A Tale of Two Theories: Using Social Comparison and Objectification Theories to Explain the Relationship between Instagram use and Eating Pathology

by

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Abstract

Previous studies have found connections between media consumption and eating pathology and used either Objectification Theory or Social Comparison theory to explain the relationships found. We explored the social media site Instagram in terms of eating pathology in the hope of understanding whether one of the two theories better explained relationships between eating pathology and the usage of the site. We asked 65 college students about their use of Instagram as well as questions about self-esteem and eating behaviors. Our results showed that Instagram users had higher shape concern compared to non-users. Frequency of tweaking selfies was related to shape and weight concern, as was perceived presentation of self in face-to-face interactions. Presentation of self on Instagram was related to eating concern and restraint. Self-esteem moderated the relationship between eating pathology and both selfie tweaking and presentation of self in face-to-face interactions, such that these relationships were only significant for those with low and medium self-esteem. Our results help shed light on the relationship between Instagram use and eating pathology, but more research examining motivations behind Instagram behavior is needed to support one theory over the other. This study indicates Instagram use should be taken into account with preventative and treatment measures for eating pathology.
Introduction

Eating disorders present serious mental health issues with a variety of potential consequences. Etiological factors that contribute to the development of an eating disorder must be identified to assist with prevention and treatment programs. A number of etiological factors have been explored, but studies suggest that cultural factors such as media exposure and social influences such as self-esteem may be particularly relevant to body image and eating pathology. Since the early 2000s, social media has emerged as a new form of media that combines both media exposure and social influences, which makes social media particularly relevant for understanding eating disorders. Preliminary studies exploring the relationships between specific social media sites and eating pathology demonstrate promising preliminary results, but no study has exclusively examined Instagram, a social media site that encourages users to make judgments based solely on images. Increasing our understanding of the mechanisms that link Instagram use and eating pathology and self-esteem not only promotes further understanding of eating pathology but also allows a better understanding of the unique dynamics at play between social influences and image-based media exposure.

Theories Explaining the Link Between Media Exposure and Eating Pathology

While studies examining eating pathology and media consumption generally seem to agree that there is a relationship between the two, explanations for why this relationship exists vary. There are currently two major sociocultural theories
attempting to explain the relationship between media and eating pathology: Objectification Theory and Social Comparison Theory (Fredrickson & Roberts, 1997; Suls, & Wheeler, 2012).

Objectification Theory explains the relationship between eating pathology and media consumption in terms of exposure to and internalization of idealized body types. The theory proposes that being exposed to images that emphasize appearance and focus on idealized body types encourages individuals to view bodies as objects that can be manipulated and changed. This view of other bodies as objects leads to self-objectification which studies have indicated has a relationship with body dissatisfaction (Tylka & Hill, 2004). Since body dissatisfaction has been shown to be strongly related to eating pathology, Objectification Theory states that the more people view bodies as objects (something found in much of media messaging) as opposed to seeing a body as part of a human “self,” the more likely individuals are to have dissatisfaction related to their body appearance and therefore the more likely they to develop disordered eating behaviors. Media, especially advertisements, tend to promote objectification of bodies; thus, media consumption is related to increased risk for eating disorders. Objectification Theory suggests that this increased risk depends on the amount and type of media individuals choose to consume. In terms of amount, the more actively people choose to consume and build a narrative of thinner ideals, the more likely they are to internalize the need for a thinner body and therefore engage in disordered eating behavior to achieve their ideal. With regard to type, media that emphasizes physical appearance is key. The more an individual sees
images of thin body types, the more likely one is to internalize those images as the “ideal” body type and work towards that body type, leading to disordered eating behavior (Fredrickson & Roberts, 1997).

While this theory has garnered research support, Social Comparison Theory proposes a more in-depth explanation for the relationship between media exposure and eating pathology. Social Comparison Theory focuses on the relationship between social comparisons, self-esteem, and eating pathology (Bailey & Ricciardelli, 2010; Corning, 2006; Lup, Trub, & Rosenthal, 2015). There are two basic types of social comparison: upward comparison and downward comparison. Upward comparison occurs when one compares themselves to someone they see as better off than them while downward comparison is when one compares themselves to someone perceived as worse off than them. Social Comparison Theory proposes that individuals are constantly comparing themselves to others, whether that be individuals they interact with directly or images presented in the media. Following the basis of the theory, when media is infused with body types that are unrealistic for the average individual to achieve, and that same body type is categorized as the ideal body, individuals are more likely to make upward comparisons. It is unclear whether social comparisons are simply an additional variable that is related to social media and eating pathology or whether social comparisons have a causational role in the media/eating pathology relationship (Tylka & Sabik, 2010). However, many studies have reported that constantly making upward comparisons results in individuals having lower self-esteem, higher body dissatisfaction, and increased eating pathology. These studies
have also supported a link between amount of media consumed, upward comparisons, and increased eating pathology (Leahey, Crowther, & Ciesla, 2011; Lin & Soby, 2016; Walker et al., 2015). The integral role of self-esteem is one of the major factors that sets Social Comparison Theory apart from Objectification Theory, since the change in self-esteem indicates that there are more psychological ties to the body as part of one’s “self” than just purely seeing the body as an object that can be altered to fit the thin ideal.

While there is support for both theories across all different media types, understanding whether one theory is more viable than the other is essential to better understanding eating disorders. The theories use different underlying causes to explain the relationship between media and eating pathology. Therefore, knowing whether one theory better explains the relationship indicates that the underlying cause of that theory is more accurate in explaining eating pathology, which can also lend assistance to improving treatment and prevention plans. Examining the aspects of different media types in terms of both theories and examining emerging types of media may clarify whether one theory successfully explains the unique relationship between media and eating pathology.

**Traditional Media**

Traditional media consumption includes the use of magazines, newspapers, and television, all of which have been shown to be related to eating pathology. Regardless of age, gender, body mass index, or sexuality, studies show that individuals who report consuming more traditional media have higher body
dissatisfaction and higher disordered eating pathology (Duggan & McCreary, 2004; Grabe, Ward, & Hyde, 2008; Hausenblas et al., 2013; Simpson, Kwitowski, Boutte, Gow, & Mazzeo, 2016). Given how embedded media is in Western society, it is difficult to determine if media consumption actually causes eating pathology or body dissatisfaction that is already present is simply expanded by media consumption. However, studies looking at disordered eating in Fiji before and after television was introduced suggest that media consumption may cause higher eating pathology, including a thinner ideal body type and an emergence of purging behaviors (Becker, 2004; Becker et al., 2002).

Objectification Theory in Traditional Media. Traditional media presents a passive form of media consumption that appears to support Objectification Theory. Studies find a consistent positive correlation between media consumed and disordered eating pathology, specifically identifying consistent relationships between body dissatisfaction and exposure to thin ideals (Grabe et al., 2008). Some of these findings can be attributed to the lack of variables associated with Social Comparison Theory being examined, but even with the variations in studies, Objectification Theory provides a consistent explanation for the relationships found.

Individuals with higher disordered eating pathology scores report reading magazines and watching television shows with higher thin ideals, supporting the idea that more exposure is related to more eating pathology (Duggan & McCreary, 2004; Tiggemann & Miller, 2010). Studies also suggest the more individuals view material that promotes bodies as objects, the more likely they are to objectify their own bodies
and therefore internalize a thinner ideal (Tylka & Hill, 2004). Advertisements in particular tend to promote bodies as objects, and studies have also found that exposure to advertisements promoting a thinner ideal results in higher eating pathology (Halliwell, Dittmar, & Howe, 2005; Harvey, 2003; Krawczyk, 2015; Morry, 2001). Advertisements function by promoting bodies and people as objects. They are required to promote the body as an object, since the majority of advertisements are simply a picture and therefore cannot communicate personality traits or a full sense of self. Even television advertisements where the individual can speak are rarely over 30 seconds long and have little chance to build a personality for members in the advertisement without giving up the chance to show off their product (Newell & Henderson, 1998). The fact that relationships exist between advertisement consumption and eating pathology indicates that objectifying the body is part of the explanation for eating pathology, supporting Objectification Theory.

A meta-analysis of traditional media research and eating pathology identified recurring relationships between media consumption and three variables related to Objectification Theory: Internalizing a thin ideal, Body objectification, and Body surveillance (Grabe, Ward, & Hyde, 2008). The relationships between all of these factors lend the strongest support to Objectification Theory, since exposure to thin ideals in the media seem to be related to individuals striving for that same thin ideal. Overall, Objectification Theory accurately explains the relationship present between traditional media consumption and eating pathology, and studies looking at internalization and body objectification strongly support the theory.
Social Comparison Theory in Traditional Media. In addition to self-objectification and internalization of ideas, social comparisons have also been looked at as a potential mediator between media exposure and eating pathology, supporting Social Comparison Theory. Studies show that social comparisons mediate the relationships between media exposure and body dissatisfaction, and that individuals who make less upward comparisons have lower eating pathology scores than those making more upward comparisons (Halliwell, 2013; van den Berg et al., 2007; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005). Since many traditional media studies neglect to look at social comparisons, traditional media studies appear to support Objectification Theory. However, if this underlying relationship between social comparisons and eating pathology exists, Social Comparison Theory could also be explaining the relationship between eating pathology and traditional media.

Traditional media has been shown to affect society’s idea of thin body types over the years (Derenne, 2006). However, reflecting on how society relates to media lends support to the idea that media reflects social aspects and therefore, even in traditional media, social comparison may be an explanation for the relationship between eating pathology and media consumption.

Internet Media

The emergence of Internet brought a new form of media consumption. While Internet resembles television and magazines in many ways, there is an even more active role that consumers take on when using the Internet. Unlike Magazines or Television, where one simply picks up the Magazine or turns on the Television and
there is media, with Internet one has to actively search for media, whether that is going to a specific Internet site, using a search engine to find information, or interacting socially through a chat room, email, or other social site. This active searching leads to more exclusivity on the media one consumes on sites, which may potentially prevent media that encourages disordered eating pathology, or promote said media in an extreme level. Despite the differences between Internet media and Traditional media, studies comparing the two have found similar relationships between media use and eating pathology, especially in sites that promote disordered eating pathology (Bair, Kelly, Serdar, & Mazzeo, 2012; Latzer, Spivak-Lavi, & Katz, 2015). Some studies have even found that Internet usage has a stronger relationship to eating pathology than Television or Magazines (Tiggeman & Slater, 2013; Tiggeman et al., 2010). This may be due to the active nature of internet media, where individuals are searching out the media they are looking for even more exclusively than they would by choosing which Magazines and Television shows to watch. However, many studies examining relationships between Internet and eating pathology tend to do so from perspective of both Objectification and Social Comparison Theory.

**Objectification theory in Internet Media.** For Objectification Theory to be supported in Internet media studies, more exposure to bodies being objectified would have to relate to higher eating pathology scores. While no studies have examined this specifically, studies examining Internet media and eating pathology in general report that Internet consumption is equal to or higher than traditional media consumption
(Bair et al., 2012; Latzer et al., 2015; Tiggemann & Miller, 2010; Tiggemann & Slater, 2013). This increased exposure has been suggested as an explanation for the relationships found between Internet media consumption and disordered eating pathology. Among studies examining Internet use and eating pathology, the more Internet exposure one has, the more likely they are to have increased eating pathology.

When consuming internet media individuals are either choosing to consume media they are actively searching for, or consuming media through advertisements or through their social groups online promoting said media. Both of these types of exposure lend support towards Objectification Theory. Tiggeman (2010) did an in-depth examination of the different types of internet use compared to traditional media. The study reported that all types of internet use were linked to increased disordered eating, regardless if the internet use was social or not. These findings indicate that simple exposure to Internet results in a relationship. Other studies found Internet exposure was found to be related to internalization of the thin ideal (Bair et al., 2012; Tiggeman & Slater, 2013). This relationship between internalization and Internet exposure gives credence to Objectification Theory.

If one is specifically looking for content around thin bodies, dieting, or even information on eating disorders, the likelihood of exposure to unhealthy messaging and internalizing those messages is incredibly high. Assuming Objectification Theory accurately explains the relationship between media consumption and eating pathology. Therefore, sites that promote eating disorders can be found among
Internet media, and content analysis of these sites appear to support Objectification Theory. The sites, commonly referred to as “pro-anorexia” or “pro-ana” sites support eating disorders as a lifestyle choice. Many of the sites are exclusive to individuals who have been diagnosed with an eating disorder. Borzekowski, Wilson, and Peebles (2010) analyzed over 300 of these sites and found the majority of sites included messages of “Thinspiration” tips and techniques on losing weight, as well as some aspects that encourage recovery. The content of these sites are very focused on body maintenance, surveillance, and a thin ideal, all ideas that are associated with Objectification Theory. Many scholars indicate that exposure to these sites further increases narratives of thin ideal bodies (Borzekowski et al., 2010; Rouleau & von Ranson, 2011; Yom-Tov, Brunstein-Klomek, Hadas, Tamir, & Fennig, 2016). No study has specifically looked at whether these sites are related to internalizing a thin ideal, however, the messages of thin bodies, and strategies toward body surveillance presented on these sites support concepts that Objectification Theory uses as the base for explaining eating pathology.

While content analysis of these sites appear to support the idea that more exposure to thin bodies lead to thinner body internalization, most analysis looks at a population pre-disposed to eating pathology that then consumes eating pathology messages. This specific scenario could create a bias in results. However, experimental studies indicate pure exposure to pro-ana sites may still result in increased eating pathology, and still support Objectification Theory. Some studies have found that those who view a pro-ana site compared to individuals who view
other websites have more disordered eating trends after viewing the site (Bardone-Cone & Cass, 2006; Bardone-Cone & Cass, 2007). In a more expansive study, women were assigned to either a pro-ana site or one of two neutral sites and asked to keep a food journal while exploring the sites. Only women who viewed pro-ana sites had any increases in pathological eating behavior (Jett, LaPorte, & Wanchisn, 2010). These studies indicate that pro-ana sites have an influence on eating pathology, and given the site’s focus on thin bodies and body surveillance, the influence of sites like these strongly supports Objectification Theory.

However, there has been some variance in experimental pro-ana studies. Delforterie, Larsen, Bardone-Cone, & Scholte (2014) found women who explored pro-ana sites had lower eating pathology scores compared to women who explored a home decorating site. While the majority of results indicate that these sites have some influence on one’s eating behaviors and body dissatisfaction, it is important to note that pro-ana sites still need to be further studied. Still, the nature of pro-ana sites and the emphasis they have on thin bodies, body surveillance, and tips and tricks on how to manipulate body size and weight overall lend support toward Objectification Theory.

**Social Comparison Theory and Internet Media.** While Objectification Theory can explain the relationship between Internet media and eating pathology, Social Comparison Theory provides an explanation for underlying motivations of Internet use and why social interactions are so important for individuals.
Studies that examine how individuals use different Internet sites have found that the more social individuals are on a site the more likely they are to develop disordered eating habits, especially on social media sites. A 2013 study by Tiggemen examining social networking sites found that individuals were more inclined toward eating pathology if they were using social networking sites compared to neutral Internet activities such as checking email. This indicates that, while exposure is an important factor to consider, social networking and how individuals use Internet sites results in stronger relationships than just pure exposure. A study by Latzer (2015) found that social aspects of internet use were strongly related to social comparisons, empowerment, and self-esteem. Combining the findings of these two studies, one can speculate that the more social networking the site, the more social comparisons. Therefore, the relationship found by Tiggeman can be explained through more upward comparisons as Latzer suggests, further endorsing Social Comparison Theory.

Other studies have found that social comparison is strongly related to internet media consumption, especially when examining social media sites (Cramer, Song, & Drent, 2016; Fardouly, Diedrichs, Vartanian, & Halliwell, 2015; Fardouly & Vartanian, 2015; Vogel, Rose, Roberts, & Eckles, 2014). If social comparison is also related to social media consumption, and social media consumption is related to eating pathology, then social comparison could better explain the relationship between social media consumption and eating pathology.
The social factors also present on the pro-ana sites also make a case for Social Comparison Theory. Analyses focusing on the social factors of pro-an sites found that major motivations for using the sites include emotional support, esteem support, and informational support (Tong, Heinemann-Lafave, Jeon, Kolodziej-Smith, & Warshay, 2013). Other studies have examined the amount of support that users of the sites give and receive and point out the benefits of being in a space with lack of stigma around eating disorders. Both pro-ana users and creators report the social support, self-expression factors, and the support in coping with a stigmatized illness helped create a community and social network on which they rely (Rodgers, Skowron, & Chabrol, 2012; Yeshua-Katz & Martins, 2013). These sites, while promoting unhealthy behaviors, tend to give users a voice and a social network where it is acceptable to talk about their illness without fear of stigma (Dias, 2003). There have also been some studies on pro-eating disorder pages on social media sites, indicating that the pages focused more on social aspects than pro-eating disorder sites. These social media sites also seem to have a stronger relationship to eating behaviors, indicating that the social aspects may be more important than exposure to the content (Juarascio, Shoaib, & Timko, 2010; Syed-Abdul et al., 2013). With the strong social nature of these sites, there is a chance that the findings Latzer (2015) presented are also related to pro-ana sites, indicating there are more social comparisons occurring on the sites, explaining why pro-ana sites are associated with higher eating pathology through a Social Comparison Theory lens.
Social Media

While social media can be categorized under Internet media, the unique combination of social interactions with active content choice sets it apart, especially when social media’s relationship with eating pathology is examined. Examining studies exploring the relationship between eating pathology and social media, it is clear that there is a relationship (Holland & Tiggemann, 2016). However, it is currently unclear whether that relationship is accurately explained by body objectification, or fueled through social comparisons or some combination of the two.

While social media sites have also been linked to disordered eating pathology, many of the studies simply look at exposure to the sites in relation to disordered eating. All of these studies have found a positive correlation between eating pathology and time spent on social media sites (Pepin & Endrez, 2015; Santarossa, 2015; Tiggemann & Slater, 2013). These studies indicate that something about social media sites relates to eating pathology, but fail to test Social Comparison and Objectification Theory specifically.

Although these two theories haven’t been directly tested with social media, some studies have found eating disorder behavior is more linked to how individuals use of social media sites as compared to pure time spent on social media. One study found that the value participants put on their Facebook photo “likes” was strongly related to higher disordered eating (Mabe, Forney, & Keel, 2014) while a different study found a relationship to negative feedback on Facebook and eating pathology scores (Hummel & Smith, 2015). An additional study on Facebook use reported that
the more a Facebook user posted on Facebook, the higher their eating pathology scores were, though just commenting and socially interacting on Facebook had no relationship to eating pathology scores (Meier & Gray, 2014). These studies can be construed to support Objectification but may also be related to Social Comparison Theory. In one sense individuals are putting emphasis on pictures of their bodies, objectifying them and relying on peer’s judgements to influence the individual’s attitude towards themselves. However, individuals are also relying on the social nature of the sites and, if individuals are comparing how many likes they have to others, they are socially comparing themselves in terms of popularity.

Studies on social comparison and self-esteem in relation to eating pathology seem to support Social Comparison Theory. The majority of studies have found that social comparison and self-esteem play a role in the relationship to eating pathology and social media. Most have found that social comparison and self-esteem are commonly present when examining social media and eating pathology’s relationship (Fardouly et al., 2015; Fardouly & Vartanian, 2015; Mihee & Woochul, 2016; Vogel et al., 2014). One study even found that social comparison mediated the relationship (Brown & Tiggemann, 2016). These studies indicate that the social aspects of social media help explain the relationship between media consumption and eating pathology, but the previous studies finding a link between pure exposure to sites and social media use support the media aspect of social media. Further examining social media sites, and examining sites specifically in terms of exposure and social factors equally, will serve to clarify this relationship.
**Instagram**

The social media site Instagram uniquely combines social comparison with high image exposure. This combination suggests that it is likely there is a relationship with disordered eating. While Objectification Theory may explain this relationship, the social components of Instagram may also endorse Social Comparison Theory. Instagram is an all-picture website and cell phone app that allows users to upload pictures, put various filters on those pictures, and then post them to their followers. Instagram communication is primarily through pictures and image, with some written commentary allowed on the pictures. Thus, all social comparisons made are based off of pictures that are often altered with filters to look ideal to the user. There are privacy settings on Instagram that allow users to only allow certain people to view the content they post. However, the default setting for Instagram is “public”, meaning that any other individual with an Instagram account can view the user’s images and make comments on the images simply by “following” the user. The public setting on Instagram allows for more social commentary and a higher risk of negative feedback, while the privacy settings refine the feedback to those of peers the user supposedly values enough to allow exposure to content.

Instagram has not been studied much in terms of eating disorders, but studies that have begun to examine it show promising results. There are profiles on Instagram that resemble the pro-ana pages found on other social media sites, and one study reported that those following pro-eating disorder themes on Instagram tend to report higher eating pathology (O’Brien, 2015). “#fitspiration”, or fitness-inspiration
pictures on Instagram are also common, and studies have found that those who post “#fitspiration” pictures are much more likely to have higher eating disorder and body dissatisfaction scores than those who post more neutral photos (Holland & Tiggemann, 2016; Tiggemann & Zaccardo, 2015). Studies that have included Instagram as one site in a general analysis of social media and eating pathology found positive correlations between Instagram use and eating pathology, but did not further examine the relationships found (Pepin & Endresz, 2015; Santarossa, 2015).

Based on past studies on Instagram use, it seems as though Social Comparison Theory would best explain the relationship at hand. It has been found that one of the major motivations for using Instagram is social interaction, which has also been identified as a major factor to participate on pro-eating disorder sites (Juarascio et al., 2010; Lee, Lee, Moon, & Sung, 2015; Peebles et al., 2012; Rodgers et al., 2012; Tong et al., 2013; Yeshua-Katz & Martins, 2013). Studies have also found links between Instagram and social comparison. How many followers one has on Instagram is slightly related to stronger social comparison and social comparing oneself to peers or celebrities resulted in individuals feeling worse about themselves (Brown & Tiggemann, 2016; Lup et al., 2015). The main themes that have been identified between athletes’ Instagram posts and also indicate that they are posting in terms of their followers, and are very self-conscious of how they present themselves on the site (Smith & Sanderson, 2015). All of these studies highlight the high social aspects and social influence of Instagram. While all of the social aspects indicate social comparisons are prevalent, no study has examined Instagram and eating pathology.
with these theories in mind, and therefore there is no proof that Social Comparison Theory actually explains the relationship.

While there have been studies examining Instagram and eating pathology and studies looking at social influences of Instagram, no study has yet examined the relationship that could be present between Instagram, social influences, and eating pathology. This relationship, if present, would lend strong support towards Social Comparison Theory, while a lack of this relationship would indicate that Objectification Theory may explain the relationships. Finding a way to measure the social component of Instagram is essential to be able to fully examine Social Comparison Theory. Given how social comparisons are related to self-esteem, including self-esteem as an additional measurement between Instagram use and Eating Pathology may help shed light on which Theory, if either, best explains the relationship.

Further exploring the relationships between Instagram, self-esteem, and eating pathology may also help identify what aspects of social media, and media exposure in general, truly relate to eating pathology. Given Instagram’s high image exposure and movements on Instagram like “#thinspiration” and “#fitspiration”, there is a chance that individuals are internalizing thinner body ideals and Objectification Theory explains the relationship. However, Instagram’s high social exposure and previous relationships with social comparisons may instead endorse Social Comparison Theory. Revealing the relationships between Instagram use, self-esteem, and eating
pathology scores will hopefully help uncover the complex relationship between eating pathology and media use.

**Purpose**

This study seeks to explore the relationship between Instagram use and eating pathology within the context of Objectification Theory and Social Comparison Theory. We believe that Instagram use will be related to eating pathology in two ways: 1) Individuals who use Instagram will report higher levels of disordered eating pathology than people who do not use Instagram and 2) Higher reported Instagram use will be positively correlated with disordered eating pathology subscales. If either Hypothesis 1 or 2 is correct, our study will replicate other findings between Instagram use and eating pathology and allow us to further delve into whether social components are fueling the relationship. Within the second Hypothesis, the combinations of Instagram use and eating pathology relationships will help shed light on how these two theories explain Instagram use and eating pathology. We believe that measures focusing on social concerns will be more strongly related to eating pathology than just frequency use alone, suggesting that more than exposure is related to eating pathology and supporting the idea that Social Comparison Theory can contribute to understanding the relationship at hand. Self-Esteem’s relationship to social comparisons resulted in our third hypothesis: 3) We expect self-esteem will moderate the relationship between Instagram use and eating pathology. Specifically, we believe that, for those with higher self-esteem, there will be a weaker relationship
between Instagram use and eating pathology compared to those with lower self-esteem.
Method

Participants

We surveyed 64 students from Wesleyan University. The average age was 19.92 years ($SD = 1.18$). In our sample, 45.32% reported being biologically male while the remainder reported being biologically female. Reported ethnicity of the sample are as follows: 56.25% White, 25% Asian/Pacific Islander, 6.25% Hispanic, 4.68% African American/Black, 9.38% Other. Students were either enrolled in Wesleyan’s Introductory Psychology class and receive class credit for participation ($n = 23$), or were recruited through flyers (see Appendix A) and paid $10 for their participation ($n = 41$). IRB approval from Wesleyan University was obtained.

Measures

Eating Pathology. Eating pathology was measured with two measures: The Eating Disorders Examination Questionnaire (EDE-Q, Appendix E) and the Drive for Muscularity Scale (DMS, Appendix F). The two measures were used as an attempt to obtain a more comprehensive understanding of general eating pathologies and body image across genders.

Eating Disorders Examination Questionnaire (EDE-Q). The Eating Disorders Examination Questionnaire (EDE-Q; Fairburn, 1993) is a self-report based version of an oral Eating Disorder Examination.

This scale measures global eating pathology as well as four subscales: Restraint, Eating Concern, Shape Concern, and Weight Concern. The Restraint subscale asks questions about restraint over eating, avoidance of eating, food
avoidance, dietary rules, and desire to have an empty stomach. Eating Concern 
surveys participants on their preoccupation with food, eating or calories, their fear of 
losing control over eating, eating in secret, social eating, and guilt over eating. Shape 
Concern examines individual’s desire for a flat stomach, preoccupation with shape or 
weight, importance of body shape, fear of weight gain, dissatisfaction with body 
shape, discomfort seeing body, avoidance of body exposure, and feelings of fatness.  
The final subscale, Weight Concern focuses on importance of weight to the 
participant, reaction to prescribed weighing, preoccupation with shape or weight, 
dissatisfaction with weight, and desire to lose weight.

The EDE-Q has been used in numerous studies (Celio et al., 2000; Guerrieri, 
Nederkoorn & Jansen, 2007). It has been shown to have high internal consistency, 
and good two-week test-retest reliability (average alpha between .80 and .90; Luce & 
Crowther, 1999).

**Drive for Muscularity Scale (DMS).** The Drive for Muscularity Scale (DMS; 
(McCreary & Sasse, 2000) is a 15 item self-report scale. Because men tend exhibit 
body dissatisfaction through a drive for muscle as opposed to women’s drive for 
thinness, many studies have used the DMS to measure body dissatisfaction in men 
(Bergeron & Tylka, 2007; Jones & Crawford, 2005; Nowell & Ricciardelli, 2008). It 
has high criterion rated validity, high internal consistency and a one month test-retest 
reliability (Dakanalis et al., 2015).

**Instagram Use.** Instagram use was measured using questions from 
Lazebna’s 2015 study (see Appendix G). These measures were broken down by
Lazebna into two sections: Instagram Frequency and Social Interactions on Instagram.

To measure how often participants used Instagram, we looked at three subscales from Lazebna’s study: Frequency of Instagram use, Frequency of Taking Selfies, and Frequency of Tweaking Selfies. Frequency of Instagram use examined how long individuals have been an Instagram user (with responses ranging from “less than a year” to “more than 4 years”), how much time individuals spend on the site per day, how many posts individuals have on the site, and how frequently individuals log onto the site each day. Frequency of Taking Selfies asked users how often they upload selfies per day and per week, as well as a general question about how frequently individuals partake in selfie culture (from “never” to “daily”). Frequency of Tweaking Selfies asked participants to report on how often they edit their selfies after they’ve been taken, including using filters on their selfies. It also looked at how often users manipulate the settings around them before taking a selfie to result in a post-worthy photo, such as finding ideal lighting and a perfect angle.

To measure how individuals interact on Instagram, we included four subscales from Lazebna’s study: Fear of Negative Evaluation (FNE), and Perceived Ability to Present True Self (PA) on Instagram, in Face to Face Interactions, and through Selfies. Fear of Negative Evaluation, as the name implies, asks individuals about their comfort with evaluation and any discomfort about negative feedback and evaluation. PA asked individuals questions about how accurately they feel the present
their true selves, both in intentional actions as well as how naturally they feel they are able to present their self.

All responses for subscales under Instagram use were on a 5-point scale, except for 3 questions under Frequency of Taking Selfies, which had a 6 point response. Lazebna reported alpha levels between .77 and .96 for all Instagram subscales.

**Self-Esteem.** Self-Esteem was measured using the Rosenberg Self-Esteem scale (RSES, Appendix H; Rosenberg 1965), a 10-item scale that has been used in many studies to measure individual’s self-esteem. It consists of 10 questions with four possible responses to each question, with half of the questions being reverse scored. The Rosenberg Self-Esteem scale has a consistent convergent validity across subgroups, high internal consistency across groups (average alpha level for Sinclair et al. (2010) was .91 with a range between .84 and .95).

**Procedure**

Participants were asked to sign up for one-hour time slots. They brought their personal laptop to a specified classroom for the study session. Up to 20 students were allowed to participate in the same timeslot. After giving informed consent (see Appendix B), participants received an email with a link to a survey conducted through Qualtrics software (Snow & Mann, 2013). The survey asked participants whether or not they had an Instagram account. If they said yes they answered questions about their Instagram use. All participants then completed questions about eating pathology and self-esteem.
At the end of the survey participants received one-on-one debriefing interviews assessing for distress (see Appendix C). They were given additional materials describing the purpose and background of the study (see Appendix D) and were given the opportunity to ask any clarifying questions. They received various resources within the debriefing materials in case they experienced any distress from questions and wished to seek out further assistance.
Results

Data Management

SPSS Data Management was used for all data analysis.

Outliers and Normality. No outliers were found within our data set. All scales were also checked for normality prior to analysis. Scales that were outside of the acceptable range (i.e., between -1 and 1) were deemed significantly skewed. All eating subscales were found to be abnormal. Findings in non-clinical populations. Analysis was adjusted for abnormality in scales.

Missing Data. One participant in the Instagram group did not complete the Rosenberg Self-Esteem Scale and therefore they were not included in the self-esteem analysis. Besides this single participant, all participants completed the majority of all the scales, with a total of 10 missing items in our entire data set outside of the missing Rosenberg scale. This missing data was replaced using regression imputation, but we believe the small amount of missing responses will have minimal effect on our data.

Descriptive Data

Reliability

All eating pathology measures had adequate cronbach alpha levels to be deemed reliable, as did our self-esteem measure (Bland & Altman, 1997). Means, standard deviations, and alpha levels were comparable to those in studies looking at a similar population (Barry, Doucette, Loflin, Rivera-Hudson, & Herrington, 2015; Corning, 2006; Grossbard, 2008; Hummel & Smith, 2015; McCreary, Saucier, &
Courtenay, 2005; Walker et al., 2015). Table 1 shows all descriptive statistics for Instagram and Eating measures.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSE</td>
<td>17.68</td>
<td>0.75</td>
<td>.86</td>
</tr>
<tr>
<td>DMS Attitudes</td>
<td>22.60</td>
<td>1.32</td>
<td>.93</td>
</tr>
<tr>
<td>DMS Behaviors</td>
<td>23.49</td>
<td>1.82</td>
<td>.95</td>
</tr>
<tr>
<td>DMS Total</td>
<td>46.09</td>
<td>2.80</td>
<td>.95</td>
</tr>
<tr>
<td>EDE-Q Restraint</td>
<td>1.26</td>
<td>0.17</td>
<td>.82</td>
</tr>
<tr>
<td>EDE-Q Eating Concern</td>
<td>1.41</td>
<td>0.18</td>
<td>.84</td>
</tr>
<tr>
<td>EDE-Q Shape Concern</td>
<td>1.81</td>
<td>0.21</td>
<td>.92</td>
</tr>
<tr>
<td>EDE-Q Weight Concern</td>
<td>1.43</td>
<td>0.20</td>
<td>.89</td>
</tr>
<tr>
<td>EDE-Q Global</td>
<td>1.48</td>
<td>0.18</td>
<td>.91</td>
</tr>
</tbody>
</table>

Note. N = 64, RSE = Rosenberg Self-Esteem Scale, DMS = Drive for Muscularity Scale, EDE-Q = Eating Disorder Examination Questionnaire.

Primary Analysis

Hypothesis 1: t-Test

To test whether individuals who use Instagram reported higher levels of eating pathology than non-Instagram users, we conducted a 2-tailed independent samples t-test between the two groups across all eating pathology measures. Instagram users scored significantly higher than non-users on EDE-Q Shape, t(63) = 2.41, p = .02. There was also a trend towards significance between the two scores on the EDE-Q Global score, t(63) = 1.91, p = .07, the EDE-Q Restraint subscale, t(63) = 1.98, p = .06, and the EDE-Q Weight subscale, t(63) = 1.85, p = .08, all of which Instagram Users scored higher than non-users. The EDE-Q Eating Concern subscale had no significant differences between the two groups, t(63) = 0.98 , p = .30 (see Figure 1.
There were also no significant differences between groups for Drive for Muscularity, 
$t(63) = -0.72, p = .48$, or Self-Esteem scores, $t(62) = -0.05, p = .96$.

**Figure 1**

*Differences between Instagram and non-Instagram users in Eating Pathology Scores*

![Graph showing differences between Instagram and non-Instagram users in Eating Pathology Scores](image-url)

*Notes. N = 53, EDE-Q = Eating Disorder Examination Questionnaire, * indicates a p < .05*

**Instagram Group Analysis**

All other analyses in this study only used responses from the Instagram group ($n = 53$). There were no significant differences between the two groups in ethnicity or biological sex ($\chi^2(3, N = 63) = 4.89, p = .18$), but there was a significant difference in age between the two groups, $t(63) = -2.420, p < .05$. Only the Instagram group answered questions about Instagram use, and descriptive statistics for all Instagram focused Questions can be found in Table 2.
All measures had adequate alpha levels to be deemed reliable, with the exception of our category attempting to assess Frequency of Taking Selfies.

Frequency of Taking Selfies was not used in any analysis due to its low reliability.

Our means and standard deviations were higher compared to Lazebna’s study in the categories examining presentation of true self and lower in all other categories.

Alpha levels were lower in this study than Lazebna’s for all measures except Frequency Tweaking Selfies, which was the same as in the Lazebna study (Lazebna, 2015).

Table 2

**Descriptive Statistics for Instagram Measures**

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Instagram Use</td>
<td>29.81</td>
<td>1.01</td>
<td>.77</td>
</tr>
<tr>
<td>Frequency Taking Selfies</td>
<td>8.60</td>
<td>0.40</td>
<td>.57</td>
</tr>
<tr>
<td>Frequency Tweaking Selfies</td>
<td>14.85</td>
<td>0.78</td>
<td>.90</td>
</tr>
<tr>
<td>True Self (Instagram)</td>
<td>29.23</td>
<td>0.64</td>
<td>.70</td>
</tr>
<tr>
<td>True Self (face to face)</td>
<td>30.96</td>
<td>0.65</td>
<td>.70</td>
</tr>
<tr>
<td>True Self (selfies)</td>
<td>29.71</td>
<td>0.81</td>
<td>.72</td>
</tr>
<tr>
<td>Fear of Negative Evaluation</td>
<td>35.25</td>
<td>1.21</td>
<td>.90</td>
</tr>
</tbody>
</table>

_Notes._ N=53

**Hypothesis 2: Correlations.** To see whether higher reported Instagram use was positively related to disordered eating pathology subscales, we ran Spearman Correlations for each question. Spearman correlations were run instead of Pearson correlations because none of the eating pathology subscales had normal distributions.

All correlations can be found in Table 3.
<table>
<thead>
<tr>
<th>Frequency</th>
<th>Instagram Use</th>
<th>Tweaking Selfies</th>
<th>PA Instagram</th>
<th>PA Face to Face</th>
<th>PA Selfies</th>
<th>FNE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.03</td>
<td>0.05</td>
<td>0.09</td>
<td>0.03</td>
<td>0.14</td>
<td>0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>0.29</td>
<td>0.31</td>
<td>0.26</td>
<td>0.37</td>
<td>0.13</td>
<td>0.01</td>
<td>0.10</td>
</tr>
<tr>
<td>0.22</td>
<td>0.28</td>
<td>0.15</td>
<td>0.33</td>
<td>0.15</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>0.11</td>
<td>0.14</td>
<td>0.06</td>
<td>0.13</td>
<td>0.00</td>
<td>0.10</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Notes:

- PA = Perceived Ability to Present True Self
- DMS = Drive for Muscularity Scale
- EDE-Q = Eating Disorder Examination Questionnaire
- FNE = Fear of Negative Evaluation

Variables: N = 53, DMS = Drive for Muscularity Scale

* indicates a p < .05, ** indicates a p < .01

Table 3: Correlations
Frequency of Tweaking Selfies was positively related to EDE-Q Shape and Weight concern subscales as well as the Global EDE-Q subscale, supporting Hypothesis 2. However, no other Frequency of Instagram scores were related to eating subscales and Drive for Muscularity subscales.

Frequency of Instagram use was positively correlated with individual’s PA selfies as well as individual’s FNE. However, no correlations were found between Frequency of Instagram use and any of the Eating Pathology scales, or for Frequency of Instagram use and Self Esteem.

**Perceived Ability to Present True Self.** Participants were asked about their ability to present their true selves on Instagram, in Face to Face Interactions, and in their selfie postings. While there were no significant correlations between Perceived ability to present true self in selfies, the other two categories both had significant correlations with eating pathology measures.

**Instagram.** Individual’s perceived ability to present their true selves on Instagram was negatively correlated with EDE-Q subscales of Restraint and Eating Concern as well as the Global EDE-Q score. Besides being positively related to the other aspects of perceived ability to present true self in other formats, there were no other significant correlations.

**Face to Face Interactions.** Scores on this measure were negatively correlated with Fear of Negative Evaluation as well as being negatively correlated with the EDE-Q global score as well as every EDE-Q subscale.
Fear of Negative Evaluation. Scores on Fear of Negative Evaluations were positively related to EDE-Q Global scores, as well as scores on Restraint, Eating Concern, Shape Concern, and Weight Concern.

Self-Esteem. Self-Esteem scores were not related to any of the Instagram Use scores but were negatively correlated with Drive for Muscularity Behavior and Total scores. Self-Esteem also had a negative relationship with the EDE-Q Eating Concern Subscale.

Hypothesis 3: Moderation Analysis

To test the hypothesis that self-esteem (RSE) would moderate the relationship between Instagram use and eating pathology (EDEQ), a series of multiple regression analyses were conducted. All variables were mean-centered prior to analysis.

The first model, examining self-esteem as a moderator of the relationship between frequency of tweaking selfies (FTS) and eating pathology, was significant, $F(3, 48) = 5.94, p < .05, R^2 = .24$. Results indicated that self-esteem [$b = -.09, SE_b = .04, t(48) = -2.43, p = .02$] and frequency of tweaking selfies [$b = .10, SE_b = .03, t(48) = 3.29, p < .01$] were both associated with eating pathology. The interaction between self-esteem and frequency of tweaking selfies was also significant [$b = -.01, SE_b = .01, t(48) = -1.98, p = .05$] suggesting that the effect of frequency of tweaking selfies on eating pathology depends on the level of self-esteem. Simple slopes for the association between frequency of taking selfies and eating pathology were tested for low (-1 SD below the mean), moderate (mean), and high (+1 SD above the mean) levels of self-esteem. The simple slope tests revealed a significant association for
both low \( b = .16, SE_b = .05, t(48) = 3.43, p < .01 \) and moderate \( b = .10, SE_b = .03, t(48) = 3.29, p < .01 \) self-esteem but not for high self-esteem \( b = .03, SE_b = .04, t(48) = 0.82, p = .41 \). Figure 2 shows the simple slopes for the interaction.

Figure 2

*Frequency Tweaking Selfies*

![Graph showing frequency of tweaking selfies](image)

*Notes. N = 53, RSE = Rosenberg Self-Esteem Scale, * indicates a \( p < .05 \), ** indicates a \( p < .01 \)*

The second model, examining self-esteem as a moderator of the relationship between perceived ability to present true self on Instagram (PTS-I) and eating pathology, was significant, \( F(3, 48) = 5.04, p < .05, R^2 = .21 \). Results indicated that self-esteem \( b = -.07, SE_b = .03, t(48) = -2.34, p = .02 \) and PTS-I \( b = -.10, SE_b = .04, t(48) = -2.84, p = .01 \) were both associated with eating pathology. The interaction between self-esteem and frequency of tweaking selfies was also significant \( b = -.01, SE_b = .01, t(48) = 2.65, p = .01 \) suggesting that the effect of PTS-I on eating
pathology depends on the level of self-esteem. Simple slopes for the association between frequency of taking selfies and eating pathology were tested for low (-1 SD below the mean), moderate (mean), and high (+1 SD above the mean) levels of self-esteem. The simple slope tests revealed a significant association for both low \[ b = -0.19, SE_b = .05, t(48) = -3.73, p < .01 \] and moderate \[ b = -0.10, SE_b = .04, t(48) = -2.84, p = .01 \) self-esteem but not for high self-esteem \[ b = -0.02, SE_b = .05, t(48) = -0.35, p = .73 \). Figure 3 shows the simple slopes for the interaction.

Figure 3

*PA Instagram*

Notes. \( N = 53 \), RSE = Rosenberg Self-Esteem Scale, * indicates a \( p < .05 \), ** indicates a \( p < .01 \)
Discussion

Conclusion

**Hypothesis 1.** The first hypothesis was partially supported in this study, suggesting that Instagram use has some interplay with eating pathology scores. Instagram users scored significantly higher on the EDE-Q Shape Concern subscale. In addition, scores on the Restraint and Weight Concern subscales trended toward significance.

Our significant and trending findings are similar to those found in another study examining Instagram and eating pathology where Instagram users reported higher eating pathology scores (Santarossa, 2015). The relationships also make sense given the research reporting positive correlations between Instagram use and eating pathology (Pepin & Endresz, 2015). Our significant and trending findings also yielded a similar relationship to the one found between eating pathology and traditional media in past studies (Derenne, 2006; Grabe et al., 2008; Hausenblas et al., 2013). These results therefore provide support for the belief that social media sites and traditional media sites have similar relationship to eating pathology.

Shape Concern was the only subscale to have a significant difference between groups. Shape Concern focuses more on the visual presentation of the body compared to the other subscales of Eating Concern, Weight Concern, and Restraint. Instagram’s focus on appearance may be why Shape Concern was the only subscale to have a significant difference. If visual appearance is the underlying reason, then
neither Social Comparison or Objectification Theory can be supported over the other. The fact that Instagram users only scored higher on a subscale focusing on visual appearance indicates Instagram users are more concerned with visual appearance. Studies looking at social comparison and eating pathology have always found links between physical comparison (Bailey & Ricciardelli, 2010; Corning, 2006). Our findings may imply users are making social comparisons while on the site. However, the image-focus of this subscale can also support Objectification Theory, since individuals could be seeing thinner shapes and internalizing the ideal shaped body.

The lack of differences between groups for Eating Concern and Drive for Muscularity (DMS) resulted in our hypothesis only being partially supported. The Eating Concern subscale of the EDE-Q focuses on: Preoccupation with food, eating or calories; Fear of Losing Control over Eating; Eating in Secret; Social Eating; and Guilt about Eating. All of these areas of eating pathology are concerned with behavior around eating, and it could be that the all-picture nature of Instagram puts less emphasis on behavior and more emphasis on appearance. The DMS results may indicate muscularity is not a priority amongst Instagram users. However, in another study examining Instagram users, those focused on “#fitspiration” scored significantly higher on DMS than those not focused on the “#fitspiration” movement (Holland & Tiggemann, 2016). Given this trend amongst Instagram users, it could be that our specific group of Instagram users did not use Instagram in the specific way that would result in a higher DMS score. The lack of significance between groups may also be due to the small sample size \( (n = 12) \) for non-Instagram users. A larger
sample would provide more power, thus increasing the probability of detecting differences on these subscales.

**Hypothesis 2.** The second hypothesis, that Instagram use would be positively correlated with various eating pathology measures, was also partially supported in this study. Our hypothesis was only partially supported because Frequency of Instagram use was not correlated to any eating pathology measure. The lack of correlation for this measure indicates that the relationship between Instagram use and eating pathology may not be purely about whether or not individuals use Instagram, but how and why individuals use the site. Since selfie alteration appears to be related to eating pathology, it may be that users who are worried about appearance or how others perceive their appearance are the only users that score higher on eating pathology measures. Because there was no correlation between exposure and eating pathology, it indicates that we need to move past Objectification Theory as a primary explanation for the relationship, which may mean Social Comparison Theory would explain the relationship better.

Frequency of Tweaking selfies was positively related to the EDE-Q Global score as well as the Shape and Weight Concern subscales. Shape and Weight Concern are the two subscales that focus on physical attributes compared to the behavior-focus of the other two subscales. Tweaking selfies is altering one’s appearance through tools on Instagram. It makes sense these two physical-focused subscales were also the two subscales that were correlated with altering physical appearance. These findings are similar to findings by Barry et al. (2015) that reported the higher individuals’
selfie behavior, the higher their physical focus. While Barry’s study was examining narcissistic behavior in selfie use, the similarities between physical focus indicate that selfie use on Instagram focuses on physicality. This can relate to feeling positively about oneself (narcissistic behaviors) or negatively (body dissatisfaction and eating pathology).

Frequency of Tweaking Selfies does appear to lend some support to Objectification Theory, since users are changing the shape and appearance of their bodies. However, without knowing individual’s motivations for changing shape and appearance, there is also a chance that individuals are tweaking their selfies in order to fit with comparisons they are making on the site. Without further information neither theory can be fully supported by only examining Frequency of Tweaking Selfies.

Looking at the correlational results around Perceived Ability to Present True Self (PA), we can begin to speculate on the underlying motivations of Instagram use. Participants who scored higher on PA on Instagram scored lower on EDE-Q Restraint, Eating Concern, and the Global subscale. The PA-Instagram scores both examined how comfortable individuals were in presenting themselves, and how accurately individuals thought they presented themselves. The inverse relationship indicates that individuals who are less comfortable with themselves are more likely to have high eating pathology scores. However, the subscales that were correlated with PA on Instagram were the two subscales focused on eating behaviors as opposed to appearance. These results indicate that something about Instagram use, or online
presence in general, causes individuals to focus less on the physical appearance and more on overall behaviors. It could also be an indication that how Instagram is used is related to sense of self and therefore related to eating pathology.

While PA in Instagram was related negatively to eating pathology scores, PA selfies did not have any significant relationships to eating pathology scores. Given that selfies were the one area of Instagram use that was related to higher eating pathology scores, PA selfies seemed logical to expect further relationships. The lack of relationship could be due to the low reliability scores on Frequency of Taking Selfies. Our population reported very different selfie-behavior than Lazebna’s (2015) and it could be that the variance did not allow for us to accurately search for a relationship. The difference between our scores and Lazebna’s could have been due the differences between our population and Lazebna’s. While our ratios of men to women were similar and both studies had a majority of white participants, the age range for subjects varied across the two studies. Our highest reported age was 28 years while the original study’s participants ranged up to 50 years. Lazebna’s study also reported nearly double the population of our study. The age difference, as well as a greater population, appears to be the best explanation for why our participant’s selfie behavior was so different from the original study.

The significant PA results can be explained by Objectification or Social Comparison Theory. It appears that individuals are more focused on their eating behaviors as opposed to their appearance when presenting their “self” on Instagram. This could imply that more social comparisons are being made, since social
comparisons can be around appearance, behavior, or any other aspect of self. It could also imply that individuals are more actively trying to achieve the thin ideal through behaviors, which would support the idea that they are internalizing a thinner body ideal and could endorse Objectification Theory. However, since PA aligns more with social scales than body objectification, there is slightly more support towards Social Comparison Theory. Since results can be interpreted both ways, there is no way to say which Theory better explains the PA results, but it does allow for further questions to be asked about motivations around Instagram us to help shed light on the theories. The confidence level of presenting true self may speak to confidence in one’s self, which would most likely lead to more downward comparisons than upward comparisons. Given that in most studies downward comparisons had a much weaker relationship than upward comparisons when it came to eating pathology, the correlations we found in this measure strongly support the social comparison aspect of eating pathology relationships (Bailey & Ricciardelli, 2010; Leahey et al., 2011, Puric et al., 2011). However, this is not fully supported given the lack of relationships between these measures and self-esteem scores.

Fear of Negative Evaluation was also correlated with all EDE-Q scales, lending support for Social Comparison Theory, as well as some explanation as to why Frequency of Tweaking Selfies was the only Instagram measure with significant relationships. Fear of Negative Evaluation is related to lower self-esteem on social media sites (Valkenburg, Peter, & Schouten, 2016). This relationship indicates insecurity and the potential to make more upward comparisons. If people are fearful
of the negative evaluation of their peers, then posting on sites like Instagram where peers will be evaluating all posts could result in individuals trying to make their posts as perfect and impenetrable to negative evaluation as possible. If the fear of negative evaluation is based on appearance, individuals will also be more likely to alter pictures of themselves (selfies) so that they will not be negatively evaluated on their looks. Such fear of negative evaluation on appearance also suggests body dissatisfaction, or at least lack of confidence in one’s appearance meeting the expectations that society has put forth. Given how much Fear of Negative Evaluation relates to other’s evaluations and comparisons of self, the strong relationship here lends support toward Social Comparison Theory.

**Hypotheses 3.** Hypothesis 3, which looked at self-esteem as a moderator of Instagram use and eating pathology, was partially supported in this study. In particular, self-esteem was found to moderate the relationship between Frequency of Tweaking Selfies and global EDE-Q scores. This finding suggests that high self-esteem may serve some protective function when it comes to the relationship of social media use and eating pathology. For the correlations found between Frequency of Tweaking Selfies and the global EDE-Q score, individuals with high self-esteem did not have a significant relationship between selfie tweaking and eating pathology measures, while those with lower to moderate self-esteem had significant relationships between the two factors. This indicates that high self-esteem may allow one to be less influenced by images presented in social media. This is especially relevant since higher self-esteem has already been shown to moderate the relationship
between traditional media and body dissatisfaction/eating pathology, as well as moderate effects social media has on various psychological states (Cramer et al., 2016; Lup et al., 2015; Zeigler-Hill & Noser, 2013). The similarities between traditional and social media indicate that underlying explanations can relate to both media types.

Self-esteem also had a significant moderation effect with PA on Instagram and Eating Pathology measures. In this relationship low to moderate self-esteem resulted in a negative relationship to eating pathology measures, while those with high self-esteem did not have a relationship between perceived ability and eating pathology. This moderation effect seems to support the idea that self-esteem is a protective tool when it comes to the influence of social media, especially when it comes to how one perceives themselves on social media. Given how much self-esteem is related to social comparisons, self-esteem’s role as a moderator in this relationship endorses Social Comparison Theory (Bailey & Ricciardelli, 2010).

**Strengths**

This study had several strengths including area of focus and population. We examined a social media site with a unique blend of image exposure and social interactions. We also explored multiple aspects of use in the site, as opposed to just seeing if there was a relationship to eating pathology. Our study did not just focus on whether a relationship existed between Instagram and eating pathology, but explored potential underlying aspects of the relationship as well.
Given that previous studies support a connection between culture and eating disorder pathology, it is necessary to begin exploring new social media sites such as Instagram, especially since younger generations are building their social lives and culture around these social media sites. While our sample was within a narrow age range, it is also a unique age group in terms of Instagram use that is ideal for the study. Because not everyone in our population uses or has an Instagram, we were able to compare Instagram users to non-Instagram users, who self-selected themselves. This allowed us to look at Instagram users and non-users and discover what differences lay between the two groups in terms of eating pathology. The Quasi-experiment setting allowed us to examine people who are naturally drawn to the site, as opposed to people in an experimental setting who may or may not be assigned to viewing the site. While our condition did allow for potential confounds due to the self-selecting nature, it also allowed for us to examine Instagram and its relation to eating disorders in as close to a naturalistic setting as internet use can be examined.

Our population included individuals of various ethnicities, genders, and sexual orientations, allowing us to look at effects outside of the normal eating disorder stereotype. Society tends to believe that eating disorders are most common in rich, white females in their teens or early 20s, while in reality this is not the case (Costin, 2007). Our diverse sample allowed us to collect results that report overall population trends, as opposed to subgroups. This helps clarify eating disorder relationships across backgrounds, and supports research exploring eating disorders amongst various populations.
Including self-esteem as an additional measurement allowed us to not only examine whether or not there was a relationship between Instagram use and eating pathology but begin to dissect the nature of that relationship. This allows our study to not just include preliminary research that can be the stepping stone for other studies, but gives us a good idea of how to proceed with further understanding the relationship this social media site in particular has to eating pathology.

**Limitations**

While our study had many strengths, the design of our study and specificity of our scales, as well as the specificity of our population presents some limitations in the generalizability of our results.

Our study design consisted strictly of self-report measures, which makes our study at risk for false reporting. This chance of false report is especially relevant since we asked participants to report on sensitive topics including their specific eating habits and self-esteem. Besides intentional false-reporting, there is also a subjectivity to self-reports. Since individuals may not be the best judge of their behavior, they could unintentionally underestimate or inaccurately report. They could also be inaccurate in their reporting due to their own insecurities and fear of judgment (Donaldson, 2002). Our society tends to judge people based off of their body appearance and eating habits, and asking individuals specific questions about this, while anonymous, may cause them to answer somewhat inaccurately so as not to be judged based on their answers. By making the survey anonymous, we hoped to encourage participants to report honestly; however, it is important to be conscious of
self-report bias as well as potential deception in the answers we received from individuals. That being said, self-reports were the most accurate way to obtain information for an exploratory study such as ours and allowed individuals the ability to freely report their behaviors on their computer, and give us an accurate sense of how individuals feel about themselves.

We failed to ask questions that specifically looked at individual’s underlying motivations for using Instagram, which may have allowed us more insight in determining which Theories were better equipped to explain the relationship. Questions about the actual content individuals viewed on Instagram, a measure of objectification and internalization of the thin ideal, or a measure of social comparisons could have all helped us further understand and draw conclusions from the study.

While the EDE-Q is a highly useful tool for looking at eating disorder pathology, it does not cover all forms of eating disorder pathology and symptomatology, nor does it cover any specific diagnostic tools for specific types of eating disorders. The EDE-Q focuses on behaviors around eating and feelings about physical appearance. While the EDE-Q is ideal for measuring general eating pathology, it does not allow for the same specificity that other scales would allow. Its subscales are somewhat more generalized than other scales. For example, the EDE-Q has a subscale of “Weight Concern” and “Shape Concern” but does not have a subscale specifically looking at “Drive for Thinness” like the Eating Attitudes Test (EAT, Garner et al., 1982). The EDE-Q also does not look at specific eating
disorders. This generalizability gives us some advantages in the study, since did not limit us to a specific eating disorder but instead eating pathology in general and gave us a full spectrum of eating pathology in order to look at a more general population. However, it also does not allow us to fully explore and examine the differences between eating disorders, or look at eating disorders specifically as one can do in a clinical population.

The EDE-Q was created with a female eating disorder bias in mind. There is a chance that the questions accurately measured eating disorder symptomology in our female participants but not in our male participants, especially since men tend to desire muscularity as opposed to thinness when it comes to eating disorders (Olivardia, Pope, Borowiecki, & Cohane, 2004). We attempted to counter this with the DMS, but the lack of relationships between DMS and any other measure may imply that we did not accurately measure out male population’s attitudes about body shape and appearance. If we had broken groups into male and female and looked at relationships, there is a chance that DMS scores could have been significant for male participants and that our EDE-Q scores could have been different between the genders. While separating genders can be looked at for other studies, we failed to do so in this experiment.

The DMS scale’s lack of relationships could also be due to our population. Our study examined a specific sample of students who attend a small, liberal arts university. Due to our sample specificity, we will not know whether our results are generalizable to the majority of the population without further studies. Since our
“Frequency of Tweaking Selfies” measurements were unreliable and all our Instagram measurements had lower alpha levels than Lazebna’s original study, there is a chance that our population does not match the generalized population. Our sample is also not the majority of Instagram Users. Most Instagram users tend to be slightly younger than our sample, which could indicate that our results do not translate to people who use Instagram more frequently (Duggan, Ellison, Lampe, Lenharte & Madden, 2015). Our sample size was also relatively small for an eating pathology study, with only 65 participants in the total sample and 12 in the Instagram group which was used for the majority of the analyses. Lack of power might explain why only one measure had significant differences between Instagram users and non-users. With a larger population size, power in our significance may increase and result in some of our trends achieving significance.

We are unable to make causal claims based solely on the correlational designs of this study. This means that we must be careful when interpreting the results and be sure not to over interpret the data or claim that eating pathology or Instagram use is directly influencing the other. These are simply behaviors we have found, and understanding why those behaviors exist is for another study. Even in our two self-selected populations, no causal claims can be made given the various potential confounding variables that could be present. These variables may even explain the relationships we found, or present mediation and moderation effects that we are unaware of that are affecting our results. Underlying variables could include motivations for why individuals have an Instagram account, or choose not to, past
history with eating pathology, social dynamics at a small university compared to a
general population, or a mired of explanations that we have not thought of.

Areas for Future Research

Our results lay the foundation for a series of future studies further exploring
the relationship between Instagram and eating disorders both through generalizing
findings as well as discovering specific differences in sub-populations, and further
understanding the relationships we discovered.

In terms of generalizing findings, future studies should focus on increasing
sample size to ensure that power is adequate to detect significant relationships.
Research should also examine whether our relationship occurs outside of a small
liberal art’s college, whether this relationship translates to society overall, and
whether the relationship is stronger in certain age groups. Studies should also test
other eating disorder measurements, such as the Eating Attitudes Test (EAT) and the
Eating Disorder Quality of Life (EDQOL) to ensure that any relationships we find are
not specific to the EDE-Q. If our results are translatable, looking at the relationship
Instagram has to a clinical population should also be done to help determine if
Instagram’s relationship to eating pathology is stronger, weaker, or comparable to a
general population. Given the discrepancy in research around pro-ana sites for both
those who have been diagnosed with an eating disorder and those who have not,
better understanding Instagram and other social media sites in a clinical population is
important for prevention and treatment efforts.
We did not collect any demographic factors other than gender, age, and ethnicity requiring further research controlling for potential confounding variables, such as socioeconomic background and sexual orientation, which have been shown to potentially influence eating disorder pathology (Costin, 2007). Further research should include these factors for potential confounds as well as a potential third variable, in case one group happens to be prevalent in our data and is therefore skewing the results. For example, if we have people of fairly low socioeconomic statuses participating in our survey, our research may be assuming translation of results to people of all socioeconomic statuses, while it may not be the case, even though our participants were randomly selected. This research would need to target specific sub-groups to see if results translate into various populations.

To further understand the relationships we discovered in our study, future research should look at selfie culture outside of Instagram and in other social media outlets such as SnapChat, Facebook, or new sites that allow for picture posting should also be examined to see if Instagram carries the unique relationship or if selfie culture explains our findings. This is especially important since the category of “Frequency of Taking Selfies” had an inadequate alpha level to examine the relationships between selfie culture further in our study. Given that “Frequency of Tweaking Selfies” was our only statistically significant correlational relationship that solely related to Instagram, further studies examining selfie culture in terms of Instagram must be conducted.
Future studies should also focus on experimental manipulation, to expand on our correlational and quasi-experimental findings and potentially propose a causal track. This testing will need to specifically assign individuals to use Instagram or not, including manipulation of time spent on Instagram, number of selfies one should post, how much individuals should tweak those selfies, and any other potential sub-categories of Instagram use that could result in confounds.

Implications

Our findings tentatively imply that Social Comparison theory may be the best theory currently available to explain the relationship between eating pathology and media consumption. While many of our findings can be explained by either theory, the presence of self-esteem as a moderator indicates that self-esteem is an important variable with eating pathology, which endorses Social Comparison Theory. However, our findings are minimal, and there is still a chance Objectification Theory better explains the relationship, more research specifically looking at moderation analysis would need to be done before either theory can be endorsed. An article recently proposed a third theory combining Objectification and Social Comparison Theories. This theory focuses solely on women, but proposes that women are taught to internalize physical appearance and that internalization then leads to lower feelings of self-worth overall (Tylka & Sabik, 2010). This synthesis of the two theories may better explain why physical and behavioral subscales related to different aspect of Instagram use, but further research looking at all media types will still need to be done to see if this theory supports all forms of media.
Understanding that a relationship exists between Instagram use/selfies and eating pathology can open up dialogues around prevention. Prevention program can begin taking social media into consideration as not only a place to influence healthy eating habits and behaviors, but a place to search and change publicizing of unhealthy eating habits and behaviors. Our findings found that physical aspects of eating pathology seems to be related to altering images and behavioral aspects of eating pathology seem to be related to perceived presentation of self. This knowledge can be used in prevention campaigns, explaining the relationships found and encouraging individuals to think about the motivations behind their behaviors. Prevention is especially important given that most everyone has access to social media, regardless of socioeconomic background, while socioeconomic status is a huge barrier for eating disorder treatment.

Our findings may also be helpful within eating disorder treatment. With new knowledge of the relationships between eating behaviors and social media use, psychologist can begin crafting and piloting programs that target social-media users who may be showing behaviors related to eating pathology. This research also encourages including social media behavior in treatment plans, which may be a part of underlying factors behind individual’s pathology.

While our research was fairly exploratory, it already opens up a field of possibilities for how to combat eating pathology in our culture. Hopefully this research and other research like it will help psychologists and society understand
eating disorders a little bit better, and that understanding will fuel improvements in treatment and preventative measures in the future.
Appendix

A- Recruitment Flyer

October-December 2016

Participate in a psychology study!

We are conducting a research study to investigate the relationships between social media use, self-esteem, and eating attitudes and behaviors.

All Wesleyan students are welcome to participate! Participation is completely voluntary and confidential. Participants will be compensated $10 for one hour of participation.

Your responses and participation would be valuable for advancing our understanding of factors that contribute to potentially harmful eating attitudes and behaviors.

Study participation will be open between October 1 and December 5th. Please contact Kayla Schlenz at kschlenz@wesleyan.edu for more information or to set up a time if you are interested in participating in the study.

Department of Psychology,
Wesleyan University
Participate in a psychology study!

We are conducting a research study to investigate the relationships between social media use, self-esteem, and eating attitudes and behaviors.

All Wesleyan Students are Welcome to Participate!

Participation is completely voluntary and confidential

Participants will be compensated $10 (study runs approximately 1 hour)

Your responses and participation would be valuable for advancing our understanding of factors that contribute to potentially harmful eating attitudes and behaviors.

Study participation will be open during the month of February.

Please contact Kayla Schlenz at kschlenz@wesleyan.edu for more information or to set up a time if you are interested in participating in the study.

Department of Psychology, Wesleyan University
B- Consent form

Social Media and Eating Disorders
Research Informed Consent

Purpose
We are conducting a research study to examine how social interactions affect eating habits, views of body image, and sense of self.

Procedures
Participation in this study will involve completing a confidential online survey on your personal computer. We anticipate that your involvement will require approximately 35 minutes. If you are a PSYC105 student, you will receive credit for participating in the survey. However, if you do not wish to participate in the survey, you may complete an alternative writing assignment to receive the credit. If you are not a PSYC105 student, you will receive $5 for completing the study.

Risks and Benefits
Participants in this study may experience some distress over the nature of the questions presented in the survey, since the topic is of a sensitive nature. If a participant has history with an eating disorder, they may find the questions particularly sensitive. Although this study will not benefit you personally, we hope that our results will add to the knowledge about the relationship social media plays in certain aspects of society. If you are feeling distressed as a result of your participation in this study, you may discontinue the study with no repercussions, and be given a page with various resources we encourage you to utilize.

Confidentiality
All of your responses will be stored in a password protected folder. Only the researchers involved in this study and those responsible for research oversight will have access to the information you provide. The only identifying information that will be collected will be collected on the consent form, and will not be associated with individual responses in any way. All data will be destroyed no later than 3 years after data has been collected.

Voluntary Participation
Participation in this study is completely voluntary. You are free to decline to participate, to end participation at any time for any reason, or to refuse to answer any individual question without penalty or loss of compensation.

Questions
If you have any questions about this study, you may contact the investigator, Kayla Schlenz (kschenz@wesleyan.edu). If you would like to talk with someone other than the researchers to discuss problems or concerns, or to discuss your rights as a research participant, you may contact Dr. Matthew Kurtz, Chair of the Wesleyan Psychology Department (mkurtz@wesleyan.edu; 860-685-2310). You may also contact the Wesleyan University Institutional Review Board through Jennifer Rose (jrose01@wesleyan.edu; 860-685-2406).
C- Debriefing Questions

<table>
<thead>
<tr>
<th>Questions for Debriefing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following bolded questions will be asked during individual, in-person debriefing sessions to assess distress and assure participants have a clear understanding of the purpose of the research. The debriefing researcher will also assure that participants are aware of the resources available to them should they have questions or need support at any time after the study.</td>
</tr>
</tbody>
</table>

1. **Do you have any questions at this time about the study?**
   - Answer question to best of the ability.
   - If answer is not immediately available, let the participant know they can email the primary investigator (kschlenz@wesleyan.edu) and she will get back to them in a timely manner.
   - Let the participant know they are welcome to contact the primary investigator at any time (kschlenz@wesleyan.edu) if questions arise later on.

2. **Did you find any of the questions in the study to be upsetting?**

3. **Do you feel distress or discomfort at this time as a result of this study?**
   - Respond sensitively. Ask follow up questions or questions for clarification as necessary.
   - Be attentive to verbal and nonverbal signs of distress.
   - Offer to assist the participant in calling Counseling and Psychological Services, and/or accompanying the participants to the CAPs at Davison Health Center.
   - Emphasize the CAPs resources available to the student at any time, if they experience any distress in the future.
D- Debriefing Form

Social Media and Eating Disorders

Debriefing Form:

The purpose of this study was to understand if there is any relationship between the use of Instagram and eating attitudes and behaviors. Specifically, we are interested in whether Instagram users have higher scores on the Eating Disorder Examination Questionnaire (EDE-Q) and the Drive for Muscularity Scale (DMS) than non-Instagram users and if certain motives for using Instagram have any relationship to these scores. We are also interested in how Instagram use and eating attitudes and behaviors might be related to self-esteem.

In the survey you just completed you were first asked whether you had an Instagram account. If you answered "no" to this question, you were directed to electronic versions of the EDE-Q and the DMS, questionnaires that are used to assess disordered eating attitudes and behaviors, and the Rosenberg Self-Esteem Scale (RSE). If you indicated you did have an Instagram account, you were asked some additional questions that allowed us to better categorize your use of Instagram and how you use Instagram.

We will be comparing the EDE-Q and DMS average of non-Instagram users to the average of Instagram users to see if there is any difference between the two groups, while also looking at Instagram user's answers to how they use Instagram and comparing them to their EDE-Q scores. In addition, we will be looking at how self-esteem scores impact this relationship.

This work is part of a new line of research looking at the effects social media has on eating attitudes and behaviors. Culture has an influence on eating disorders and psychologist are now studying social media. We believe social media may be a newer, powerful cultural influence and we are trying to gain a better understanding of the influence it may have. Any information we discover can help with prevention and treatment efforts around eating disorders.

We ask that you not talk about the details of this study to anyone else who may complete the survey, since prior knowledge about the nature of the survey tends to cause individuals to respond to the answers differently.

If you have any questions, comments or concerns, please feel free to reach out to the primary researcher, Kayla Schlenz (e. kschlenz@wesleyan.edu).

If you feel you need support or resources due the sensitive nature of this content in this survey, please utilize any of the following resources:

Wesleyan CAPS:
Phone: 860.685.2910
Website: http://www.wesleyan.edu/caps/

Wesleyan 8-to-8:
Online chat: http://8-to-8.group.wesleyan.edu/ Phone: 860-685-7789 (campus ext. 7789)

National Eating Disorder Hotline: 800-931-2237

National Eating Disorder Association Website: http://www.nationaleatingdisorders.org/
### EDE-Q

**EATING QUESTIONNAIRE**

Instructions: The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all of the questions. Please only choose one answer for each question. Thank you.

Questions 1 to 12: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days) only.

<table>
<thead>
<tr>
<th>On how many of the past 28 days ......</th>
<th>No days</th>
<th>1-6 days</th>
<th>6-12 days</th>
<th>13-15 days</th>
<th>16-22 days</th>
<th>23-27 days</th>
<th>Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2 Have you gone for long periods of time (6 waking hours or more) without eating anything at all in order to influence your shape or weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3 Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4 Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5 Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6 Have you had a definite desire to have a totally flat stomach?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7 Has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8 Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9 Have you had a definite fear of losing control over eating?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10 Have you had a definite fear that you might gain weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11 Have you felt fat?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12 Have you had a strong desire to lose weight?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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</tbody>
</table>
Questions 13-16: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).

13 Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?

14 ...On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?

15 Over the past 28 days, on how many days have such episodes of overeating occurred (i.e. you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?

16 Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?

17 Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?

18 Over the past 28 days, how many times have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat or to burn off calories?

Questions 19-21: Please circle the appropriate number. Please note that for these questions the term "binge eating" means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

19 Over the past 28 days, on how many days have you eaten in secret (i.e., surreptitiously)?...Do not count episodes of binge eating

<table>
<thead>
<tr>
<th>No days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15 days</th>
<th>16-22 days</th>
<th>23-27 days</th>
<th>Every day</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

20 On what proportion of the times that you have eaten have you felt guilty (felt that you've done wrong) because of its effect on your shape or weight?...Do not count episodes of binge eating

<table>
<thead>
<tr>
<th>None of the times</th>
<th>A few of the times</th>
<th>Less than half</th>
<th>Half of the times</th>
<th>More than half</th>
<th>Most of the time</th>
<th>Every time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>6</td>
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</tbody>
</table>

21 Over the past 28 days, how concerned have you been about other people seeing you eat?...Do not count episodes of binge eating

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Markedly</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Questions 22-28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

<table>
<thead>
<tr>
<th>On how many of the past 28 days ......</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Markedly</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 Has your weight influenced how you think about (judge) yourself as a person?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
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</tr>
<tr>
<td>23 Has your shape influenced how you think about (judge) yourself as a person?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
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<tr>
<td>24 How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
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<tr>
<td>25 How dissatisfied have you been with your weight?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 How dissatisfied have you been with your shape?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?</td>
<td>0 1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

What is your weight at present? (Please give your best estimate). ........................................

What is your height? (Please give your best estimate). .....................................................

If female: Over the past three-to-four months have you missed any menstrual periods? ..............

If so, how many? ........................................

Have you been taking the "pill"? .........................

THANK YOU
The Drive for Muscularity Scale

Please read each item carefully then, for each one, circle the number that best applies to you.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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Note: If you use this scale, please forward any scientific papers resulting from your research to Dr. Don McCreary
G- Instagram Questions

**Frequency of Instagram Use:**

1. How long have you been an Instagram user?
   - less than 1 year
   - 1 year
   - 2 years
   - 3 years
   - 4 years
   - more than 4 years

2. On average, approximately how much time per day do you spend on Instagram?
   - 10 min or less
   - 10-30 min
   - 31-60 min
   - 1-2 h
   - 2-3 h
   - 3+ h

3. How many posts do you have on Instagram?
   - less than 100
   - 100-500
   - 500-2000
   - more than 2000

4. How frequently do you post photos on Instagram?
   - every day
   - 2-3 days a week
   - once a week
   - once a month
   - once every few months

5. How frequently do you check in to Instagram?
   - never
   - rarely
   - sometimes
   - often
   - very often

6. I dedicate a part of my daily schedule to Instagram.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

7. Instagram is a part of my everyday activity.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

8. I try to use Instagram when I have free time.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

9. I tend to use Instagram all the time even at work or in class etc.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

10. I use Instagram when I talk to other people.
    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

11. People tend to tell me that I spend a lot of time on Instagram.
    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

12. I feel out of touch when I haven’t logged on to Instagram for a while.
    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree
13. I feel the need to check in on Instagram all day long.  
___Strongly Disagree___Disagree___Neutral___Agree___Strongly Agree

**Frequency of Selfie Use**

1. How often do you take selfies?
   ___never ___less than once a month ___once a month ___2-3 times a month
   ___once a week ___2-3 times a week ___daily

2. How many selfies a day do you upload to Instagram?
   ___none ___few ___some ___quite a bit ___a lot

3. How many selfies do you take per day?
   ___none ___few ___some ___quite a bit ___a lot

4. How many selfies do you usually post per week?
   ___none ___few ___some ___quite a bit ___a lot

**Frequency of Tweaking Selfies**

1. How often do you edit your selfies before posting them on Instagram?
   _____never ______rarely _____sometimes ______often _____very often

2. How often do you try to modify your shortcomings/appearance by editing your selfies?
   _____never ______rarely _____sometimes ______often _____very often

3. How often do you use filters on your selfies?
   _____never ______rarely _____sometimes ______often _____very often

4. How often do you choose good lighting to highlight positive features of your appearance on your photos?
   _____never ______rarely _____sometimes ______often _____very often
5. How often do you try to find a perfect angle to show the best of you?  
_____never _____rarely _____sometimes _____often _____very often  

**Perceived Ability to Present True Self on Instagram**  

1. I feel that I express who I really am on Instagram.  
____Strongly Disagree __Disagree __Neutral ___Agree ___Strongly Agree  

2. I find it easy to pretend to be something other than who I really am on Instagram.  
____Strongly Disagree __Disagree __Neutral ___Agree ___Strongly Agree  

3. For better or worse I present my real self on Instagram.  
____Strongly Disagree __Disagree __Neutral ___Agree ___Strongly Agree  

4. I want my Instagram followers to see the real me on Instagram.  
____Strongly Disagree__Disagree__Neutral___Agree___Strongly Agree  

5. I feel that I can control my authenticity and how I appear to other people on Instagram.  
____Strongly Disagree __Disagree __Neutral ___Agree ___Strongly Agree  

6. I believe that on Instagram other people view me the way I see myself.  
____Strongly Disagree__Disagree__Neutral___Agree___Strongly Agree  

7. I can construct a real image of myself on Instagram.  
____Strongly Disagree__Disagree__Neutral___Agree___Strongly Agree  

8. When I post my photos on Instagram, I frequently pretend to enjoy something when in actuality I really don’t.  
____Strongly Disagree __Disagree __Neutral ___Agree ___Strongly Agree  

9. In order to get along and be liked, I tend to post photos that people expect me to.  
____Strongly Disagree __Disagree __Neutral ___Agree ___Strongly Agree  

**Perceived Ability to Present True Self in Face to Face Interactions**  

1. I feel that I express my true self in face-to-face interaction.
2. I find it easy to pretend to be something other than my true self in face-to-face interaction.

3. For better or worse I present my true self in face-to-face interaction.

4. I want other people to see the real me in face-to-face setting.

5. I feel that I can control my authenticity and how I appear to other people in face-to-face interaction.

6. I believe that in face-to-face interactions other people view me the way I see myself.

7. I can construct a real image of myself in face-to-face interactions.

8. In face-to-face conversations I frequently pretend to enjoy something when in actuality I really don’t.

9. In order to get along and be liked, I tend to do what people expect me to.

Percieved Ability to Present True Self with Selfies
1. My selfies on Instagram are representative of how I see myself.

2. I feel that it is easy to present who I really am via posting selfies.
3. I feel that selfies represent the better version of myself.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

4. I feel that I can control my authenticity and how I appear to other people via posting selfies.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

5. I rarely ever put on a “false face” for others to see when posting selfies.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

6. I enjoy being unique and express who I am via posting selfies, even if it is different from others.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

7. I feel that it is important to me to act as an independent person when posting selfies.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

8. When posting selfies, expressing my personal identity, independent of others, is very important to me.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

9. I believe that via posting selfies other people view me the way I see myself.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

10. I can construct a real image of myself via posting selfies.

__Strongly Disagree__Disagree__Neutral__Agree___Strongly Agree

**Fear of Negative Evaluation**

Indicate how your level of agreement with the statements below by marking whether you: (1) Strongly Disagree, (2) Disagree, (3) Agree and Disagree, (4) Agree, (5) Strongly Agree, when posting photographs of yourself on Instagram. There is no
right or wrong answer. Please work quickly and record your first impression.

1. I worry about what other people will think of me on Instagram even when I know it doesn’t make any difference.

2. I am unconcerned even if I know people are forming an unfavorable impression of me based on my photos on Instagram.

3. I am frequently afraid of other people noticing my shortcomings on my Instagram photos.

4. I rarely worry about what kind of impression I am making on someone on Instagram.

5. I am afraid that others will not approve of my photos on Instagram.

6. I am afraid that people will find fault with me based on my Instagram photos.

7. Other people’s opinions of me on Instagram do not bother me.

8. When I am commenting someone’s photos or replying to their comments, I worry about what they may be thinking about me.

9. I am usually worried about what kind of impression I Instagram.

10. If I know someone is judging me by my photos, it has little effect on me.

11. Sometimes I think I am too concerned with what other people think of my photos.

12. I often worry that I will post the wrong photos on Instagram.
H- Rosenberg Self Esteem Scale

Instructions

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.
   Strongly Agree    Agree    Disagree    Strongly Disagree

2. At times I think I am no good at all.
   Strongly Agree    Agree    Disagree    Strongly Disagree

3. I feel that I have a number of good qualities.
   Strongly Agree    Agree    Disagree    Strongly Disagree

4. I am able to do things as well as most other people.
   Strongly Agree    Agree    Disagree    Strongly Disagree

5. I feel I do not have much to be proud of.
   Strongly Agree    Agree    Disagree    Strongly Disagree

6. I certainly feel useless at times.
   Strongly Agree    Agree    Disagree    Strongly Disagree

7. I feel that I'm a person of worth, at least on an equal plane with others.
   Strongly Agree    Agree    Disagree    Strongly Disagree

8. I wish I could have more respect for myself.
   Strongly Agree    Agree    Disagree    Strongly Disagree

9. All in all, I am inclined to feel that I am a failure.
   Strongly Agree    Agree    Disagree    Strongly Disagree
10. I take a positive attitude toward myself.

Strongly Agree  Agree  Disagree  Strongly Disagree

Scoring:

Items 2, 5, 6, 8, 9 are reverse scored. Give “Strongly Disagree” 1 point, “Disagree” 2 points, “Agree” 3 points, and “Strongly Agree” 4 points. Sum scores for all ten items. Keep scores on a continuous scale. Higher scores indicate higher self-esteem.
References


In compliance with the Honor Code, I acknowledge that I visited the Writing Workshop for help in writing this paper.