1.71	0.62	2.76	<.01**	0.49	2.93	
Narcissism x Gender	-0.90	0.35	-2.56	<.01**	-1.59	-0.21	

Notes: The racial categories used by the US Census (African-American, Asian American, Latinos/-as, Native-American, and Pacific Islander) have been collapsed into the category "Non-White."

* $p < .05$ ** $p < .01$ *** $p < .001$

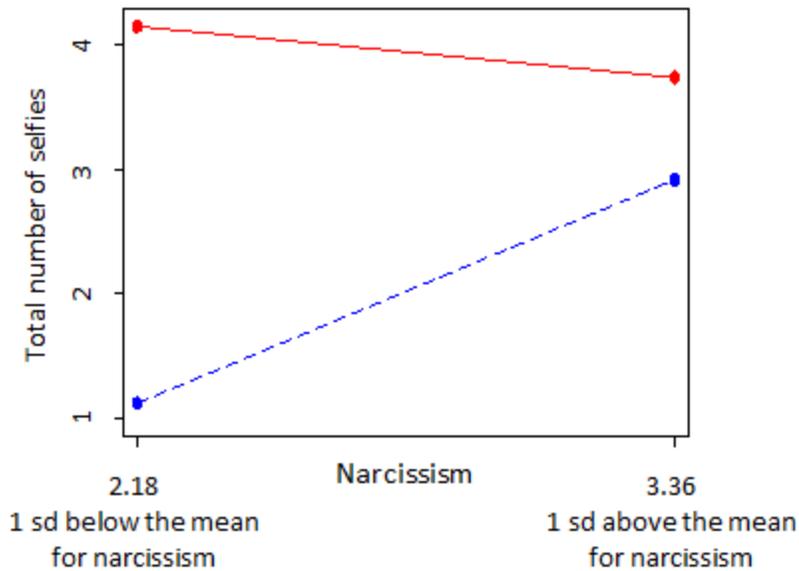


Figure 1 Interaction Plot for Selfie Posting: Dark Triad Narcissism x Gender Identity

Hypothesis 3 Analysis

The third hypothesis predicted that individuals with higher levels of impulsivity, including attentional, motor, and non-planning impulsivity, would post more selfies than individuals with low levels of these traits. A negative binomial regression model was used to assess the main effects of attentional impulsivity, motor impulsivity, and non-planning impulsivity as they relate to the number of selfies posted. Race was included in the analysis as a covariate because, as explained previously, it was related to both the dependent variable, total number of selfies posted and at least one of the independent variables tested in this hypothesis.

The negative binomial regression model, which consisted of the main effects corresponding to the three types of impulsivity and the two race contrasts, was found to be significantly related to the total number of selfies posted [$LR\chi^2(5) = 51.55, p < .001, \text{Pseudo } R^2 = .03$]. The magnitude of this pseudo R^2 is considered to be a small effect size (Cohen, 1988).

Additionally, a number of individual predictors in this model were statistically significant. The main effect of motor impulsivity was found to be a statistically significant predictor of the total number of selfies posted ($b = .10$, $z = 3.69$, $p < .001$). In effect size terms, for each one-unit increase in motor impulsivity, there is an 11% increase in the expected number of selfies posted. The main effect of non-planning impulsivity was also statistically significant ($b = .05$, $z = 2.02$, $p < .05$). For each one-unit increase in non-planning impulsivity, there is a 5% increase in the expected number of selfies posted. Race was also found to be a statistically significant predictor of the total number of selfies posted [$\chi^2(2) = 13.07$, $p = .001$]. As seen in the findings of the second hypothesis, both individuals identifying as non-white ($b = .59$, $z = 2.31$, $p < .05$) and mixed/other ($b = .93$, $z = 3.54$, $p < .001$) post significantly more selfies than do their white counterparts. These findings are presented in Table 6.

Table 6 Negative Binomial Regression of Impulsivity and Selfie Posting

	Coef. b	Std. Error SE b	z	p > z	[95% Conf. Interval]		% Change Effect Size
Non-White	0.59	0.25	2.31	<.05*	0.09	1.08	
Mixed/ Other	0.93	0.26	3.54	<.01***	0.41	1.44	
Attentional Impulsivity	0.02	0.03	0.75	0.45	-0.04	0.08	2.30
Motor Impulsivity	0.10	0.03	3.69	<.01***	0.05	0.16	11.00
Non-planning Impulsivity	0.05	0.02	2.02	<.05*	0.00	0.10	5.00

* $p < .05$ ** $p < .01$ *** $p < .001$

Hypothesis 4 Analysis

The fourth hypothesis predicted that individuals with higher levels of attachment avoidance and attachment anxiety would exhibit higher levels of selfie posting than individuals with lower levels of these traits. A negative binomial regression model was used to assess the main effects of attachment avoidance and attachment anxiety as they relate to the number of selfies posted. Age and income were included in the analysis as covariates.

As a whole, the model, which consisted of attachment anxiety, attachment avoidance, age, and income, was found to be predictive of the total number of selfies [$LR\chi^2(4) = 23.05, p < .001, \text{Pseudo } R^2 = .01$]. According to Cohen (1988), the magnitude of this pseudo R^2 translates to a small effect size.

Individually, neither of the two attachment variables was found to be statistically significant at the .05 level. A trend toward significance was noted for attachment anxiety, suggesting that anxious attachment may be predictive of the total number of selfies posted during the past two weeks ($b = .16, z = 1.91, p = .057$). In effect size terms, each one-unit increase in attachment anxiety is associated with a 17.1% increase in the expected number of selfies posted.

Both confounding variables were significantly related to the number of selfies posted during the previous two weeks (Age: $b = -.10, z = -3.33, p < .001$; Income: $b = -.11, z = 1.99, p < .05$). For each one-unit increase in the age and household income level of the participant, the anticipated number of selfies posted decreases by 9.2% and 10.1%, respectively. In other words, individuals who are younger and with a lower household income level tend to post more selfies. These findings are presented in Table 7.

Table 7 Negative Binomial Regression of Attachment and Selfie Posting

	Coef. b	Std. Error SE b	z	p > z	[95% Conf. Interval]		% Change Effect Size
Age	-0.10	0.03	-3.33	<.01***	-0.15	-0.04	-9.20
Income	-0.11	0.05	-1.99	<.05*	-0.21	0.00	-10.10
Attachment anxiety	0.16	0.08	1.91	0.06	0.00	0.32	17.10
Attachment avoidance	0.13	0.10	1.33	0.18	-0.06	0.32	13.90

* $p < .05$ ** $p < .01$ *** $p < .001$

Hypothesis 5 Analysis

The fifth hypothesis predicted that individuals who are highly sensitive to rejection would exhibit higher levels of selfie posting than individuals with lower levels of rejection sensitivity. A negative binomial regression model was used to assess the main effect of rejection sensitivity as it relates to the number of selfies posted. Also, age was included in the model as a covariate.

As a whole, the model, consisting of rejection sensitivity and age, was found to be significantly related to the total number of selfies posted in the past two weeks [$LR\chi^2(2) = 16.99, p < .001$, Pseudo $R^2 = .01$]. The magnitude of this pseudo R^2 is considered to be a small effect size (Cohen, 1988).

The main effect of rejection sensitivity was found to be a statistically significant predictor of the total number of selfies posted ($b = -.05, z = -1.96, p = .05$). Contrary to expectation, and in effect size terms, each one-unit increase in rejection sensitivity is associated with a 4.5% decrease in the expected number of selfies posted. Age was also found to be significantly related to the number of selfies posted during the previous two weeks ($b = -.11, z = -3.93, p < .001$). For each additional year of age, the anticipated number of selfies posted decreases by 10.3%. These findings are displayed in Table 8.

Table 8 Negative Binomial Regression of Rejection Sensitivity and Selfie Posting

	Coef. b	Std. Error SE b	z	p > z	[95% Conf. Interval]		% Change Effect Size
Age	-0.11	0.03	-3.93	<.01***	-0.16	-0.05	-10.30
Rejection Sensitivity	-0.05	0.02	-1.96	0.05*	-0.09	0.00	-4.50

*p < .05 **p < .01 ***p < .001

Hypothesis 6 Analysis

The sixth hypothesis predicted that individuals with higher levels of reflective functioning would exhibit lower levels of selfie posting than individuals with lower levels of reflective functioning. A negative binomial regression model was used to assess the main effect of reflective functioning as it relates to the number of selfies posted. Two separate analyses were conducted because most of the items in each subscale, i.e., four out of six items, are overlapping. Race (non-white and mixed/other) and age were included as covariates in both analyses. Income was included as a covariate only for the analysis with *Certainty of Mental States*.

As a whole, the first model, consisting of the *Certainty of Mental States* subscale of reflective functioning, the two race contrasts, age, and income, was found to be significantly related to the total

number of selfies posted in the past two weeks [$LR\chi^2(5) = 39.28, p < .001, \text{Pseudo } R^2 = .02$]. The second model, consisting of the *Uncertainty of Mental States* subscale of reflective functioning, the two race contrasts, and age, was also significantly related to the total number of selfies posted [$LR\chi^2(4) = 48.88, p < .001, \text{Pseudo } R^2 = .03$]. Cohen (1988) characterizes the magnitude of both pseudo R^2 s as small effect sizes.

The main effect of the *Certainty of Mental States* subscale of reflective functioning was found to be a statistically significant predictor of the total number of selfies posted ($b = -.55, z = -4.49, p < .001$). For each one-unit increase in the *Certainty of Mental States* subscale, the expected number of selfies posted decreases by 42.5%. The *Uncertainty of Mental States* subscale of reflective functioning was also found to significantly predict the total number of selfies posted ($b = .73, z = 5.17, p < .001$). For each one-unit increase in the *Uncertainty of Mental States* subscale, the expected number of selfies increases by 107.4%. Race was also found to be predictive of the total number of selfies posted [$\chi^2(2) = 10.04, p < .01$]. With respect to race, only the mixed/other vs. white contrast is statistically significant indicating that respondents who classified themselves as mixed/other report posting significantly more selfies than whites. Age was also found to be predictive of selfie posting ($b = -.06, z = -2.14, p < .05$). Re-expressed in effect size terms, each additional year of age is associated with a decrease of 6.2% in the total number of selfies posted. Refer to Table 9 for a summary of these findings.

Table 9 Negative Binomial Regression of Reflective Functioning and Selfie Posting

	Coef. b	Std. Error SE b	z	p > z	[95% Conf. Interval]		% Change Effect Size
Age	-0.04	0.03	-1.32	0.19	0.11	0.02	-4.20
Non-White	0.17	0.27	0.65	0.52	-0.36	0.72	
Mixed/ Other	0.50	0.29	1.70	0.09	-0.07	1.07	
Income	-0.07	-0.05	-1.22	0.22	-0.17	0.04	-6.50
Certainty of Mental States	-0.55	0.12	-4.49	<.01***	-0.79	-0.31	-42.50
Age	-0.06	0.03	-2.14	0.03*	-0.12	-0.01	-6.20
Non-White	0.37	0.25	1.48	0.14	-0.12	0.85	
Mixed/ Other	0.84	0.27	3.17	<.01**	0.32	1.37	
Uncertainty of Mental States	0.73	0.14	5.17	<.01***	0.45	1.01	107.40

*p < .05 **p < .01 ***p < .001

Summary of Results

Hypothesis 1 was not supported: None of the individual variables were found to be statistically significant, though vulnerable narcissism demonstrated a trend toward significance. Gender identity was not found to moderate the relationship between any of the measures of narcissism and selfie posting.

Hypothesis 2 was partially supported: Psychopathy was found to be related to the number of selfies posted in a two week period, though no gender identity interaction was observed. Gender identity was found to moderate the relationship between narcissism and selfie posting, such that an increase in narcissism for males increases the expected number of selfies posted, whereas an increase in narcissism for females decreases the expected number of selfies posted, albeit not significantly.

Hypothesis 3 was partially supported: Motor impulsivity and non-planning impulsivity were significantly related to the number of selfies posted in the previous two weeks. Attentional impulsivity was not a significant predictor of selfie posting.

Hypothesis 4 was not supported: Neither attachment anxiety nor attachment avoidance was found to be a statistically significant predictor of selfie posting. However, attachment anxiety demonstrated a trend toward significance.

Hypothesis 5 was not supported: Although rejection sensitivity was found to be significantly related to selfie posting, the direction of the relationship was contrary to expectation, i.e., an increase in rejection sensitivity was found to predict a decrease in the number of selfies posted.

Hypothesis 6 was supported: Both subscales of reflective functioning were found to be significantly related to selfie posting in the expected directions. An increase in the *Certainty of Mental States* subscale of reflective functioning was found to predict a decrease in selfie posting. An increase in the *Uncertainty of Mental States* subscale of reflective functioning was found to predict an increase in selfie posting.

CHAPTER 5: DISCUSSION

Main Findings

This study found that individuals with high levels of Dark Triad traits of psychopathy and narcissism post more selfies on social media, as do those with high levels of motor and non-planning impulsivity. The effect of the Dark Triad trait of narcissism on selfie posting is driven by males; for females, an increase in narcissism does not result in an increase in selfie posting behavior. This study also found a (marginally non-significant) trend whereby vulnerable narcissism and anxious attachment are predictive of increased selfie posting. Individuals with higher levels of reflective functioning post fewer selfies on social media, as do individuals high in rejection sensitivity. Grandiose narcissism, subclinical narcissism, avoidant attachment, and attentional impulsivity were not found to be significantly related to increased selfie posting on social media.

In this study, none of the individual non-Dark Triad narcissism variables were significantly related to selfie posting on social media. This finding differs from a number of studies linking narcissism and selfie posting on social media (Weiser, 2015; Kim & Chock, 2016; Sung et al., 2016; Fox & Rooney, 2015). However, a general lack of a significant relationship between pathological narcissism and selfie posting has also been observed by Barry and colleagues (2017), who suggested that other constructs may be more predictive of selfie posting than narcissism. It is probable that the current study did not replicate the findings of the majority of previous research on narcissism and selfie posting due to differences in the study's sample and methodology. For example, the sampling method used in this study may have biased the results toward heavier social media users compared with studies using nationally representative samples (Weiser, 2015; Fox & Rooney, 2015). Furthermore, the study by Sung and colleagues (2016) examined a group of Korean adults who were older on average than those in the current study, and it is likely that predictors of selfie posting vary by age and by culture.

A correlation between narcissistic vulnerability and the number of selfies posted was found to trend toward significance ($p = .08$). This trend may be explained in part by literature describing the ways in which vulnerable narcissists rely on external feedback and validation from others to modulate their self-esteem (Dickinson & Pincus, 2003). A positive relationship between narcissism and selfie posting was also supported qualitatively by several individuals who responded to open-ended questions about their selfie-posting tendencies. One participant with a high level of narcissistic vulnerability (Participant 122, 18, Male), writes, "I choose to post selfies so that I can get likes," suggesting a need for external validation which he believes can be met in the form of "likes" on social media. Participant 407 elaborates on this idea, explaining, "Before I go out I post a selfie, so I kind of use it as a confidence booster based on the number of likes I get" (21, Male). Participant 386 demonstrated the fragility of her self-image and her dependence on likes in order to feel validated: "Posting selfies has boosted my self-esteem because I have received the attention I was seeking. But, it works both ways. If I don't receive the likes and comments I was seeking, it affects me in a negative way" (18, Female). These comments shed light on the ways in which selfie posting can enable narcissistically vulnerable individuals to derive a sense of self-assurance and validation from the "likes" of others. It is consistent with literature indicating that vulnerable narcissists have a fragile core and look to others to derive a sense of self-confidence (Dickinson & Pincus, 2003).

Contrary to the study's hypothesis, gender identity did not interact significantly with the relationship between any of the individual narcissism variables and selfie posting. Although some previous research had found that gender moderated the relationship between narcissism and selfie posting (Weiser, 2015; Sorokowski et al., 2015), other studies (Kim and Chock, 2016; Sung et al., colleagues, 2016), in line with the present study, did not find a significant gender interaction.

Although none of the aforementioned measures of narcissism were individually found to be predictive of selfie posting, the Dark Triad component of narcissism predicted an increase in selfie

posting on social media. It is somewhat surprising that narcissism was significantly related to selfie posting when examined alongside other traits of the Dark Triad (Hypothesis 2), whereas narcissism was not significantly related to selfie posting in a regression analysis examining three types of narcissism (Hypothesis 1). It might be the case that the predictive power for narcissism is greater in the context of other traits of the Dark Triad, which have previously been linked to selfie posting (Fox & Rooney, 2015). Pathological narcissism (as measured by the PNI) has only been examined in relation to selfie posting in one prior study, which overall did not yield significant results (Barry et al., 2017). Thus, it is possible that the predictive power of subclinical narcissism (as measured by the NPI) in the present study is diminished when examined in a regression analysis alongside narcissistic grandiosity and narcissistic vulnerability, the two components of pathological narcissism.

Gender was found to moderate the relationship between the Dark Triad trait of narcissism and selfie posting, such that a high level of narcissism predicts a significant increase in selfie posting for males. The effect for females was nonsignificant (and slightly in the opposite direction). This gender interaction is consistent with prior research indicating that gender moderates the relationship between narcissism and selfie posting (Weiser, 2015; Sorokowski et al., 2015). It is also bolstered by the finding that the Dark Triad trait of narcissism predicted selfie posting in a nationally representative sample of men (Fox & Rooney, 2015). It appears that narcissistic behaviors are expressed differently in females than they are in males with regard to selfie posting. For instance, narcissistic women may choose not to post selfies on social media because they regard themselves as superior and deem others as not worthy of viewing their selfies. Narcissistic men, on the other hand, may post selfies to reinforce their narcissistic beliefs by receiving praise in the form of likes and comments from others.

The findings of the present study indicate that narcissism as assessed by the Narcissistic Personality Inventory and the Pathological Narcissism Inventory was not significantly related to selfie posting, whereas narcissism as measured by the Short Dark Triad was found to be predictive of selfie

posting among men. According to Paulhus and Williams (2002), narcissism as expressed in the Dark Triad represents the malignant grandiose aspects of the trait. Malignant narcissists are organized at a borderline level of personality organization and present with an infiltration of aggression and antisocial personality traits into the pathological grandiose self (Kernberg, 1984). Such individuals are motivated primarily by their need for ego-reinforcement, and selfie posting (and the “likes” that often result from it) may serve to fulfill these needs. Narrative responses provide additional support for this finding. One study participant who scored high in the Dark Triad trait of narcissism explains, “I post selfies alone so I have time to make a sexy face and I can get more likes” (Participant 190, Male, 19). Another individual with similar motivations writes, “I post selfies so others can like it... then I know that others find me attractive. The only selfies I post with others are with famous people or attractive girls” (Participant 275, 19, Male). Both of these men exhibit aspects of malignant narcissism, and they appear to fulfill their needs for ego-reinforcement by posting selfies and receiving likes from others.

Although selfie posting was found to be linked to malignant narcissism in the present study, the phenomenon does not solely represent pathological aspects of the trait. It is important to note that for many individuals, selfie posting appears to represent a normal, healthy expression of narcissism. This is highlighted in the narrative of one woman, who explains, “Posting selfies is a way to build up my self-confidence and show how much I love and appreciate myself” (Participant 139, 23, Female). Another woman writes, “I choose to post selfies on social media because I look pretty in the pictures and want to share it with my friends. It gives me confidence and more self-esteem” (Participant 410, 18, Female). Both of these women’s narratives demonstrate normal aspects of narcissism, as their selfie posting habits are indicative of high self-esteem, confidence, and psychological health.

Additionally, as hypothesized, the Dark Triad trait of psychopathy was also found to be predictive of selfie posting on social media. This finding did not vary by gender. This outcome provides further support for the findings of Fox and Rooney (2015), who identified a relationship between

psychopathy and selfie-posting in men. The present study found that both males and females with psychopathic tendencies are more likely to post selfies on social media than individuals with low levels of this trait. Individuals high in psychopathy seek excitement and a heightened sense of pleasure, and they have high levels of impulsivity with an absence of caring about the feelings of others (Jones & Paulhus, 2014). One can imagine how these desires and qualities may play out in the arena of social media, particularly when it comes to posting selfies. As one study participant with a high level of psychopathy writes, “I post selfies when I am bored and looking for some fun, usually late at night around the times from 10pm-12am” (Participant 125, 18, Female). For this young woman, posting selfies on social media appears to be a form of thrill-seeking, which is a key component of psychopathy (Cleckley, 1976). Another participant with high levels of psychopathy illustrates his thought process around posting selfies: “I post selfies whenever I’m bored, and I couldn’t care less if I get a like on Facebook or Instagram... I just do and say how I feel and I’m pretty unapologetic about it” (Participant 272, 21, Male). Like the woman described above, this individual may also be seeking excitement by posting selfies when he is bored, and his uninhibited, unapologetic attitude suggests a general lack of concern about others and impulsivity, central qualities of psychopathy (Jones & Paulhus, 2014).

The present study’s findings indicate that the Dark Triad traits of narcissism and psychopathy are significantly predictive of selfie posting, highlighting the importance of examining more severe psychopathology in relation to selfie posting and social media use.

Consistent with previous research, Machiavellianism was not found to be related to selfie posting on social media (Fox & Rooney, 2015). Machs tend to be very deliberate in working toward their objectives, and it is probable that they would see the indiscriminate nature of selfie posting as tending to interfere with, and certainly not assist in, their ability to achieve specific goals targeting particular individuals. Machs may rely on individualized or face-to-face communication rather than on the use of more public social media use. On a related note, impulsivity is considered the key element that

distinguishes psychopathy from Machiavellianism. While Machs plan ahead and strategize, individuals with high levels of psychopathy tend to be highly impulsive (Jones & Paulhus, 2014). Impulsivity (described in further detail below) may be the chief component of psychopathy, linking psychopathic tendencies to a higher level of selfie posting.

This is the first study of which I am aware to demonstrate a link between selfie posting and impulsivity, although previous research has indicated a positive relationship between impulsive behavior and social media use in Turkish students and Chinese adults (Savci & Aysan, 2016; Wu et al., 2013). In the present study, two of the three types of impulsivity examined were found to predict increased selfie posting on social media. Motor impulsivity, which involves acting without thinking, and non-planning impulsivity, which refers to a lack of forethought (Barratt, 1985), were both significantly related to selfie posting. These findings were highlighted by the written responses of a number of participants. When asked whether there are any factors that influence the decision to post selfies, Participant 484, who scored high on motor and non-planning impulsivity, writes, “No, whenever I take a good one I'll just post it right then” (18, Female). Another individual with high levels of non-planning impulsivity responded to the same question stating, “Not really. I just post them. I don't think much about it and don't care if my pics get likes or not” (Participant 41, 23, Female).” Both of these explanations suggest a minimal amount of forethought leading up to and during the process of posting selfies. Another respondent who scored low in impulsivity provides further insight into how impulsivity may be related to selfie posting: “I do not post selfies on social media. The only platform I use at all is Instagram and I only post high quality near-professional photos of myself and my clothing/sneaker hobby. Each picture is extremely intentional and is the result of an almost embarrassing amount of forethought” (Participant 83, 25, Male). This individual sheds light on some of the reasons why non-impulsive people might be less inclined to post selfies.

Neither attachment anxiety nor attachment avoidance significantly affected the number of selfies respondents posted. However, a trend toward significance was established for attachment anxiety. This trend is consistent with previous research showing that attachment anxiety is predictive of the frequency of Facebook posting (Oldmeadow et al., 2013) in addition to increased surveillance and jealousy behaviors on Facebook (Marshall et al., 2013). Anxiously attached individuals, or those preoccupied with fears of abandonment, may post selfies as a way of connecting with others and meeting their attachment needs. One respondent's narrative helps to illustrate this idea: "I'm a bit of an anxious/ introverted person, and I feel like sharing selfies helps give me an opportunity to express myself to my classmates and acquaintances. It's a way of connecting" (Participant 151, 25, Female). Another participant who scored high in attachment anxiety wrote, "If someone likes my selfie it shows that we're connected, even if we haven't spoken in two years... those interactions make me feel like certain people are more a part of my life" (Participant 418, 25, Female). Both of these narratives indicate a desire to feel close to others through the sharing of selfies on social media. Individuals who fear that important people in their lives will not be available in times of need may turn to selfie posting as a way of attaining a sense of security and connection.

Anxiously attached individuals have been said to exhibit higher levels of rejection sensitivity than securely attached individuals (Finzi-Dottan et al., 2011), and individuals disposed to anxiously expect rejection have been found to use Facebook more than individuals with low levels of rejection sensitivity (Farahani et al., 2011). Consistent with these findings, I hypothesized that rejection sensitivity would be linked to an increase in selfie posting on social media. However, this study found that the relationship occurred in the opposite direction, with individuals high in rejection sensitivity posting significantly fewer selfies on social media than individuals with low levels of the trait. These findings suggest that for rejection sensitive individuals, the potential threat of rejection is experienced as too great with regard to selfie posting. Participant 334 who scored high in rejection sensitivity, explained

that she does not post selfies because, “it would be humiliating to post a selfie and not get any likes” (23, Female). Furthermore, the responses of several participants high in rejection sensitivity suggest a tendency to post selfies and to later remove them if they do not find their selfies to be well-received by others. Participant 386 provided an example of this, stating, “I find myself taking selfies down that do not receive the likes I expect or do not receive likes from specific people” (18, Female). This was also the case for an individual who reported, “If I post a selfie and no one likes it, I'll delete it” (Participant 408, 22, Female). The study’s findings and the accompanying narrative responses suggest that for individuals who are sensitive to rejection, posting selfies might provoke more anxiety than general social media use, resulting in individuals either shying away from selfie posting altogether or in removing selfies that had been posted.

It is important to note that the only study examining rejection sensitivity in the context of social media (Farahani et al., 2011) examined the amount of time spent using Facebook as an indicator of social media usage. The amount of time spent using Facebook does not necessarily translate to posting habits, as one can browse social media without posting anything. Thus, the study on which the rejection sensitivity hypothesis was based is not directly comparable to selfie posting, which may also explain the discrepancy in findings. In addition, the study by Farahani and colleagues took place in Iran, which has a vastly different cultural landscape from the United States and likely has different social media practices. For these reasons, it is understandable that the present study’s finding with regard to rejection sensitivity and selfie posting differed from its hypothesis.

Low reflective functioning has been linked to attachment insecurity, difficulty regulating oneself, and to narcissistic and borderline personality disorders (Diamond et al., 2014; Raikes & Thompson, 2006), a number of which have been associated with an increase in social media usage and selfie posting (Oldmeadow et al., 2013; Marshall et al., 2013; Weiser, 2015; Kim & Chock, 2016; Sung et al., 2016; Fox & Rooney, 2015). Based on these relationships, it was hypothesized that higher levels of reflective

functioning would predict lower levels of selfie posting. The findings provide support for this hypothesis. To my knowledge, no previous research has examined the relationship between reflective functioning and selfie posting, and the present results indicate that individuals with a high level of certainty about the mental states of themselves and others are less likely to post selfies on social media. This finding was supported by the open-ended responses of several participants who did not post selfies, all of whom demonstrated high levels of *Certainty of Mental States* and low levels of *Uncertainty of Mental States*. As one participant writes, “I do not post selfies because I do not want to be seen as vain and I also don’t like when others excessively post pictures of themselves. I hate being a hypocrite” (Participant 124, 23, Female). Relatedly, Participant 306 demonstrates his reasoning regarding the mental representations of himself and others in the context of selfie posting: “I think [posting selfies] gives off a feeling of insecurity to other people and promotes insecurity in the person posting them. I don’t think most people would want to see a selfie of me, as I don’t want to see a selfie of them” (27, Male). In a similar fashion, Participant 223 explains her thought process around her decision to refrain from posting selfies: “I’m motivated by how I want people to perceive me. I look at people who frequently post selfies as a bit self-centered, and I don’t want to be viewed like that” (26, Female). All three of these individuals take into account how others might view them if they were to post a selfie, and they infer from their feelings about others’ posts how others might feel about their posts, which impacts their decision to not post selfies. Another respondent who had low levels of selfie posting and high reflective functioning illuminates her thought process around posting individual selfies: “I rarely post selfies (maybe once per year), but when I do, I am deliberately showing off my surroundings in the picture (mainly vacation photos--admittedly, sometimes with the intent of inciting jealousy...)” (Participant 96, 29, Female). This woman, like other respondents with high levels of reflective functioning, reflects on how her selfies might make others feel. Taken together, the aforementioned

narratives bolster the statistical findings that individuals with higher levels of reflective functioning post fewer selfies than individuals with low levels of reflective functioning.

Additional Insights on Selfie Posting

In addition to the findings already discussed, a number of additional insights about individuals' motivations for selfie posting were gleaned from responses to the study's open-ended questions.

Though purely anecdotal, they may help us to better understand the selfie posting phenomenon and may provide some inspiration for future investigations into the motivations for and predictors of selfie posting on social media.

Implications for Growth, Development, and Identity

One theme that emerged from narrative responses was that selfies posted on social media could be used to track one's maturation and growth over time. Both physical growth and emotional development can be observed through the lens of the selfies one has posted. Selfie posting and its sequelae can also impact one's sense of self. One participant, a 25-year-old woman, describes how her selfie posting behavior shifted over a 10-year period, impacting her self-esteem and contributing to an eating disorder:

I was 15 when I started posting selfies on MySpace, and I'm 25 now, so naturally I've matured immensely and am much less insecure about my appearance and about my identity in general... In my mid to late teens, I became obsessed with finding the 'perfect' shot (and comparing myself to everyone else's 'perfect' shots). That was dangerous, and it contributed to my eating disorder when I was 19. By the time I reached my early 20's though, I had grown up so much, had gotten my fill of compliments, and I was confident enough about my appearance that I could post selfies without covering up every little insecurity. When I continued to get positive responses to pictures I would have hated at a younger age (regarding stupid insecurities I was

the only one noticing), I realized I was already good enough without having to kill myself trying to attain perfection... now I post selfies much more rarely, as a fun little ego boost or to share an exciting experience” (Participant 151, 25, Female).

For this woman, selfie posting is intertwined with many aspects of her development. Like many Millennials growing up in a society with an increasing self-focus, she has experienced a significant amount of pressure to adapt to the trends and expectations of her generation (Twenge & Campbell, 2009). She is able to recognize the ways in which this increasing focus on herself and her need to take the “perfect” selfie led to a decrease in her self-esteem and ultimately to an eating disorder. Her narrative sheds light on the ways in which selfie posting may be linked to psychological disorders. She also explains a shift over time, from “covering up every little insecurity” in her selfies to becoming more comfortable with herself. This shift was accompanied by a decrease in selfie posting, suggesting that the frequent urge to post selfies may be accompanied by self-consciousness and decreased self-esteem.

Another woman describes her physical and psychological transformation as it relates to selfie posting, and she credits social media for helping to increase her self-confidence:

My confidence levels have actually grown since I began using social media heavily in high school. I had a MySpace page back in middle school, however I was barely on and I was not confident with myself at all; my stomach wasn't flat, I had greasy hair, my clothes didn't fit right and I had these hideous glasses. However, it was only when I entered high school that I began to reinvent myself. Facebook and Instagram were a big deal, which made me want to post selfies like everyone else. I began to work out more, read magazines to learn to dress better, ditched the glasses, cut my hair, and most importantly began to hold my head high. Even though I underwent a drastic physical makeover, it was only when I started to have confidence in myself that people began to notice me. Although it took the introduction of social media to change the

image I had of myself, it has helped me in so many ways and I am very grateful (Participant 442, 19, Female).

This woman's narrative demonstrates her process of identity formation, from initially focusing on her physical appearance to recognizing the importance of "holding [her] head high" and having confidence in herself.

By the same token, a number of participants reported positive changes for their sense of identity since they began posting selfies. In response to the question, "Has your view of yourself changed since you began posting selfies on social media," Participant 412 states, "It's more positive. I can look back on myself having fun or looking good." (26, Female). Similarly to the above respondent, a number of individuals noted an improvement in their self-image after they began posting selfies. One participant explains, "I see that I am much prettier than I thought" (Participant 340, 21, Female), and another writes, "I've realized that I can actually be attractive to other people" (Participant 130, 19, Female). Another woman explains the positive impact selfie posting has had on her body image: "When I do post selfies and see them I worry less about looking overweight. I'm thin but sometimes have body image issues, and when I see a photo of myself it reassures me that I don't look overweight" (Participant 42, 29, Female).

While a number of encouraging changes in self-image have been acknowledged in connection with selfie posting, some responses indicated mixed or negative feelings regarding the impact of selfie posting on identity. A young woman's narrative helps to capture some of this ambivalence: "I feel a bit more confident, but also a bit more self-conscious" (Participant 351, 18, Female). She recognizes two aspects of her identity that have changed as a result of her selfie posting—one which is widely considered beneficial (confidence) and one which has negative implications (self-consciousness).

Others have referred to negative changes in self-perception since they began posting selfies. As Participant 389 explains, “Ever since I started posting selfies on social media, I realized that I care too much about the number of likes and who does or doesn’t like my photos. I realized how much time I spend stressing about unnecessary things like ‘likes’ and how I let that affect me negatively. It makes me want to change my view of social media and of myself” (18, Female). Other participants noted changes after they stopped posting selfies or stopped posting as frequently. One individual writes, “I would say that my view [of myself] has changed somewhat. I now post less selfies than I did before, and I feel much better without the judgment from others” (Participant 211, 23, Female). Another participant describes how she has changed since she began posting fewer selfies: “I’m realizing it’s not the end of the world if I don’t post in a while, and I have become more comfortable in my skin. The amount of pressure on social media is ridiculous and unnecessary” (Participant 320, 18, Female). Thus, for several study participants, selfie posting has negatively impacted their views of themselves.

It is noteworthy that all of the narratives regarding identity and development above were written by women. There were many more women in the study than men (313 v. 186), but of the participants who identified as Male, the vast majority responded “No” to the question “Has your view of yourself changed since you began posting selfies on social media?” or left it blank. This might suggest that the implications of selfie posting on identity development may be more salient or more meaningful for women than for men.

Implications for Gender Identity

In addition to selfies having important implications for maturation and identity, a handful of individuals who identified outside of traditional gender roles discussed the importance of selfie posting at various stages of coming to terms with their gender identity. Participant 240, a 21-year-old who identifies as trans male, writes, “Am transsexual and pre-hormones/surgery. Have very severe sex

dysphoria. Am concerned about passing for cisgender/biological male.... I post one or two [selfies] a week to get critiques and opinions on how I look and whether I can pass for an attractive male today. Sometimes I change my hair or clothes based on written feedback.” For this man, selfie posting is an integral part of his transitioning process, as he relies on responses to selfies posted to help him gauge whether he can pass for an attractive male. He looks for critiques and opinions from others in the form of comments on the selfies he has posted, and he integrates others’ feedback into the way he dresses and styles his hair.

Another individual who identifies as trans male elucidates the importance of “likes” on his photos: “Photographs of people normatively attractive for their assigned sex attract many more Likes. If I get a number of Likes, particularly from people who don't know I'm trans, I conclude that I look like an OK-looking guy and not an ugly woman” (Participant 271, 18). Similarly to the individual described above, this man is able to assess how others perceive him based on the number of likes his selfies receive.

In addition, a participant who identifies as trans female explains that she posts selfies “to give myself a lens to look at my gender through, to see myself and to hear and see how others see me” (Participant 46, 18). For this woman, posting selfies on social media provides a mechanism for understanding how others view her. This individual further explains that she tends to post selfies “when I feel good about my gender and my body,” suggesting that feelings of confidence around gender identity and body image are important precursors to selfie posting for this person.

Considerations for Romantic Relationships

Selfie posting can also be viewed as a way of potentially finding romantic partners. As one man explains, “The only purpose is to attract people I could be sexually or romantically attracted to” (Participant 423, 26, Male). This belief was also supported by a younger man, who writes, “I choose to post selfies because I want people to notice me and I also want to attract the opposite sex” (Participant

78, 18, Male). For both of these men, selfie posting has the potential to attract future partners, and they post with this goal in mind. One female participant also notes how she sees selfie posting as a possible stepping stone to forming a romantic relationship: “If I see that someone I am attracted to likes my posts, then it motivates me to post more selfies to get that person to like it again... it gives me hope of a potential relationship with that specific person” (Participant 389, 18, Female). For each of these participants, one incentive for selfie posting is the possibility that it may lead to a romantic relationship.

For other individuals who are already in romantic relationships, posting selfies may be used to demonstrate to others and possibly to oneself a level of security in the relationship. Participant 143 writes, “I post selfies with my boyfriend I guess to show him and my friends that we're happy” (27, Female). This woman explains how she posts selfies to assure others that she is content in her relationship. However, the hesitancy in her writing, marked by the word “I guess,” suggests that perhaps in posting a selfie, she is also trying to convince herself that she and her boyfriend are happy. In a similar vein, Participant 228 explains, “I also find it very important that people in my husband’s life think that I am pretty. I'm not sure why. I like the idea that people from his work will see my profile picture on his Facebook and think he is lucky for being with me” (24, Female). This woman’s narrative indicates that she is thinking a lot about how she will be perceived by others, particularly her husband’s co-workers. Her desire to have others view her as “pretty” and to “think [her husband] is lucky for being with [her]” may suggest a wish to be viewed by others as being in a solid, secure relationship.

Factors that Increase the Likelihood of Posting

A number of written accounts in response to the study’s open-ended questions chronicle different factors that impact one’s decision to post selfies. One common thread was the notion of following along with the trend of selfie posting, particularly if others in one’s social network are posting them. Participant 272 demonstrates this idea, explaining, “This sounds stupid, but everyone else posts

selfies so I just do it. Does that make me a sheep?" (21, Male). This young man's explanation suggests that his primary motivation for posting selfies is to conform with the conduct of his social network. Similarly, Participant 321 writes, "Sometimes I see my friends posting really pretty selfies of themselves, and it makes me want to post selfies of myself" (25, Female). Like the young man described above, this woman's impetus for posting selfies derives from seeing selfies posted by her friends. This idea is explained further by another individual who provides some justification for why one might choose to follow along with the selfie-posting trend: "The way that social media works now is that the more likes you have, the more popular or attractive you are basically" (Participant 235, 19, Female). Thus, if the number of likes one receives on each selfie is equated with one's popularity and attractiveness, then one will be more inclined to post selfies, whether consciously or unconsciously.

Several individuals described being more likely to post selfies when under the influence of alcohol or other substances. As a 24-year-old man writes, "I am more likely to post selfies if I am intoxicated" (Participant 248). Similar responses came from Participant 239, who states, "When I'm drunk I'll probably post more selfies" (26, Female) and Participant 454, who notes, "usually I post [selfies] when drunk or in a great mood" (21, Male). These anecdotal responses are supported by a recent study of young adults, which found that alcohol consumption promotes social media use, and that social media use promotes alcohol consumption. Photos of peers consuming alcohol that were posted on social media were found to influence others to drink and post photos on social media (Jones et al., 2017).

Another factor noted by a number of participants was the increased likelihood of posting selfies when in a negative mood state. Several participants wrote about posting selfies when they are feeling sad or lonely. As one individual writes, "I post selfies during times of loneliness and insecurity, but I haven't thought much about it" (Participant 35, 27, Female). Although she is unsure of why this is the case, this woman recognizes that she tends to post more often when she is feeling lonely and uncertain. Another participant explains, "I usually post selfies when I am feeling down. This usually changes my

mood depending on the reaction of others” (Participant 386, 18, Female). This is also the case for Participant 142, who shares, “If I feel down I’ll post a selfie that portrays me as being happy but it is not for my friends but rather for me. I guess it helps me feel better” (18, Male). Both of these individuals turn to selfie posting when they are feeling sad, with the hope that the selfies themselves or the responses they receive from others will help to improve their mood.

Conversely, a large number of individuals described an inclination to post selfies when they are experiencing an elevated mood state. For example, one woman writes, “If there was a mood that made me most likely to post selfies, it would be a happy mood, feeling like I am on top of the world” (Participant 334, 23, Female). Another individual explains “If I’m feeling especially good and proud about myself or something I’ve accomplished, I’ll take a selfie” (Participant 286, 25, Trans Male). One participant identifies her tendency to post selfies when in more extreme mood states, whether positive or negative: “I usually post when I am feeling confident or genuinely happy with myself. Sometimes it’s the exact opposite and I post when I’m overwhelmed by negative thoughts and feelings” (Participant 119, 19, Female).

Factors that Decrease the Likelihood of Posting

Just as some narratives illuminated circumstances that increase the likelihood of posting selfies, other accounts detailed reasons that individuals choose to refrain from posting. Unlike the participants described previously who wrote about posting selfies to follow along with the trend, Participant 437 shares that she abstains from posting selfies for exactly that reason: “I do not post selfies because I do not want to be like everyone else in the world” (19, Female). If selfie posting is considered banal and likened to following along with the status quo, then the decision to not post selfies might be viewed as unique and unusual, which appears for some to be a motivation for not posting selfies.

Another woman explains how taking and posting selfies can make it difficult to fully embrace experiences as they are happening: “I do not post selfies. Selfies are planned, so it's hard to enjoy the moment when you are trying to look like you are enjoying the moment” (Participant 13, 18, Female). This individual identifies the potential for selfies to interfere with one’s ability to live in the moment. By its very nature, taking a selfie requires a shift away from the present experience to the act of taking of thinking about and taking the selfie. This individual points to the irony of “trying to look like you are enjoying the moment” when the very act you are doing is detracting from your ability to do just that.

Several participants pointed to concerns around privacy and safety as their primary reason for not posting selfies. As Participant 380 explains, “I don’t post selfies because I don’t want anyone to be able to find me via social media. I value my privacy, and I know how easy it is to find information about people on the internet” (27, Other). Another writes, “I don’t post selfies because I want the moments that I have with my friends and family to be private and not seen by random people. Also to make sure that there aren’t any dangerous photos out there that can harm my reputation” (Participant 282, 18, Male). Both of these individuals highlight the importance to them of maintaining their privacy, recognizing the potential for other people on the Internet to easily access posted photos. There is also a recognition that photos posted can be used against a person later on, potentially impacting one’s reputation.

Clinical Implications

As selfie posting becomes ever more pervasive, it is important that clinicians better understand the phenomenon so that they can help their patients. This study’s findings, along with themes that emerged in narrative responses, have potential implications for psychotherapy. Because selfie posting can have different meanings for different individuals, it is recommended that clinicians create space for their patients who post selfies to reflect on their motivations for selfie posting. While participants in the

current study had a lot of ideas about why they choose to post selfies, it is likely that they have other motivations for posting selfies that have not entered into their conscious awareness. By encouraging patients to think more about their selfie posting habits and tendencies, psychotherapists can help patients gain greater insight into their reasons for posting. Increased self-awareness around these behaviors can help individuals recognize how they might be using selfie posting to meet various needs or to perpetuate unhealthy patterns in their lives. Thus, it would be beneficial for clinicians to communicate to their patients that they are receptive to hearing about their social media habits. Clinicians might consider inquiring directly about any patterns recognized by patients regarding their selfie posting behavior and about their frequency of posting selfies.

A number of participants in the present study recognized an interplay between their psychological states and selfie posting behavior. For some, selfie posting was found to contribute to a decrease in symptoms of psychopathology. For example, a narrative discussed earlier describes how one woman found that posting selfies helped her to challenge her distorted perception of her body. Posting selfies and receiving encouraging feedback had a positive impact on her body image, and it might serve as a protective factor to reduce her likelihood of developing an eating disorder. Another participant explains, "I have anxiety and other mental illnesses, and posting selfies is and isn't anxiety inducing, it's like, taking control in a small way over myself, which I need" (Participant 46, 19, Other). Selfie-posting appears to provide an outlet for overcoming anxiety in a manageable way by enabling this individual to feel more in control. Furthermore, for adolescents and young adults who are experimenting with their identities and forming new relationships, selfie posting can serve as a transitional arena for play, creativity, and connection. Posting selfies and other photographs on social media can serve as a platform for online self-expression, and individuals have the freedom to shape their online self-presentations through experimentation and deciding which content to underscore, downplay, embellish, or omit (Gardner & Davis, 2013). Thus, despite society's tendency to view selfie posting in a negative

light (Wagner, 2015), it is important for clinicians to recognize that selfie posting can serve healthy, normative functions. With this awareness, clinicians will be less likely to pathologize selfie posting without first understanding the functions it is serving.

However, the findings of the study do indicate that selfie posting is linked to a number of problematic personality traits, including the Dark Triad traits of narcissism and psychopathy as well as motor and non-planning impulsivity. These traits are historically difficult to assess, as individuals often attempt to portray themselves in a more positive light (Paulhus, 1991). For this reason, psychologists might consider integrating some questions about selfie posting habits into a screening tool assessing aversive personality traits. Individuals might be less defensive and more open to responding to questions about selfie posting habits than they would about questions directly assessing personality. Those who engage in extensive selfie posting could then be flagged as potentially possessing some of the negative personality characteristics associated with selfie posting.

Along similar lines, selfie posting might also be considered for use as an informal projective measure by clinicians seeking to better understand their patients' underlying personality dynamics. Projective measures assess conscious and unconscious processes, and they can assist clinicians in making sense of their patients' difficulties (Tuber, 2012). As a projective tool, patients could review their social media feeds with their therapists, sharing their associations to each of their posted selfies. This could facilitate a deeper understanding of the impact of one's selfie posting, both by the selfie poster and by his or her therapist. Reviewing posted selfies in psychotherapy might be particularly useful for adolescents, who are often resistant to therapy and have a hard time opening up in treatment (Sommers-Flanagan et al., 2011). Adolescent patients and others who are hesitant to talk about difficulties in their lives might find reviewing their selfies to be safer than discussing their innermost struggles. Thus, selfie posting might provide a window into the ways in which such individuals experience themselves in the world and how they want others to view them.

In sum, selfie posting might have important implications for clinical work. By demonstrating a curiosity and openness to learning about selfie posting habits, patterns, and the aftermath of posting, clinicians can help patients to gain greater insight into their social media usage.

Limitations and Future Directions

While the current study presents some interesting data on the predictors of selfie posting behavior on social media, it is not without limitations. This section is organized into two parts. The first part considers the limitations of the study's data collection, recruitment sources, and interpretation. The second part examines possible avenues for further research.

An important limitation of the study was the two-week time period during which participants were asked to report the number of selfies posted, which was the primary outcome variable. Two weeks may not have been sufficient to capture the full range of selfie posting behavior, particularly for individuals who do not post selfies on a regular basis. Although the time period examined was twice as long as an earlier study assessing personality and selfie posting (Fox & Rooney, 2015), the large number of zeros in the dataset indicate that many individuals did not post selfies during the two-week period. Out of the 418 respondents who reported that they had posted a selfie at some point in the past, only 232 had posted one or more selfies during the study's specified two-week time period. While this study may have effectively captured individuals who post selfies on a daily, weekly, or bi-weekly basis, it did not fully capture those who post selfies less frequently.

Furthermore, although self-report measures are the most commonly used assessment tool in personality research, there is a high potential for response bias, in which participants respond to a range of questionnaire items on some basis other than the specific content of the items. Individuals completing self-report questionnaires may present themselves in a more favorable light, or they may inadvertently mislead themselves in order to feel better about their self-presentation. Thus, responses

to self-report instruments may not accurately capture participants' authentic patterns of thinking and behavior (Paulhus, 1991). There is also evidence suggesting that assessing personality using self-report instruments is particularly problematic, as individuals with personality pathology may lack self-knowledge and insight into their conditions (McDonald, 2008).

In addition to the limitations of self-report measures in general, there are also shortcomings associated with specific instruments used in this study. Regarding the Experiences in Close Relationships Scale (ECR-S; Wei et al., 2007), its focus on romantic relationships is far more limited in scope than an interview-based measure of attachment such as the Adult Attachment Inventory (AAI; George, Kaplan, & Main, 1985), which is able to assess both conscious and unconscious aspects of attachment. Also, focusing only on romantic relationships fails to address other important social relationships. The ECR-S was also found to have poorer internal consistency than its 36-item predecessor, signifying less overall consistency among the items. Despite these issues, both measures have been successfully used in a large number of studies.

A similar limitation was observed for the Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016), which demonstrated poor internal consistency among non-clinical samples (.63 to .65) in a validation study by the measure's developers (Fonagy et al., 2016). The 8-item version of the RFQ was only recently developed and published, and at present, it has only been successfully used in a small number of published studies. Regarding its psychometric properties, the RFQ has only received preliminary support. Further investigation is needed to ensure the validity and reliability of the measure (Fonagy et al., 2016).

Moreover, there may be errors in self-reporting for questions about selfie posting behavior. Although participants were asked to refer to Facebook, Instagram, and other social media applications in order to accurately report the number of selfies posted in the two-week period requested, it is possible

that not all participants followed this direction. It is likely that some participants may have estimated the number of selfies posted, which may have impacted the findings. This possibility is even more likely for individuals who posted a very large number of selfies, as it would be quite time consuming to accurately tabulate all the postings. Even for those who do follow instructions and count each of their photos, there is the potential for human error in counting and reporting these numbers.

Another limitation is the use of convenience sampling as the recruitment method, as it is highly vulnerable to selection bias. Although the study recruited participants from a number of different sources, including a university subject pool, postings on Facebook and Reddit, and via email, this method of sampling has the potential to introduce significant bias into the dataset. The majority of participants (52%) were psychology students recruited from a university's subject pool in exchange for course credit. Because these participants were studying psychology, they may have had prior knowledge of some of the self-report measures used in the study, potentially impacting their responses. Furthermore, these were public university students who were more racially and ethnically diverse than the general population, and a large number were in the lowest income bracket. Posting selfies generally requires a smartphone, which is quite expensive, and it is feasible that some study participants did not post selfies because they did not have the means to do so. For participants who were recruited through postings on Facebook, Reddit, and via email, they may have been a unique group who were particularly interested in selfie posting.

The study's limitations provide a number of possible directions for future research in the area of selfie posting. For one, future researchers might consider using a nationally representative sample to reduce the potential impact of selection bias. In addition, examining a larger window of time for selfie posting would likely enable researchers to capture a broader range of selfie posting habits, particularly for individuals who post less frequently. Researchers might consider using a 30-day time period as was

used by Sorokowski and colleagues (2015) and by Barry and colleagues (2017), or perhaps an even longer period of time might be warranted.

To address the potential for bias related to self-reporting, particularly for counting the number of photos posted, future studies might consider asking participants to grant researchers permission to look at their Facebook and Instagram pages so that researchers can track the number of selfies posted. It is also feasible that a smartphone application could be created by researchers which would track the number of photos and selfies posted and transfer them to a dataset.

Having participants appear in person to complete the study would enable future researchers to incorporate the Adult Attachment Interview (AAI), which would provide much richer information regarding attachment style and would enable a more refined measure of reflective functioning through the RF scale. Along these lines, in-person interviews would open up the possibility of recruiting participants who post a very large number of selfies and asking them to participate in semi-structured interviews, to gain greater insight into the selfie-posting phenomenon for those in this extreme group. Data could then be examined qualitatively to provide a more nuanced understanding of the traits associated with individuals who post many selfies and the motivations for doing so.

It might be worthwhile for further research to consider expanding the age range. It would be interesting to examine whether the findings of the present study are unique to the period of “emerging adulthood” (Arnett, 2014) or whether they extend to adults over the age of 29. Older adults might have different motivations for posting selfies and a different set of personality traits. In addition, researching the selfie posting behavior of adolescents may shed light on important processes around identity formation and individuation. Research has found that younger and older individuals differ both in their social media use and in their levels of narcissism (Sorokowski et al., 2015).

Additional research might also explore various mechanisms of mediation and moderation to help explain how the independent variables in the present study are related to selfie posting. Self-esteem, measures of well-being, and various motivations for selfie-posting might be considered as possible mediating variables. Paranoia might also be examined as a mediating variable between traits of the Dark Triad and selfie posting. One might expect that Machs would have increased levels of paranoia compared with individuals high in traits of narcissism and psychopathy, as Machs are very concerned with maintaining a positive reputation (Jones & Pauhus, 2014). This might help to explain why Machiavellianism is not linked to selfie posting whereas both narcissism and psychopathy are linked to the phenomenon. The present study examined the impact of gender identity on the relationship between narcissism and selfie posting and traits of the Dark Triad and selfie posting, but future studies could also consider age, race, and socioeconomic status as potential moderating variables.

Future research might choose to examine the role of selfie posting on the social media application Snapchat, in which photographs disappear within seconds after they are viewed and can only be viewed within 24 hours from the time they are posted. This study excluded photos posted to Snapchat, as the application is quite different from Facebook, Instagram, and other traditional photo sharing social media applications. However, several study participants who denied posting selfies on any traditional social media applications explained in their written responses that they only post selfies on Snapchat. As one participant put it, "I'll post Snapchat selfies because they disappear in 10 seconds and the evidence of my narcissism is obliterated" (Participant 21, 28, Female). It is possible that the population of individuals who post selfies on Snapchat may be qualitatively different from those who post on more traditional social media applications, with unique motivations and psychological predictors.

Another possible avenue for future research would consider the impact of each individual's social network on his or her selfie posting habits. Several participants mentioned in their narratives that they posted selfies primarily because others were doing so. Thus, assessing for whether one's friends,

peers, and family members are posting selfies could help researchers to better understand the phenomenon within the context of one's social network. It might also be interesting to consider comparing sub-groups of selfie posters. For instance, researchers might compare the selfie posting behaviors of one group of adolescents (for instance, a group of friends) with the selfie posting behavior of another group of adolescents. Researchers could then assess whether selfie posting behaviors are more similar within groups than they are between groups.

Selfie posting is still a fairly recent phenomenon, and as technology that promotes the taking and posting of selfies evolves further, it is likely that trends and habits around these behaviors will shift. Thus, it will be important to consider the changing landscape of selfie posting when planning future research studies.

Conclusion

As selfies have increased in popularity over the past five years, they have been denigrated by many as a manifestation of Millennials' self-obsession and sense of entitlement (Wagner, 2015). The primary aim of this study was to enhance the understanding of the various predictors of selfie posting on social media. Specifically, pathological narcissism, subclinical narcissism, psychopathy, Machiavellianism, impulsivity, attachment, rejection sensitivity, and reflective functioning were examined as possible predictors of selfie posting on social media. Furthermore, a number of open-ended questions were asked with the intention of gaining further insight into the motivations behind posting selfies.

This study yielded several significant results. The Dark Triad traits of narcissism and psychopathy were both found to predict selfie posting, with narcissistic men posting significantly more selfies than narcissistic women. Attentional and motor impulsivity were associated with an increase in selfie posting, whereas reflective functioning was associated with a decrease in selfie posting. Contrary to the study's

hypothesis, rejection sensitivity was shown to predict a decrease in selfie posting on social media. Vulnerable narcissism and anxious attachment both demonstrated trends toward significance with regard to predicting an increase in selfie posting. Thus, this study provides evidence for several as yet unstudied relationships between personality traits and selfie posting.

In addition, narrative responses also revealed interesting anecdotal material about possible drives for posting selfies. For some individuals, selfies posted on social media were used to track growth and development over time. Others found that selfies posted on social media corresponded with important shifts in identity, self-confidence, and sense of self. A small subset described how selfie posting related to their gender identity. Some participants noted the use of selfies in seeking out romantic partners. Individuals described how following along with the trend, being under the influence of substances, and being in positive or negative mood states increased their likelihood of posting selfies. Being perceived as unique, wanting to be present in the moment, and privacy concerns were all cited as decreasing the likelihood of posting selfies.

As technology enabling selfie posting continues to develop and selfie posting becomes ever more prevalent, it will be important for researchers and clinicians to consider the subtle ways in which selfie posting impacts one's identity, sense of self, and interpersonal relationships.

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