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Regulating Self-Image on Social Media: Associations Between Social Anxiety and Instagram Control Behaviors

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Running head: REGULATING SELF-IMAGE ON SOCIAL MEDIA

Regulating Self-Image on Social Media: Associations Between Social Anxiety and Instagram
Control Behaviors

Senior Project Submitted to
The Division of Science, Mathematics, and Computing
of Bard College

by
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Table of Contents

Abstract.....	4
Introduction.....	5
Method.....	15
Data Analysis.....	23
Results.....	24
Discussion.....	30
Conclusion.....	37
References.....	38
Tables.....	44
Appendices.....	54

Abstract

Individuals with social anxiety try to avoid or disengage when there is a perceived lack of control in a social situation. This study examined individual differences in social anxiety to better understand how levels of social anxiety are related to differences in self-preservation and image protection behaviors on Instagram, an image-based social media application. The purpose of this empirical study was to explore Instagram control behaviors by applying Schlenker and Leary's (1982) Social Anxiety and Self-Presentation (SASP) conceptualization model. Instagram has features and settings that allow individuals to exert varying degrees of control over the content they share on their profile and posts. I explored two aspects of self-preservation and image management as predicted by the SASP model, affiliation and preferred impression, in a non-clinical sample of college students ($N = 45$). Results indicated that individuals who generally experienced higher levels of social anxiety were more likely to engage in greater control behaviors on Instagram than individuals with low levels of social anxiety. While there was no relationship between control behaviors and affect, socially anxious individuals were more likely to report increases in self-esteem from Instagram even though they reported spending less time on Instagram than less socially anxious individuals. These findings suggest that there are key differences in people's Instagram behaviors as a function of social anxiety and feared negative evaluations. The present findings can inform future work that further elucidates relations between social anxiety, self-presentation, and various ways people engage with social media platforms.

Keywords: social anxiety, Instagram, affiliation, preferred impression, control behaviors, self-evaluation, self-presentation

Introduction

Social media and online platforms

Nearly two-thirds of the U.S. population own a smartphone or mobile device. According to a recent estimate, ninety percent of U.S. young adults, ages 18-29, use at least one social media site (Pew Research Center, 2019). Common social media platforms include Facebook, Youtube, Twitter, Snapchat, TikTok, and Instagram. Surveys conducted between 2012 and 2019 revealed that YouTube and Facebook are the most-widely used online platforms across the entire U.S. population. However, other platforms are more demographic-specific. Instagram, a social media platform released in 2010, is more commonly used by a younger demographic (Pew Research Center, 2019). Sixty-seven percent of 18-29-year-olds actively use Instagram, with “60% reporting that they do so several times per day” (Pew Research Center, 2019).

Previous research has shown that the popularity of social media amongst younger populations is because of the greater amount of perceived control one has in an online interaction in comparison to one that unfolds in person and in real time (Lee-Won, Herzog, & Park, 2015). For some individuals, online interactions appear more comfortable than in-person interactions because of a reduced perception in social risks associated with self-presentation (Lee-Won, Herzog, & Park, 2015). For socially anxious individuals, in-person interactions can be replaced by online ones, which can be curated, allowing for more control over the interaction (Lee-Won, Herzog, & Park, 2015). Although this has been observed in Facebook usage, Facebook is a primarily text-based social media platform. Instagram, however, is based primarily on images and videos that users share, with any accompanying text directly related to the image or video posted.

Image and self-presentation

Image is essential to self-presentation. Self-presentation emerges from how one cultivates one's image and selects the medium (or media) by which that image is cultivated. Past research has shown that through aspects of appearance and behavior, people either intentionally or unintentionally lay claim to particular self-images, called self-schemas, that have implications for how those individuals are defined by others (Schlenker & Leary, 1982). Self-presentation can be defined as the "attempt to control images of self before real or imagined audiences" (Schlenker & Leary, 1982). For an individual, the desired impression (i.e., the attempt to control images of self) depends on the goals and self-beliefs of a particular situation (Schlenker & Leary, 1982).

Both Goffman and the SASP model examine the goal of the performer, to convince the audience of their role by feeling personally secure in the believability of the performance thus producing a desired impression. According to Goffman, when an individual "performs" there will be aspects of the activity which are expressed in order to create or maintain a fostered impression, while other behaviors that "might discredit the fostered impression...are suppressed" (Goffman, 1973, p.111). The performer's true self may be hidden, but through careful selection of self-presentation the performer can curate an image selected for a given audience. In order for the performer to feel a sense of security, they must feel like they can exert control over their audience. Like Goffman, Schlenker and Leary's SASP model states that a socially anxious individual engages in control behaviors and where the perceived, anticipated, or imagined reaction of the performer's audience provides feedback about the effectiveness of the performance (Schlenker & Leary, 1982). The "performer" may or may not be socially anxious in Goffman's text, but still attempts to create a specific self-image through control behaviors.

Though Goffman and the SASP model do not use the exact same language when describing the desire to execute control over an audience and performance so as not to undermine one's affect, both works explore the same control constructs of "affiliation" and "preferred impression" (terms introduced by the SASP model but applicable to Goffman's conceptualization).

Self-presentation and social anxiety: a conceptualization model

The current empirical study aimed to test and recapitulate Schlenker and Leary's 1982 Social Anxiety and Self-Presentation (SASP) model in the context of Instagram users' behaviors. Social anxiety disorder (SAD) is defined as "marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others" (Substance Abuse and Mental Health Services Administration, 2016, p.1). Individuals with SAD may experience fear of humiliation or negative judgement in social or performance situations (Heimberg, Liebowitz, Hope, & Schneier, 1995) whereas less socially anxious individuals would not. According to the American Psychiatric Association, individuals with SAD fear, and thus avoid, situations where they could be "exposed to unfamiliar people or to possible scrutiny by others" (American Psychiatric Association, 1994, p. 416). At the center of social anxiety "appears to be a strong desire to convey a particular favorable impression of oneself to others and insecurity to do so" (Heimberg et al., 1995, p.69). Previous research has shown that early studies about social anxiety revealed two factors that increase the likelihood of experiencing social anxiety: a) being in an evaluative situation where one's behavior is scrutinized by others and b) being in a situation where one's behavior has been pre-judged as inadequate by others (Schlenker & Leary, 1982).

The SASP model attempts to address why poor social skills or negative self-evaluations (and general negative affect directed towards oneself) make some individuals anxious in social

environments. The model does not differentiate between someone who is highly socially anxious (but without a SAD diagnosis) and someone with a SAD diagnosis, in regard to control constructs affiliation and preferred impression. This may in part be related to when the SASP model was published. Social anxiety was first introduced 1980, in the DSM-III, as social phobia disorder. It was not until the mid 1980s that research on social anxiety began. Prior to this, social anxiety was considered to be a "neglected anxiety disorder" due to the lack of studies on the topic (Thomas, 2018). The SASP conceptualization model was published in 1982, some years before social anxiety research was underway, which suggests that the model was a prototype in exploring the mechanisms of the disorder. Even so, the SASP model maintains its significance through the identification and assessment of affiliation and preferred impression as control constructs of social anxiety.

The model suggests that people experience social anxiety when the individual is (1) highly motivated to make a particular impression on other people, but (2) doubts their ability to successfully create the desired impression (Heimberg et al., 1995). Given the importance of perceived perception, the SASP model suggests that "a person's assessment of [their] self-presentation effectiveness can be made only relative to the impressions [they] desire to make; whether those impressions are positive or negative...is irrelevant" (Heimberg et al., 1995, p. 96). In other words, social anxiety "arises when people are motivated to make a preferred impression on real or imagined audiences but doubt they will [be successful in] do[ing] so" (Schlenker & Leary, 1982). The model explores various constructs of SAD. However, the current study will focus on the SASP model constructs of affiliation and preferred impression.

Goffman describes a "front region," a term used "to refer to the place with the performance is given" (Goffman, 1973, p. 107). He writes:

We may expect individuals to realize the strict maintenance of front [regions] when they are with those they have known for a long time, and to tighten their front [region] when among persons who are new to them. With those whom one does not know, careful performances are required. (Goffman, 1973, p. 222)

The way in which the individual (i.e., the performer) chooses to portray themselves depends on their perceived closeness to, and control over, the audience. This sort of “audience regulation” can be viewed as the SASP model construct of affiliation.

To affiliate is “to bring or receive into close connection as a member or branch” (Affiliation, n.d.). Stanley Schachter theorized that affiliation was often rooted in anxiety. He proposed that fear, stress, or nervousness could encourage affiliation-based behaviors and that anxiety was a strong motivating factor in affiliation. Schachter concluded that feelings of fear, stress, or anxiety motivated individuals to bond (Schachter, 1959). Similarly, the SASP affiliation construct is based on a motivation to share and regulate emotions and information. Affiliation is carried out when the individual will engage in control behaviors so as not to feel threatened.

When given the opportunity to affiliate/connect with others, “socially anxious people will seek to affiliate with others whom they believe they can impress or otherwise pose no threat to their identities” (Schlenker & Leary, 1982). Therefore “socially anxious people should avoid [affiliating] with others they expect to impress but avoid those they expect not to impress” (Schlenker & Leary, 1982). Affiliation, therefore, can be thought of as a way for the performer to maintain control over the audience through a careful vetting process. In this sense, individuals (i.e., the audience) selected through affiliation should not pose a threat to, or undermine the affect of, the performer.

The affiliation phase typically occurs first, as the socially anxious individual must assess who they believe will not pose an evaluative threat. The desire to create a preferred impression follows once the individual believes their sense of self will not be threatened by the selected audience. Preferred impression refers to the way in which the performer believes they have the ability to successfully create an impression to a carefully selected audience. Regarding social settings and social anxiety, “people are interpersonally secure in social settings when (a) they do not have the goal of creating a particular [preferred] impression...or (b) they are attempting to create a particular impression and believe they will be successful in doing so” (Schlenker & Leary, 1982).

Instagram

In 2012, Facebook purchased Instagram for \$1 billion (Rusli, 2012). Instagram boasts 500 million users (and growing), compared to Facebook’s 300 million users (Constine, 2018). The app was released in 2010 and is a social network service where individuals can take and share pictures or videos on the platform (Frommer, 2010). It has been noted that online platforms, where social connection occurs online rather than in person, suggest that social media has the potential to supplant causal social interactions that take place in-person (Kushlev, Dwyer, & Dunn, 2019). Although both Goffman’s work and the SASP model explore self-image and its related anxieties from the performance of self-presentation, they do so with the assumption that interactions will occur in-person. Instagram, however, provides a similar platform, albeit virtual. The app provides its users with the ability to create and regulate a presentation of self, not unlike Goffman’s proposal of the performer. This performance can occur in front of either real or imagined audiences, according to the SASP model (Schlenker & Leary, 1982).

Instagram users are given that audience, in the form of followers. Although the audience is not physically present, an individual can expect a sort of “response” in the form of likes and comments. The performance, therefore, can be found in the content and regulation of both a user’s profile and post content. If both the platform, the performer, and the audience are all present in the user’s Instagram experience, it can be anticipated that the SASP model can be applied to Instagram as well. Consequently, online regulation behaviors may also reflect real-time regulation behaviors. Therefore, the way in which a socially anxious person engages in control constructs in-person will also occur on a virtual platform.

I propose that control on an account level relates to the SASP construct of affiliation, whereas control on a post level relates to the SASP construct of preferred impression. I predict that socially anxious individuals will engage in more engagement regulation behaviors, such as comment restriction or removal and works, as per Schlenker and Leary’s SASP model in that the performer can cultivate a desired self-presentation when they feel as though they can control their audience through (1) affiliation and (2) preferred impression.

Instagram users can control their visibility (i.e., who can access their profiles and all content they post). By default, an Instagram profile is set to public, so anyone can view a user’s profile and posts without following them. However, Instagram users can choose to set their profile to private (“Controlling your Visibility,” n.d.) as soon as their account has been activated. When a user sets their Instagram profile to private, only approved followers can see shared content including photos, videos, hashtags, or location pages. If a user’s account is set to private, only approved followers can see what the user has posted, including likes and comments. If a private user likes a public post, the “like” will be visible and the “username will be clickable below the post, but only approved followers can see [the user’s] posts (“Controlling your

Visibility,” n.d.). Private accounts allow users to be more selective about who they share content with. In order to follow a private account, a user must submit a follow request. Follow requests appear on the Activity page, where they can be approved or ignored (denied) (“How do I set my Instagram account to private so that only approved followers can see what I share?”, n.d.). Additionally, if a user sets their account to private and does not want current followers to see material, there is an option to block said user so that they no longer see posts. Users can select who to affiliate with based on how much the user wishes to make their account and account’s content transparent and accessible by toggling various settings within the app.

Although most Instagram users have one account, a growing trend indicates that some users create and manage additional accounts in parallel with their primary accounts. In contrast to “real” Instagram accounts (“*Rinstagrams*” or “*Rinstas*”), these secondary accounts are known as “*Finstagrams*”; “fake”, private, pseudonymous Instagram accounts that reveal a different, more intimate part of users’ lives to a more limited audience (Safranova, 2015). Because a Finstagram is typically private, no one can follow the account without user approval, allowing users to screen their followers. Finstagrams are popular among teenagers and adults in their twenties and act as “intimate online spaces intended for an audience of friends, with the number of followers purposely kept in the low double digits” (Safranova, 2015). Secondary accounts also release the user of socially acceptable norms related to posting; on a Finstagram a user will post multiple times a day whereas, on a primary account, most users post only once a day.

Furthermore, the content on a Finstagram is less curated. For example, it’s perfectly acceptable to post mundane images, screenshots of text conversations, and “ugly” photos (Safranova, 2015).

The often-limited number of followers on a Finstagram account allows for a carefully selected community thus reducing identity-threat through affiliation. The content posted on the account

reflects the preferred impression of the user. I predict that socially anxious individuals are more likely to have Finstagrams compared to non-socially anxious individuals.

Another feature of Instagram is the Instagram “story” option. Launched in August 2016, Instagram Stories usage surpassed all Snapchat activity in April 2017 (Hasnain, 2017). Instagram Stories can only be viewed for 24 hours, and users can either upload an image or video from their camera roll or take a picture or video to post on their Instagram Story (Hasnain, 2017). Instagram Stories are posted on a user’s profile and can be viewed by all followers. However, the user can selectively share Instagram Stories through the Close Friends feature. Instagram Close Friends was launched in November 2018 (Constine, 2018). Close Friends allows an Instagram user to share details of one’s life, but only to the extent that the user is comfortable with one’s followers. The Close Friends feature allows users to “create a separate list of followers to grant special viewing permissions. When posting a Story to Instagram, users will be able to differentiate between posting for everyone and posting to their group of Close Friends” (Pardes, 2018). The feature was instituted during beta testing, when the company noticed that users wanted more control over their audiences. Instagram found that users liked to limit their audience and that the “close friends” option may provide users with a more carefully selected audience (Pardes, 2018) and may reflect the SASP construct of affiliation.

Comments are a popular addition to a post and can be written by the individual posting the content or by followers. Both public and private accounts allow for comments. However, users can filter, delete, or disable comments on a post-by-post basis (“How do I turn comments on or off for my Instagram posts?”, n.d.). Users can turn off commenting to prevent people from commenting on an individual post. When users “turn off commenting, any comments that are currently on [the] post will be hidden. If you turn commenting back on for a post, previous

comments will be restored and people will be able to comment again” (“How do I turn comments on or off for my Instagram posts?”, n.d.). Users can also turn off commenting for a post before sharing it (“How do I turn comments on or off for my Instagram posts?”, n.d.). However, some users may just want to delete specific comments on the posts. A user may post content with a caption as well as respond to a comment on their own post. On their own posts, users have the option to delete both their own and other people's comments. However, on other people's posts, users can only delete comments they have written (“How do I delete a comment?”, n.d.). This type of behavior can be mapped onto the SASP construct of preferred impression, where the individual may act in a way to ensure a desired impression.

Instagram offers a variety of editorial tools for users to edit content. Editing tools include image rotation and cropping, applying filters and effects, and comparing edited images to original images before posting (“Photo taking, editing, and sharing.”, n.d.). Users can spend as much time as they want editing their content before posting. Preferred impression may play a role in the amount of time spent editing and image before posting. I predict that socially anxious individuals will spend more time editing an image than less socially anxious individuals.

The Present Study

Given the above mentioned constructs influenced by Goffman and presented in the SASP model, I developed and tested two main hypotheses in the present study:

Hypothesis 1. Because of greater motivation to regulate affiliation and preferred impression, individuals with higher levels of social anxiety are more likely to engage in control behaviors (affiliation and preferred impression) on Instagram than individuals with lower levels of social anxiety. Conversely, individuals with lower levels of social anxiety are less likely to engage in control behaviors on Instagram than individuals with higher levels of social anxiety.

Hypothesis 2. Because of greater motivation to regulate affiliation and preferred impression, individuals with higher levels of social anxiety are more likely to engage in control behaviors on both a profile and post level, creating positive affect. By this logic, individuals with higher levels of social anxiety will also spend more time on Instagram than individuals with lower social anxiety levels (see *Figure 1*).

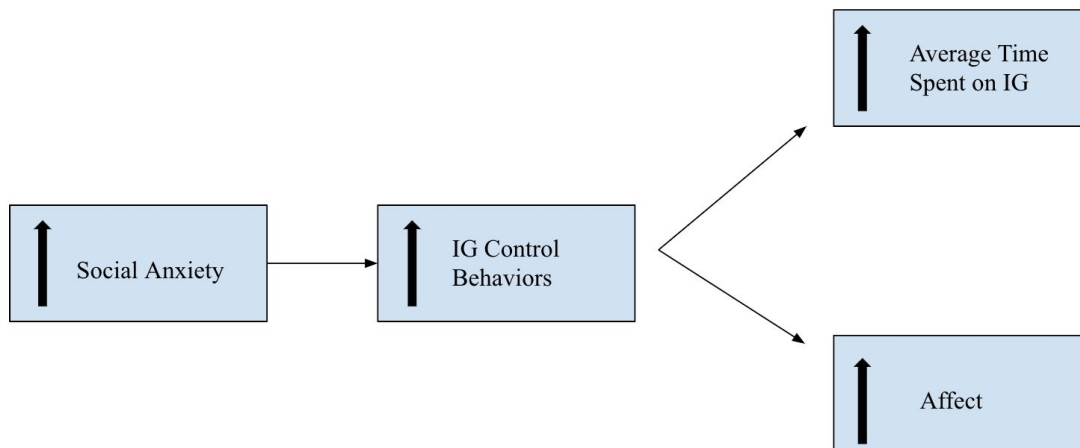


Figure 1. Hypothesis 2. Individuals with higher levels of social anxiety are more likely to engage in control behaviors, creating positive affect. Thus, individuals with higher levels of social anxiety will spend more time on Instagram than individuals with lower levels of social anxiety.

Method

Participants

This study was approved by the Institutional Review Board at Bard College in Annandale-on-Hudson, New York (See Appendix A) and funded by Principal Investigator Richard Lopez's REACH Lab at Bard College. The final sample size of the study included 45 undergraduate students (31 female, 12 male, 2 other [i.e., gender non-binary]) from Bard College with self-reported assumed/ mostly non-clinical levels of social anxiety. Fifty participants initially participated in the study. One participant's data was eliminated from data analysis

because they failed to fill out the SMQ portion of the phase 3 questionnaire. Four other participants were removed from data analysis due to a significant and unprecedented external stressor, namely the COVID-19 pandemic.

Participants were between the ages of 18 and 22 ($M = 19.1$, $SD = 1.10$). Participants were recruited in two ways: electronic recruitment and paper poster ads (both paper and electronic). Electronic recruitment was made possible on Sona for students enrolled in Introduction to Psychological Science (PSY141) and The Science of Behavior (PSY128) during the spring 2020 semester. In addition, posters advertising the study were created and distributed throughout the Bard College campus (see Appendix B). Recruitment and participation ran from January to early March, 2020. Participants were excluded from the study if they did not have an Instagram account. In order to ensure that data collected from participants remain confidential, participants reviewed and signed a consent form during Phase 1 of the study (see Appendix C) and were fully debriefed on the study's research questions and hypothesis upon completion of the study, at the end of Phase 3. All participant data was stored securely in the REACH Lab, on password-protected computers with encrypted hard drives.

Procedure

The study was carried out over three phases. During Phase 1, participants completed baseline measurements, including the Social Anxiety Questionnaire (SAQ; Caballo, Salazar, Iruña, Arias, & CISO-A Research Team, 2012), Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003), Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), Perceived Stress Scale (PSS; Cohen, Kamarck, Mermelstein, & Others, 1994), State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), and the Internal Control Index (ICI; Duttweiler 1984), as well as general demographic questions.

These measures served as baseline measures for participants and were administered online via SurveyGizmo. Participants were then asked to register for Ecological Momentary Assessment (EMA; Hoffman & Patel, 2015) surveys for Phase 2.

Participants left the lab after completing Phase 1. Over the next seven days participants were reminded to fill out a short EMA questionnaire on their phone. The questionnaire was distributed through SurveySignal, a web-based application that “integrates the idea of using short message service (SMS) messages as signals and reminders, according to fixed or random schedules and of linking these signals to mobile surveys designed with common online survey software” (Hoffman & Patel, 2015). Previous research has shown that, in an evaluation of 9 social–psychological studies conducted with SurveySignal, mean response rates averaged 77% and the median response delay to signals was 8 minutes (Hoffman & Patel, 2015). For the current study, SurveySignal was used to randomly administer the EMA questionnaire 5 times a day. Participants received a text notification and were expected to fill out the EMA questionnaire as frequently as possible, although they were expected to fill out an EMA questionnaire at least once a day in order to receive compensation for said portion of the study.

The third phase of the study generally occurred 7 days after Phase 1 and after participants completed the EMA portion of the study. Upon returning to the lab participants were asked to once again fill out the same SurveyGizmo questionnaire battery they completed for Phase 1. During this phase, participants were additionally asked to fill out the social media questionnaire and report their Instagram screen time. The purpose of Phase 3 was to assess Instagram behavior and activity. Instagram usage and behavior were collected in three ways: the SMQ, measures of Instagram activity, and measures smartphone screen time. Upon successful completion of the

study, participants received either monetary compensation (at rate of \$20/hour) or course credit.

Measures

Explanatory variable: social anxiety

Social anxiety was the primary explanatory variable in the study and assessed via the Social Anxiety Questionnaire for Adults (SAQ) (see Appendix D). The SAQ has proven to be a valid measure of individuals' levels of social anxiety through its 5-factor structure (Caballo, Salazar, Iruiria, Arias, & CISO-A Research Team, 2012). Each factor is theorized to assess different aspects of social anxiety. These factors include: 1) interactions with strangers, 2) speaking in public/talking with people in authority, 3) interactions with the opposite sex, 4) criticism and embarrassment, and 5) assertive expression of annoyance, disgust or displeasure (Caballo et. al, 2015). This study will assess subscales and overall scores. I hypothesized that there will be subscales strongly correlated with Instagram control behaviors. Specifically, I hypothesized that the subscale *interaction with strangers* will be strongly correlated with affiliation and that the subscale *criticism and embarrassment* will be strongly correlated with preferred impression.

Criterion variables: Instagram behaviors

The Social Media Questionnaire (SMQ) was distributed to participants to gather information about social media behavior, including the main criterion variables of interest. Questions on the SMQ were adapted from various scales related to social media in addition to questions created for the current study. The two main scales used for the SMQ include the Facebook Usage scale, created by Koroleva et. al (2011) and the Reasons/Motives for using Instagram scale, created by Tobin and Chulpaiboon (2016). Though the scale was originally used for Facebook usage, questions and measures are relevant to Instagram behavior and control

constructs. Additional information from the SMQ includes general information including time spent on other social media platforms, including Facebook, Twitter, Snapchat, YouTube, Pinterest, Tumblr, and Tik-Tok.

The goal of the revised SMQ was to take social anxiety constructs provided by the SASP model and map them onto Instagram behaviors and constructs. The revised SMQ aimed to assess control through affiliation and preferred impression, and affect, in addition to general information. Questions aimed to target at least one of the aforementioned constructs; some questions overlapped in their categorization. It is through this questionnaire that affiliation and preferred impression will be used to operationalize control behaviors. Given the relationship between socially anxious individuals and the need for perceived control as a way to cultivate a preferred impression through selective affiliation, there are multiple Instagram constructs that can allow the socially anxious performer to develop a sense of control. The SMQ provides a way to observe how user-enabled control occurs on both a profile and post level.

The SMQ contained questions aimed at identifying affiliation. Examples of such questions included: “Is your profile set to public or private?”, “Do you have a ‘Finsta’ account as well as a ‘Rinsta’ account?”, “As of today, how many followers do you have on IG?”, and “Of the people who follow you on IG, how many do you know personally?” In addition to questions, the SMQ posed statements that the participant would respond to on a scale based on how much they agreed with the statement. Examples of such prompts included: “In the past month, I used IG: because it makes me feel less lonely”, “In the past month, I used IG: to meet new people”, and “In the past month: there were things I did to pursue a higher number of followers on IG.”

The SMQ also contained questions aimed at identifying the construct of preferred impression. Examples of such questions included: “In the past month on IG, how often did you:

post stories?”, “In the past month on IG, how often did you: share thoughts and feelings in comments you make on other's posts?”, “In the past month: to what extent would you say that you use IG mainly for direct communication (i.e., a Direct message)?”, and “In the past month on IG, how often did you: share thoughts and feelings in your own post?” Statements were also included in the questionnaire, to which the participant would respond based on how much they agree with the statement. Examples of such statements included: “In the past month, I used IG: to share information that may be of use or interest to others”, “In the past month, I used IG: to provide personal information about myself”, “In the past month: sometimes I got so focused on getting a higher number of likes on IG that I neglected other ways of connecting meaningfully with others”, and “In the past month, I used IG: to tell others a little bit about myself” (See Appendix E). Many questions in the SMQ were grouped into behaviors related to constructs affiliation, preferred impression, or affect (see Appendix F).

Participants were also asked to fill in a general demographic questionnaire (see Appendix G) and to report their daily Instagram activity from the past 7 days by reporting the data shown on the “your activity” section of their account. The setting allows the user to see the daily amount of time spent on Instagram within the last 7 days as well as a daily average of time spent on Instagram over the past 7 days. Time spent on Instagram starts when the application is opened and ends when the application is closed or the user switches to another application on their device (“How do I see how much time I’ve spent on Instagram?”, n.d.). This includes all actions on the Instagram account, including time spent editing photos in the application. This information was retrieved through the smartphone, rather than through individual applications. Most smartphones include a feature that records and organizes a user’s time on each smartphone

application, called “Screen Time.” Participants were asked to report the daily amount of time spent on the phone.

Covariates

Additional covariates were also assessed and included in the study’s analyses, either to control for potential confounding influence of these variables or to test and disambiguate other plausible hypotheses. The Ten Item Personality Measure (TIPI) is a 10-item assessment of the Big Five personality traits, including extraversion, agreeableness, conscientiousness, emotional stability (neuroticism), and openness to experiences. Items are rated on a 7-point scale. The TIPI possesses “adequate levels in terms of (a) convergence with widely used Big-Five measures in self, observer, and peer reports, (b) test-retest reliability, (c) patterns of predicted external correlates, and (d) convergence between self and observer ratings” (Gosling, Rentfrow, & Swann, 2003) (see Appendix H).

Participants’ general affective experiences were measured by several scales, including the Positive and Negative Affect Schedule (PANAS), Perceived Stress Scale (PSS), State and Trait Anxiety Inventory (STAI). Momentary affect was measured by the Ecological Momentary Assessment Measures (EMA). I predicted that the more a socially anxious individual uses control constructs on their Instagram profile and posts, the more positive affect and/or less negative affect the individual will experience.

The Positive and Negative Affect Schedule (PANAS) is a self-report measure with high validity. Although the PANAS’ main psychological construct measured is positive affect, there are two subscales; positive affect and negative affect (Watson, Clark, & Tellegen, 1988). The PANAS consists of 10-items measuring positive affect and 10-items measuring negative affect. Response options to the items are assessed with a 5-point Likert Scale ranging from 1 (very

slightly or not at all) to 5 (extremely) Scores range from 10 to 50, where a higher score indicates greater positive affect (Watson, Clark, & Tellegen, 1988) (see Appendix I).

The Perceived Stress Scale (PSS) is a self-report measure that assesses the perception of stress. It is a 10-item questionnaire that measures the degree to which one perceives their life, or events in their life, as stressful. Furthermore, “the scale also includes a number of direct queries about current levels of experienced stress” (Cohen, Kamarck, Mermelstein, & Others, 1994). Response options to the items are assessed with a 5-point Likert Scale ranging from 0 (never) to 4 (very often). Higher scores reflect greater amounts of perceived stress (Cohen, Kamarck, Mermelstein, & Others, 1994) (see Appendix J).

The State-Trait Anxiety Inventory (STAI) is a self-report measure used to assess anxiety. The STAI has two subscales to measure both trait anxiety and state anxiety. Trait anxiety (T-Anxiety) refers to “relatively stable individual differences in anxiety proneness” (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983); differences between people in the perception of stressful situations as dangerous or threatening and responses to such situations “with elevations in the intensity of their state anxiety (S-Anxiety) reactions” (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The STAI consists of 20 T-Anxiety items and 20 S-Anxiety items. Items are rated on a 4-point scale; higher scores indicate higher overall anxiety. “Scores for both the S-Anxiety and T-Anxiety scales can vary from a minimum of 20 to a maximum of 80” (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Participants were given the STAI form Y-2 questionnaire, which assesses trait anxiety (see Appendix K).

Measures of internal locus of control were measured via the ICI. The ICI “assesses several variables especially pertinent to internal locus - cognitive processing, autonomy, resistance to social influence, self-confidence and delay of gratification” (Duttweiler, 1984). The

ICI uses a Likert-type scale with 28 items with response options of “rarely, occasionally, sometimes, frequently or usually” in regard to behavior as specified by each of the items. The scale is noted to have good internal reliability, with a Cronbach’s alpha of 0.85 (Duttweiler, 1984) (See Appendix L).

Momentary affect was measured by Environmental Momentary Assessment (EMA) measure, which participants received through phone notifications. The EMA assessment lasted seven days and contained various questions aimed at assessing stressor types and prevalence (Hoffman & Patel, 2015). This data will be used for subsequent analyses (See Appendix M). All analyses conducted here were pre-registered using the AsPredicted.org template (see Appendix N).

Data Analysis

All measures of interest for the present analyses, including the SMQ, were administered during Phase 3 of the study. Therefore, Phase 3 data will be the focus of the reported analyses. Descriptive statistics on age, ethnicity, gender, SAQ scores, average Instagram time, and composite control behaviors were included (see Table 1). Age and gender were control variables, with SAQ score as a focal predictor, based on the a priori hypotheses stated above. Average Instagram time and composite control behaviors were the outcomes of interest. Statistical analyses included zero-order/bi-variate correlations and multiple regression models to adjust for the potential influence of other variables.

	Age	Gender	Ethnicity	SAQ-a30 total	avg IG time	IGcontrolcomp
N	45	43	44	45	45	45
Missing	0	2	1	0	0	0
Mean	19.1			87.7	34.5	1.51
Median	19			86	34	1.33
Standard deviation	1.10			22.5	22.7	0.606
Minimum	18			41	0	1.00
Maximum	22			139	100	3.00

Frequencies

Frequencies of Gender

Levels	Counts	% of Total	Cumulative %
female	31	72.1%	72.1%
male	12	27.9%	100.0%

Frequencies of Ethnicity

Levels	Counts	% of Total	Cumulative %
White	36	81.8%	81.8%
Asian	3	6.8%	88.6%
African-American / Black	3	6.8%	95.5%
Hispanic / Latino	2	4.5%	100.0%

Table 1. Descriptive statistics and frequencies of the variables of interest.

Results

Zero-order Correlations

In regard to the zero-order correlations, a composite score variable of Instagram control behaviors¹ was positively correlated with overall SAQ score ($r = .378, p = .010$) and factor 4 of the SAQ ($r = .325, p = .029$) (see *Figure 2*). A similar pattern was observed when testing the correlation between individual items that made up the composite score.²

¹ This variable represents a composite of scores reflecting overall Instagram behaviors, including specific control behaviors: frequency of editing captions, time spent editing photos, and frequency of disabling comments.

² Editing captions was positively associated with overall SAQ ($r = .426, p = .004$) and factor 4 of the SAQ ($r = .380, p = .010$). There was no significant correlation between editing captions and factor 1 of the SAQ ($r = .196, p = .197$). There was also an association between editing captions and ICI score ($r = .298, p = .047$).

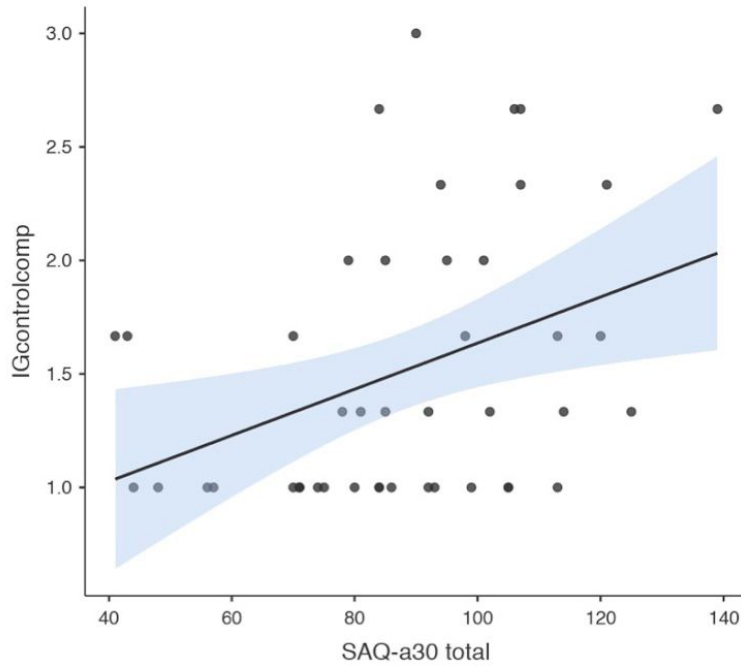


Figure 2. Scatterplots and linear regression of SAQ score vs IGCS ($r = .378, p = .010$).

There was a marginal positive correlation between composite control behaviors and ICI score ($r = .274, p = .068$), with no significant relationship between IGCS and trait anxiety (as measured by the STAI; $r = .004, p = .980$), or PSS score ($r = .139, p = .364$). There was no relationship between IGCS and factor 1 of the SAQ ($r = .134, p = .379$). Additionally, there was no significant correlation between overall SAQ score and ICI score ($r = .128, p = .402$) (see Table 2).

		IGcontrolcomp	SAQ-a30 total	D1: SAQ-a30	D4: SAQ-a30	ICI	3STAI-Y2	PSS
IGcontrolcomp	Pearson's r	—						
	p-value	—						
SAQ-a30 total	Pearson's r	0.378 *	—					
	p-value	0.010	—					
D1: SAQ-a30	Pearson's r	0.134	0.827 ***	—				
	p-value	0.379	< .001	—				
D4: SAQ-a30	Pearson's r	0.325 *	0.856 ***	0.670 ***	—			
	p-value	0.029	< .001	< .001	—			
ICI	Pearson's r	0.274	0.128	0.016	0.194	—		
	p-value	0.068	0.402	0.915	0.201	—		
3STAI-Y2	Pearson's r	0.004	0.133	0.139	0.201	0.122	—	
	p-value	0.980	0.382	0.363	0.186	0.426	—	
PSS	Pearson's r	0.139	0.018	-0.047	0.148	0.109	0.438 **	—
	p-value	0.364	0.905	0.759	0.331	0.477	0.003	—

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

Table 2. Correlational matrix exploring relationships between control behaviors, social anxiety, locus of control, state and trait anxiety, and perceived stress.

There were negative associations between average time spent on Instagram and overall SAQ score ($r = -.433, p = .003$) (see *Figure 3*), factor 1 of the SAQ (interactions with strangers) ($r = -.337, p = .024$) and factor 4 of the SAQ (criticism and embarrassment) ($r = -.300, p = .046$) (see *Table 3*).

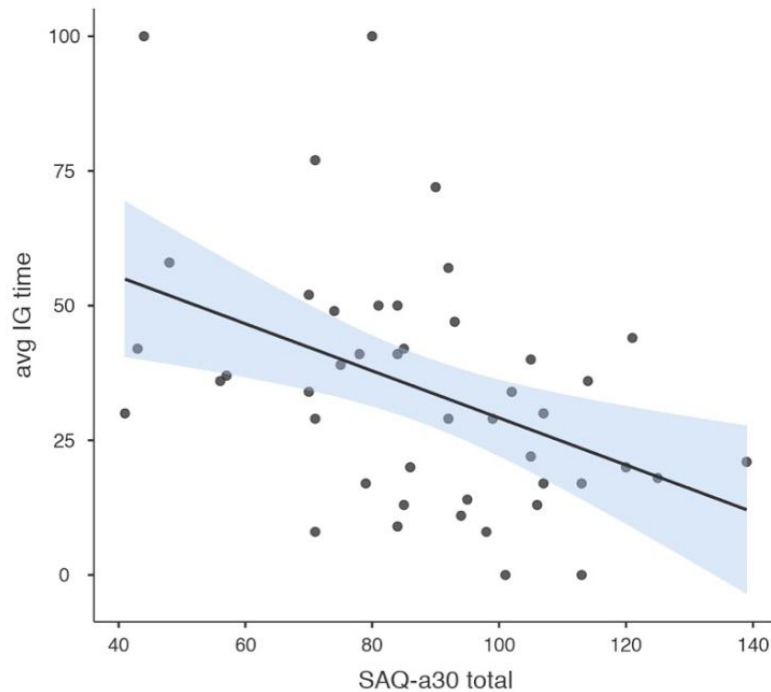


Figure 3. Scatterplot and linear regression of SAQ score vs. average amount of time spent on Instagram ($r = -.433$, $p = .003$).

		avg IG time	SAQ-a30 total	D1: SAQ-a30	D4: SAQ-a30
avg IG time	Pearson's r	—			
	p-value	—			
SAQ-a30 total	Pearson's r	-0.433**	—		
	p-value	0.003	—		
D1: SAQ-a30	Pearson's r	-0.337*	0.827***	—	
	p-value	0.024	< .001	—	
D4: SAQ-a30	Pearson's r	-0.300*	0.856***	0.670***	—
	p-value	0.046	< .001	< .001	—

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

Table 3. Correlational matrix exploring the relationship between average time spent on Instagram and social anxiety.

In regards to affect, there was no significant correlation between IGCS and positive affect ($r = -.039$, $p = .799$) or negative affect ($r = -.088$, $p = .566$), as measured by the PANAS.³

However, there was a positive correlation between self-esteem motives to use Instagram and

³ While EMA data also measured affect, it was a momentary aggregate as opposed to the PANAS, which measures trait-level affect through broad affective states. Therefore, the PANAS was used to assess affect.

overall SAQ score ($r = .438, p = .003$), factor 1 of the SAQ ($r = .360, p = .015$) and factor 4 of the SAQ ($r = .379, p = .010$). Additionally, self-esteem motives were not significantly correlated to ICI score ($r = .236, p = .119$) (see Table 4).

		IGcontrolcomp	PA 3: PANAS- SF	NA 3: PANAS- SF	increase self esteem	SAQ- a30 total	D1: SAQ- a30	D4: SAQ- a30	ICI
IGcontrolcomp	Pearson's r	—							
	p-value	—							
PA 3: PANAS- SF	Pearson's r	-0.123	—						
	p-value	0.419	—						
NA 3: PANAS- SF	Pearson's r	-0.083	0.976 ***	—					
	p-value	0.589	< .001	—					
increase self esteem	Pearson's r	-0.015	-0.389 **	-0.365 *	—				
	p-value	0.922	0.008	0.014	—				
SAQ-a30 total	Pearson's r	0.378 *	-0.370 *	-0.330 *	0.438 **	—			
	p-value	0.010	0.012	0.027	0.003	—			
D1: SAQ-a30	Pearson's r	0.134	-0.379 *	-0.338 *	0.360 *	0.827 ***	—		
	p-value	0.379	0.010	0.023	0.015	< .001	—		
D4: SAQ-a30	Pearson's r	0.325 *	-0.341 *	-0.321 *	0.379 *	0.856 ***	0.670 ***	—	
	p-value	0.029	0.022	0.032	0.010	< .001	< .001	—	
ICI	Pearson's r	0.274	-0.173	-0.167	0.236	0.128	0.016	0.194	—
	p-value	0.068	0.254	0.273	0.119	0.402	0.915	0.201	—

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

Table 4. Correlational matrix exploring relationships between Instagram control behaviors, affect, self-esteem, social anxiety, and locus of control.

Approximately 64% of participants had a “Finsta” account. Of those participants, 28 had private Finstagram accounts and 2 had public “Finsta” accounts. An independent t -test compared social anxiety as a function of whether participants had a “Finsta” account ($M = 88.2, SD = 24.7$) or did not have a “Finsta” account ($M = 86.8, SD = 18.7$); $t(43) = -0.201, p = .841$.

Multiple Regression Models

Next, in multiple regression models controlling for gender, age, and emotional stability (neuroticism, as measured from the TIPI), social anxiety remained a significant positive predictor of Instagram control behaviors (measured with Instagram control score [IGCS]); this was true of overall SAQ score ($b = 0.004$ [95% CI = 0.002 , 0.019], $t(38) = 2.598$, $p = .013$) and factor 4 of the SAQ ($b = 0.020$ [95% CI = 0.005 , 0.087], $t(38) = 2.265$, $p = .029$) (see Tables 5 and 6). In another multiple regression model, ICI score was added as another control variable and the positive relationship between overall SAQ score and ICGS was maintained ($b = 0.004$ [95% CI = 0.002 , 0.018], $t(37) = 2.431$, $p = .020$).⁴ However, the positive relationship between factor 4 of the SAQ and IGCS weakened slightly when ICI score was added as a control variable ($b = 0.020$ [95% CI = 0.000327 , 0.0814], $t(37) = 2.043$, $p = .048$) (see Tables 7 and 8).

With covariates gender, age, and emotional stability controlled for, the relationship between overall SAQ score and average time spent on Instagram remained negatively associated ($b = 0.146$ [95% CI = -0.757 , 0.167], $t(38) = -3.170$, $p = .003$) as well as factor 1 of the SAQ and average time spent on Instagram ($b = 0.606$ [95% CI = -2.54 , -0.088], $t(38) = -2.167$, $p = .036$). The negative relationship between factor 4 of the SAQ and average time spent on Instagram weakened slightly ($b = 0.767$ [95% CI = -3.09 , -0.019], $t(38) = -2.000$, $p = .053$) (see Tables 9, 10, 11).

Overall SAQ score and self-esteem motives also maintained a positive relationship ($b = 0.010$ [95% CI = 0.004 , 0.043], $t(38) = 2.444$, $p = .019$) as well as factor 1 of the SAQ and

⁴ Editing captions was positively associated with overall SAQ scores ($b = 0.008$ [95% CI = 0.008 , 0.039], $t(38) = 3.090$, $p = .004$) and factor 4 of the SAQ ($b = 0.038$ [95% CI = 0.026 , 0.180], $t(38) = 2.705$, $p = .010$). In another multiple regression model, ICI score was added as another control variable and the relationship between editing captions and overall SAQ score was maintained ($b = 0.007$ [95% CI = 0.007 , 0.037], $t(37) = 2.929$, $p = .006$), as was the relationship between editing captions and factor 4 of the SAQ ($b = 0.038$ [95% CI = 0.0174 , 0.170], $t(37) = 2.488$, $p = .017$).

self-esteem motives ($b = 0.038$ [95% CI = 0.004 , 0.159], $t(38) = 2.142$, $p = .039$). However, the relationship between factor 4 of the SAQ and self-esteem motives weakened ($b = 0.049$ [95% CI = -0.025 , 0.175], $t(38) = 1.520$, $p = .137$) (see Tables 12, 13, and 14).

Discussion

In support of hypothesis 1, my findings indicate that increased social anxiety is associated with greater likelihood of engaging in Instagram control behaviors. There was a positive relationship between composite Instagram control scores (IGCS) and self-reported social anxiety levels (as measured by the SAQ). Although causality cannot be assessed, this correlation suggests that socially anxious individuals engage with Instagram in a different way than less anxious individuals. Socially anxious individuals practice more control behaviors than those who are not socially anxious. For example, the more times a participant reported editing captions on their Instagram posts, the more likely they reported higher levels of general social anxiety, as measured by the SAQ. Moreover, IGCS was positively correlated with factor 4 of the SAQ. Therefore, socially anxious individuals are more anxious about potential criticism and embarrassment when on Instagram and thus these individuals will engage in control behaviors. However, IGCS was not significantly correlated with factor 1 of the SAQ. This data suggests that socially anxious individuals tend to engage in avoidant behaviors on Instagram in general. Even so, when these individuals are using their accounts, they are perhaps more concerned about potential criticism and embarrassment than interactions with strangers.

A possible explanation for this could be that, by the time an individual has allowed someone to follow them, the follower has been “vetted” and does not pose a threat to the user’s Instagram persona. Another possible explanation could lie in the nature of the online platform. Although the user is engaging with others there is an absence of in-person interactions. This may

relate to the lack of social anxiety about interactions with strangers in that users do not have to truly “interact” with strangers. Instead, they can opt to deny a follow request, or choose not to engage with unknown followers (not accepting followers, blocking accounts, refusing to message followers, etc.). Instagram may lessen the “uncontrollability” of interactions with strangers; socially anxious individuals may feel as though they have more say over their own affiliation behaviors to begin with, and in turn, focus attention to the potential criticism and embarrassment that could come from the inability to maintain a preferred impression. This is not to say that they are not concerned about interactions with strangers, as revealed through weak, but not statistically significant correlations between factor 1 of the SAQ and IGCS..

In regards to my second hypothesis, that individuals with higher levels of social anxiety are more likely to engage in control behaviors, creating a positive affect and thus socially anxious individuals will spend more time on Instagram, there was a significant negative relationship between average Instagram time and SAQ score as well as subscales for factors 1 and 4. There were no significant relationships between IGCS and trait affect measures. As a result, hypothesis 2 failed to be supported. Interestingly, there were statistically significant relationships between self-esteem motives to use Instagram and overall SAQ score, as well as factor 1 of the SAQ.. The data suggest that the more socially anxious an individual is, the less time the individual spends on Instagram. This relationship also applies to SAQ subscales of and accounts for the negative relationships between average Instagram time and factor 1 and factor 4 of the SAQ.

Yet, there were significant positive relationships between self-esteem motives and overall SAQ score, factor 1 and factor 4 of the SAQ. Although this does not change the directionality of the relationship between average time spent on Instagram and social anxiety, it may suggest that

socially anxious individuals use Instagram to boost their self-esteem even if they are spending less overall time on the app. Although self-esteem does not directly map onto one's overall affect, there is a strong affective component: self-evaluation. Even though a socially anxious individual will use Instagram less frequently, they still see Instagram as a way to increase self-esteem. This again relates back to the constructs of affiliation and preferred impression, where socially anxious Instagram users somehow feel a greater sense of control of who they are connecting with as well as control in how successful they are in managing their image online. However, although using Instagram to increase self-esteem is positively correlated with social anxiety, it could also be that the nature of Instagram is to increase one's self-esteem, regardless of anxiety levels.

It should be noted that all five SAQ subscales contribute to social anxiety, but each reflects a different facet of social anxiety. Not all subscales are important for predicting Instagram control behaviors. Factor 1 of the SAQ assesses the potential anxiety resulting from a social interaction with an unknown individual whereas factor 4 of the SAQ assesses potential social rejection in the form of criticism or embarrassment, from individuals known and unknown. The overlap to be noted between these two subscales is that social anxiety stems from uncontrollable interactions with unknown individuals. In this case, the social setting is not in the "real world" but is Instagram itself and the impressions and interactions that occur on the platform. Factor 1 of the SAQ then relates to the process of "audience" admittance through an affiliation process while Factor 4 of the SAQ, as it relates to preferred impression, may be unique in how it becomes more enhanced when a person curates a virtual self-image on the platform.

It is important to note that IGCS was not correlated to participants' perceived stress, as assessed by the PSS. The PSS assesses the degree to which an individual perceives life events as

stressful and the ability to “control” or “manage” stress. Results suggest that, regardless of stress levels, socially anxious individuals will continue to engage in Instagram control behaviors and thus control behaviors are possibly prompted by something other than perceived stress. A possible explanation may be that, even when experiencing stress apart from social anxiety, socially anxious individuals remain more concerned about social evaluation.

Similarly, IGCS was also not related to participants’ internal locus of control (as measured by the ICI). Individuals with a high locus of control believe they are in control of their lives whereas individuals with a low internal locus on control believe that other factors control their lives. And results from multiple regression models, when SAQ and its subscales were key predictors and ICI was added as a control variable, suggest that being socially anxious is not significantly related to having perceived greater control over one’s self and actions (the extent to which individuals believe they can control events that affect them). In addition, Instagram control behaviors were not the result of neurotic (emotionally unstable) behaviors, as assessed in multiple regression models. There is something about the evaluative nature of social anxiety itself that results in Instagram control behaviors.

Instagram is a virtual platform. However, one’s curated Instagram persona could be viewed as an extension of the self where self-image is seen as more (easily) controllable than the “real” self. If a socially anxious individual feels as though they have more control over a virtual presence and virtual interactions, they may focus more on how they present themselves online than on other “real life” stressors or anxieties and thus prioritize their virtual self-image over their physical self-image. Here, we can also consider the temporal aspect of virtual social anxiety. In-person social interactions are more dynamic and offer more visual feedback (i.e., body language and facial expressions) and are generally more fast-paced. Online interactions,

however, provide more discrete and fewer information channels to respond to, which could diminish the anxiety of “evaluative” scenarios just as much as it could increase it. Less information could suggest more or less control, depending on individual differences in social anxiety.

Limitations

There are several limitations to the present work that are worth mentioning. First, it must be acknowledged that while the analyses above controlled for demographic variables, the population for this study was relatively homogeneous as far as age, ethnicity and gender: all participants were Bard students between the ages of 18-22, 82% of the sample was White and 72% of the sample was female. Furthermore, the results were analyzed using cross-sectional data, assessing social anxiety and Instagram use concurrently. Although there were *a priori* explanatory (predictor) variables and criterion (outcome) variables, there were no true independent or dependent variables due to lack of experimental manipulation. Therefore, there was no way to assess potential causal mechanisms underlying social anxiety and Instagram behaviors because it was impossible to assess directionality between these variables.

Another limitation occurred within data collection. Although participants were asked to fill out the questionnaires in their entirety, some participants failed to answer all the questions. This could have been avoided had the questionnaire on SurveyGizmo required responses for every question. Unfortunately, this option was not selected when the questionnaires were distributed which resulted in the loss of some data points for various questions.

Average screen time was collected from Instagram. The study originally anticipated additional reports screen time data collected from Apple Screen time. These reports would have included additional reports of average time spent on the apps Facebook, Twitter, Snapchat,

Youtube, Pinterest, Tumblr, and TikTok. Additionally, it was expected that participants would be able to report the overall amount of time spent on their phone in the past 7 days as well as report of the amount of time spent on their phone per day. Apple Screen time is only unique to Apple users, and Android phones do not offer the same data. Even so, reported data from Apple Screen time was not useful. Apple phone data collection begins at 12:00 am on Sunday and finishes at 11:59 pm the following Saturday, resetting every Sunday night. However, phone data was not collected in a manner that allowed accurate weekly measures. Screen time data collected from participants unless they reported their data Saturday evening. Given the lack of participants who participated in Phase 3 on a Saturday evening, this data set was not an accurate reflection of average screen time from the past 7 days and was not analyzed in the study.

COVID-19 was another limitation in the study, although its impact was relatively minor. In response to growing concerns over COVID-19, Bard College halted all in-person classes on Friday, March 13th. While 46 participants finished all phases of the study before this time, 4 participants did not. Although all 50 participants completed Phase 1 of the study, the aforementioned 4 participants were in various stages of Phase 2 when the institution closed and thus their data could not be collected. However, concern about COVID-19 began before March 13th, with a general student concern becoming noticeable starting March 9th which may have affected anxiety levels among participants. For future follow-up analyses, a control variable was created indicating pre- and post-COVID-19 anxiety that may have interfered with participant EMA and Phase 3 responses between the dates of March 9th and March 13th.

The presence of COVID-19 is accompanied by a new anxiety; what does it mean to have different, new “threats” (ie. anxieties and stressors) in a post-COVID-19 world? There were four participants whose data was not analyzed for this study because of COVID-19. However,

participants' reported data from Phase 1 and from the EMA could serve as case studies in regard to exploring the rapid development of COVID-19 anxiety.

Future Directions

Given that this study was a correlation study, future studies could attempt to apply an experimental design to the variables of interest. It could be possible to randomly assign some participants to engage in various control behaviors in order to assess how social anxiety changes as a result of different types of Instagram behaviors. Alternatively, participants could be randomly assigned to social anxiety manipulations, in order to assess how various control behaviors may be affected by being in a socially anxious (vs. calm) state. Furthermore, different control behaviors could be assessed. The IGCS consisted only of 3 Instagram control behaviors. It did not account for other potential control behaviors reported on the SMQ. Though the relationship between social anxiety and IGCS was significant, it may be beneficial to compute new composite control scores through other control behaviors not analyzed in the study.

Intervention work could also be explored in future studies. Nowadays we are living in a connected, informed, and online world. Even though the current study was correlational, it provides primary findings that reveal the potential to differentiate particular online behaviors as characteristic behaviors of certain psychological disorders. With regards to SAD, how do we make social media more palatable for clinically diagnosed, socially anxious individuals? And how can we make them less concerned about their image construct on Instagram?

Conclusion

The current study sought to explore individual differences in Instagram control behaviors, in a presumably non-clinical sample of individuals that varied in social anxiety levels, through the SASP model constructs of affiliation and preferred impression. My first hypothesis was supported and revealed a positive linear relationship between Instagram control behaviors and social anxiety, although these behaviors were more strongly correlated to social anxiety as it relates to fear of criticism and embarrassment than fear of interactions with strangers. These findings support the SASP model's assertion that affiliation and preferred impression are often perceived as means by which socially anxious individuals can control social interactions (Schlenker & Leary, 1982). Although I failed to find support for my second hypothesis, it was revealed that socially anxious individuals generally spend less time on Instagram and do not experience change in affect as a result of using Instagram. However, social anxiety was related to reports of Instagram boosting self-esteem. Future research could explore the causal mechanisms behind social anxiety and online control behaviors on Instagram and other popular social media platforms.

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Model Info	
Info	
Estimate	Linear model fit by OLS
Call	IGcontrolcomp ~ 1 + `SAQ-a30 total` + Gender + Age + neuroticism
R-squared	0.1839
Adj. R-squared	0.0980

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	2.911	4	2.141	0.095	0.184
SAQ-a30 total	2.295	1	6.752	0.013	0.151
Gender	0.236	1	0.695	0.410	0.018
Age	0.354	1	1.040	0.314	0.027
neuroticism	0.248	1	0.731	0.398	0.019
Residuals	12.918	38			
Total	15.829	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	1.4892	0.09989	1.28695	1.6914	0.000	38	14.908	< .001
SAQ-a30 total	SAQ-a30 total	0.0105	0.00402	0.00231	0.0186	0.389	38	2.598	0.013
Gender1	male - female	-0.1718	0.20607	-0.58900	0.2453	-0.280	38	-0.834	0.410
Age	Age	0.0851	0.08342	-0.08381	0.2540	0.153	38	1.020	0.314
neuroticism	neuroticism	-0.0422	0.04941	-0.14227	0.0578	-0.131	38	-0.855	0.398

Table 5. Multiple regression model controlling for gender, age, and neuroticism, with social anxiety as a predictor variable of interest on IGCS ($b = .004$ [95% CI = 0.002 , 0.019], $t(38) = 2.598, p = .013$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	IGcontrolcomp ~ 1 + `D4: SAQ-a30` + Gender + Age + neuroticism
R-squared	0.1532
Adj. R-squared	0.0641

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	2.426	4	1.719	0.166	0.153
D4: SAQ-a30	1.810	1	5.131	0.029	0.119
Gender	0.263	1	0.746	0.393	0.019
Age	0.499	1	1.415	0.242	0.036
neuroticism	0.239	1	0.677	0.416	0.018
Residuals	13.404	38			
Total	15.829	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	1.4871	0.1017	1.28116	1.6931	0.000	38	14.617	<.001
D4: SAQ-a30	D4: SAQ-a30	0.0457	0.0202	0.00486	0.0865	0.355	38	2.265	0.029
Gender1	male - female	-0.1811	0.2098	-0.60577	0.2435	-0.295	38	-0.864	0.393
Age	Age	0.1039	0.0874	-0.07293	0.2808	0.187	38	1.190	0.242
neuroticism	neuroticism	-0.0415	0.0504	-0.14345	0.0605	-0.129	38	-0.823	0.416

Table 6. Multiple regression model controlling for gender, age, and neuroticism, with factor 4 of the SAQ as a predictor variable of interest on IGCS ($b = .020$ [95% CI = 0.005 , 0.087], $t(38) = 2.265$, $p = .029$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	IGcontrolcomp ~ 1 + `SAQ-a30 total` + Gender + Age + neuroticism + ICI
R-squared	0.240
Adj. R-squared	0.138

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	3.803	5	2.340	0.061	0.240
SAQ-a30 total	1.921	1	5.910	0.020	0.138
Gender	0.308	1	0.947	0.337	0.025
Age	0.504	1	1.551	0.221	0.040
neuroticism	0.141	1	0.433	0.515	0.012
ICI	0.892	1	2.744	0.106	0.069
Residuals	12.026	37			
Total	15.829	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	1.48370	0.09773	1.28567	1.6817	0.0000	37	15.181	< .001
SAQ-a30 total	SAQ-a30 total	0.00964	0.00397	0.00161	0.0177	0.3584	37	2.431	0.020
Gender1	male - female	-0.19660	0.20205	-0.60600	0.2128	-0.3202	37	-0.973	0.337
Age	Age	0.10244	0.08224	-0.06420	0.2691	0.1842	37	1.246	0.221
neuroticism	neuroticism	-0.03204	0.04871	-0.13073	0.0666	-0.0993	37	-0.658	0.515
ICI	ICI	0.01858	0.01122	-0.00415	0.0413	0.2459	37	1.656	0.106

Table 7. Multiple regression model controlling for gender, age, neuroticism, and ICI with social anxiety as a predictor variable of interest on IGCS ($b = .004$ [95% CI = 0.002 , 0.018], $t(37) = 2.431$, $p = .020$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	IGcontrolcomp ~ 1 + `D4: SAQ-a30` + Gender + Age + neuroticism + ICI
R-squared	0.208
Adj. R-squared	0.101

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	3.295	5	1.945	0.110	0.208
D4: SAQ-a30	1.413	1	4.172	0.048	0.101
Gender	0.338	1	0.996	0.325	0.026
Age	0.637	1	1.881	0.178	0.048
neuroticism	0.137	1	0.405	0.529	0.011
ICI	0.870	1	2.567	0.118	0.065
Residuals	12.534	37			
Total	15.829	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	1.4817	0.0998	1.27954	1.6838	0.0000	37	14.852	< .001
D4: SAQ-a30	D4: SAQ-a30	0.0408	0.0200	3.27e-4	0.0814	0.3178	37	2.043	0.048
Gender1	male - female	-0.2058	0.2061	-0.62345	0.2119	-0.3352	37	-0.998	0.325
Age	Age	0.1181	0.0861	-0.05634	0.2925	0.2123	37	1.372	0.178
neuroticism	neuroticism	-0.0317	0.0497	-0.13245	0.0691	-0.0981	37	-0.636	0.529
ICI	ICI	0.0184	0.0115	-0.00487	0.0417	0.2437	37	1.602	0.118

Table 8. Multiple regression model controlling for gender, age, neuroticism, and ICI with factor 4 of the SAQ as a predictor variable of interest on IGCS ($b = .020$ [95% CI = 0.000327 , 0.0814], $t(37) = 2.043$, $p = .048$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	avg IG time ~ 1 + 'SAQ-a30 total' + Gender + Age + neuroticism
R-squared	0.231
Adj. R-squared	0.150

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	5100.0	4	2.8589	0.036	0.231
SAQ-a30 total	4481.8	1	10.0494	0.003	0.209
Gender	16.4	1	0.0368	0.849	0.001
Age	14.5	1	0.0325	0.858	0.001
neuroticism	333.8	1	0.7485	0.392	0.019
Residuals	16947.1	38			
Total	22047.2	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	35.456	3.618	28.131	42.780	0.0000	38	9.800	< .001
SAQ-a30 total	SAQ-a30 total	-0.462	0.146	-0.757	-0.167	-0.4603	38	-3.170	0.003
Gender1	male - female	1.431	7.464	-13.679	16.541	0.0625	38	0.192	0.849
Age	Age	-0.545	3.022	-6.662	5.572	-0.0262	38	-0.180	0.858
neuroticism	neuroticism	1.548	1.790	-2.075	5.172	0.1286	38	0.865	0.392

Table 9. Multiple regression model controlling for gender, age, and neuroticism with social anxiety as a predictor variable of interest on average time spent on Instagram ($b = .146$ [95% CI = -0.757 , 0.167], $t(38) = -3.170$, $p = .003$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	avg IG time ~ 1 + `D1: SAQ-a30` + Gender + Age + neuroticism
R-squared	0.1351
Adj. R-squared	0.0441

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	2978.54	4	1.48391	0.226	0.135
D1: SAQ-a30	2360.32	1	4.70365	0.036	0.110
Gender	2.10	1	0.00419	0.949	0.000
Age	141.10	1	0.28118	0.599	0.007
neuroticism	216.91	1	0.43225	0.515	0.011
Residuals	19068.62	38			
Total	22047.16	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	35.254	3.845	27.47	43.0372	0.0000	38	9.1691	< .001
D1: SAQ-a30	D1: SAQ-a30	-1.315	0.606	-2.54	-0.0875	-0.3335	38	-2.1688	0.036
Gender1	male - female	0.517	7.986	-15.65	16.6838	0.0226	38	0.0647	0.949
Age	Age	1.678	3.164	-4.73	8.0826	0.0808	38	0.5303	0.599
neuroticism	neuroticism	1.260	1.916	-2.62	5.1392	0.1046	38	0.6575	0.515

Table 10. Multiple regression model controlling for gender, age, and neuroticism with factor 1 of the SAQ as a predictor variable of interest on average time spent on Instagram ($b = .606$ [95% CI = -2.54 , -0.088], $t(38) = -2.167$, $p = .036$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	avg IG time ~ 1 + `D4: SAQ-a30` + Gender + Age + neuroticism
R-squared	0.1206
Adj. R-squared	0.0280

Model Results

ANOVA Omnibus tests					
	SS	df	F	p	η^2p
Model	2659.2	4	1.3030	0.286	0.121
D4: SAQ-a30	2041.0	1	4.0003	0.053	0.095
Gender	36.7	1	0.0720	0.790	0.002
Age	27.5	1	0.0539	0.818	0.001
neuroticism	355.9	1	0.6976	0.409	0.018
Residuals	19387.9	38			
Total	22047.2	42			

Fixed Effects Parameter Estimates									
Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	35.612	3.869	27.78	43.4454	0.0000	38	9.204	< .001
D4: SAQ-a30	D4: SAQ-a30	-1.535	0.767	-3.09	0.0187	-0.3199	38	-2.000	0.053
Gender1	male - female	2.140	7.978	-14.01	18.2901	0.0934	38	0.268	0.790
Age	Age	-0.772	3.323	-7.50	5.9551	-0.0372	38	-0.232	0.818
neuroticism	neuroticism	1.600	1.916	-2.28	5.4790	0.1329	38	0.835	0.409

Table 11. Multiple regression model controlling for gender, age, and neuroticism with factor 4 of the SAQ as a predictor variable of interest on average time spent on Instagram ($b = .767$ [95% CI = -3.09 , -0.019], $t(38) = -2.000$, $p = .053$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	increase self esteem ~ 1 + `SAQ-a30 total` + Gender + Age + neuroticism
R-squared	0.260
Adj. R-squared	0.182

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	25.8304	4	3.3336	0.020	0.260
SAQ-a30 total	11.5730	1	5.9743	0.019	0.136
Gender	0.4882	1	0.2520	0.619	0.007
Age	8.7047	1	4.4936	0.041	0.106
neuroticism	0.0757	1	0.0391	0.844	0.001
Residuals	73.6115	38			
Total	99.4419	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	2.6199	0.23846	2.13713	3.1026	0.0000	38	10.987	< .001
SAQ-a30 total	SAQ-a30 total	0.0235	0.00961	0.00403	0.0429	0.3483	38	2.444	0.019
Gender1	male - female	-0.2469	0.49191	-1.24277	0.7489	-0.1605	38	-0.502	0.619
Age	Age	-0.4221	0.19914	-0.82528	-0.0190	-0.3028	38	-2.120	0.041
neuroticism	neuroticism	0.0233	0.11795	-0.21546	0.2621	0.0288	38	0.198	0.844

Table 12. Multiple regression model controlling for gender, age, and neuroticism with self-esteem motives as a predictor variable of interest on social anxiety ($b = .010$ [95% CI = 0.004, 0.043], $t(38) = 2.444$, $p = .019$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	increase self esteem ~ 1 + `D1: SAQ-a30` + Gender + Age + neuroticism
R-squared	0.236
Adj. R-squared	0.155

Model Results

ANOVA Omnibus tests					
	SS	df	F	p	η^2p
Model	23.432	4	2.929	0.033	0.236
D1: SAQ-a30	9.175	1	4.587	0.039	0.108
Gender	0.230	1	0.115	0.737	0.003
Age	14.680	1	7.339	0.010	0.162
neuroticism	0.277	1	0.139	0.712	0.004
Residuals	76.010	38			
Total	99.442	42			

Fixed Effects Parameter Estimates									
Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	2.6367	0.2427	2.14525	3.128	0.0000	38	10.862	< .001
D1: SAQ-a30	D1: SAQ-a30	0.0820	0.0383	0.00449	0.159	0.3096	38	2.142	0.039
Gender1	male - female	-0.1709	0.5042	-1.19159	0.850	-0.1111	38	-0.339	0.737
Age	Age	-0.5412	0.1998	-0.94554	-0.137	-0.3882	38	-2.709	0.010
neuroticism	neuroticism	0.0451	0.1210	-0.19987	0.290	0.0557	38	0.372	0.712

Table 13. Multiple regression model controlling for gender, age, and neuroticism with self-esteem motives as a predictor variable of interest on factor 1 of the SAQ ($b = .038$ [95% CI = 0.004 , 0.159], $t(38) = 2.142$, $p = .039$).

Model Info	
Info	
Estimate	Linear model fit by OLS
Call	increase self esteem ~ 1 + `D4: SAQ-a30` + Gender + Age + neuroticism
R-squared	0.192
Adj. R-squared	0.107

Model Results

ANOVA Omnibus tests

	SS	df	F	p	η^2p
Model	19.1397	4	2.2643	0.080	0.192
D4: SAQ-a30	4.8823	1	2.3104	0.137	0.057
Gender	0.6501	1	0.3076	0.582	0.008
Age	7.9306	1	3.7528	0.060	0.090
neuroticism	0.0565	1	0.0268	0.871	0.001
Residuals	80.3022	38			
Total	99.4419	42			

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	2.6115	0.2490	2.1074	3.1156	0.0000	38	10.487	< .001
D4: SAQ-a30	D4: SAQ-a30	0.0751	0.0494	-0.0249	0.1750	0.2329	38	1.520	0.137
Gender1	male - female	-0.2848	0.5134	-1.3241	0.7546	-0.1851	38	-0.555	0.582
Age	Age	-0.4143	0.2139	-0.8472	0.0186	-0.2972	38	-1.937	0.060
neuroticism	neuroticism	0.0202	0.1233	-0.2295	0.2698	0.0249	38	0.164	0.871

Table 14. Multiple regression model controlling for gender, age, and neuroticism with using Instagram to increase self-esteem as a predictor variable of interest on factor 4 of the SAQ ($b = .049$ [95% CI = -0.025 , 0.175], $t(38) = 1.520$, $p = .137$).

Appendix A
IRB Approval Letter

Bard College

Institutional Review Board

Date: October 29, 2019
To: Richard Lopez
Cc: Betsy Hoffman
From: Laura Kunreuther, IRB Chair
Re: Anxiety and Social Media proposal

DECISION: APPROVED

Dear Richard,

Thank you for your thorough revisions and organization of the files. The Bard Institutional Review Board reviewed your proposal on 'Anxiety and Social Media'. Your proposal is approved through October 30, 2020. Your case number is 2019OCT30-LOP.

Please notify the IRB if your methodology changes or unexpected events arise.

We wish you the best of luck with your research.



Laura Kunreuther
kunreuth@bard.edu
IRB Chair

Certificate of Completion in the Ethical Treatment of Human Subjects



Appendix B
Recruitment Poster

STUDY ON INSTAGRAM AND EMOTION



**Do you use Instagram?
Seeking participants interested
in the relationship between
social media and emotions.**



Interested?

Contact: reachlab@bard.edu

**All participants will be compensated for their time
(\$20/hour or course credit)**



Appendix C
Consent Form**BARD**

*A College of the Liberal Arts and Sciences
Division of Science, Mathematics & Computing*

INFORMED CONSENT AGREEMENT

Title: Anxiety in the age of social media: examining relations between anxiety, Instagram use, and emotions in daily life

Student Investigator: Isabel Polletta

Principal Investigator: Richard Lopez

Institution: Bard College

Background. In the present study, we are generally interested in people's experience of emotions in daily life, as well as relations between technology and social media use and various cognitive and affective processes important for health and wellbeing (broadly construed).

What you will do in the study. You will first come in for an initial laboratory session in Preston Hall in which you will complete a questionnaire battery assessing various psychological variables. Some physiological measures, including heart rate and body composition, will also be collected. Next, several times a day for one week you will answer brief survey questions on your phone. These questions will only take a few minutes to complete. Lastly, you will return for a final laboratory session in which you will complete the same questionnaire battery and physiological measures mentioned above. You will also answer some additional questions and be compensated for the total time spent on all the latter two parts of the study.

Risks and Benefits. It is possible that some participants may experience slight discomfort when reflecting on and reporting their general thoughts, feelings, and behaviors, and/or as they occur in daily life. Such discomfort is unlikely to be any greater than what participants naturally experience. Despite this minimal risk, if you happen to experience any psychological discomfort as a result of the study, and/or are experiencing symptoms of anxiety and depression, you are encouraged to contact Bard Counseling Services at counselingservice@bard.edu or (845) 758-7433. For confidential and anonymous counseling and referral services offered 24 hours a day, 7 days a week, contact the BRAVE hotline at (845) 758-7777 and ask to speak with a BRAVE Counselor.

As far as potential benefits, participants may indirectly benefit from learning about research testing novel hypotheses in a relatively new field of study. Following debriefing, they may also enjoy learning about the research process more generally and the various topics under study in the Bard Psychology Program.

Lastly, as a potential risk and/or benefit, if you are interested in receiving a photocopy of responses you produced as part of the study for personal use and reference, you may request one by emailing the PI (rlopez@bard.edu) when data collection and analysis for the study have concluded. However, note that the PI cannot make any clinical recommendations from your data.

Compensation. In exchange for participating in the experiment, you will either receive cash compensation (prorated at \$20 per hour), or Sona credit that will count toward the experimental participation requirement as part of your Psychology course.

Your rights as a participant. Your participation in this experiment is completely voluntary, and you may withdraw from the experiment at any time without penalty. Also, if there are questions on any survey that you would rather not answer for any reason, you can choose not to respond to those questions. You will still receive prorated cash payment or course credit for the amount of time you were enrolled in the study. You may withdraw by notifying the experimenter that you no longer wish to participate, and no questions will be asked. At the conclusion of the study, a debriefing session will take place in which the experimenter will tell you more about the study's aims and hypotheses in greater detail.

<p>Contact: If you have questions about this research, please contact Richard Lopez, Assistant Professor of Psychology, Bard College, at rlopez@bard.edu.</p>

Confidentiality. You will provide your name on this consent form, but otherwise you will be assigned a random alphanumeric code so your identity remains confidential. Only authorized research personnel will be able to link your name to your data. However, in the interest of open and reproducible science, de-identified data from this study may also be posted on the Open Science Framework. All data will be stored securely on password-protected computers with encrypted hard drives.

If you have questions about this study, please contact Richard Lopez, Department of Psychology, Bard College, Annandale-on-Hudson, NY 12504 at rlopez@bard.edu. If you have questions about your rights as a research participant, please contact the Bard College Institutional Review Board: irb@bard.edu.

Agreement. The nature and purpose of this research have been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty. I certify that I am at least 18 years of age.

By signing the line below, I am indicating that I am in agreement with the above statement of consent.

Participant signature

Date

Participant name (printed)

Experimenter signature and initials

Appendix D
Social Anxiety Questionnaire (SAQ-A30)

SOCIAL ANXIETY QUESTIONNAIRE FOR ADULTS (SAQ-A30)

(Caballo, Salazar, Iruña, Arias, and CISO-A Research Team, 2010)

Below are a series of social situations that may or may not cause you UNEASE, STRESS or NERVOUSNESS. Please place an “X” on the number next to each social situation that best reflects your reaction, where “1” represents no unease, stress or nervousness and “5” represents very high or extreme unease stress, or nervousness.

If you have never experienced the situation described, please **imagine** what your level of UNEASE, STRESS, or NERVOUSNESS might be if you were in that situation, and rate how you imagine you would feel by placing an “X” on the corresponding number.

LEVEL OF UNEASE, STRESS OR NERVOUSNESS

Not at all or very slight 1	Slight 2	Moderate 3	High 4	Very high or extremely high 5
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Please rate all the items and do so **honestly**; do not worry about your answer because there are no right or wrong ones. Thank you very much for your collaboration.

1. Greeting someone and being ignored	1	2	3	4	5
2. Having to ask a neighbor to stop making noise	1	2	3	4	5
3. Speaking in public	1	2	3	4	5
4. Asking someone attractive of the opposite sex for a date	1	2	3	4	5
5. Complaining to the waiter about my food	1	2	3	4	5
6. Feeling watched by people of the opposite sex	1	2	3	4	5
7. Participating in a meeting with people in authority	1	2	3	4	5
8. Talking to someone who isn't paying attention to what I am saying	1	2	3	4	5
9. Refusing when asked to do something I don't like doing	1	2	3	4	5
10. Making new friends	1	2	3	4	5
11. Telling someone that they have hurt my feelings	1	2	3	4	5
12. Having to speak in class, at work, or in a meeting	1	2	3	4	5
13. Maintaining a conversation with someone I've just met	1	2	3	4	5
14. Expressing my annoyance to someone that is picking on me	1	2	3	4	5
15. Greeting each person at a social meeting when I don't know most of them	1	2	3	4	5
16. Being teased in public	1	2	3	4	5
17. Talking to people I don't know at a party or a meeting	1	2	3	4	5
18. Being asked a question in class by the teacher or by a superior in a meeting	1	2	3	4	5
19. Looking into the eyes of someone I have just met while we are talking	1	2	3	4	5
20. Being asked out by a person I am attracted to	1	2	3	4	5
21. Making a mistake in front of other people	1	2	3	4	5
22. Attending a social event where I know only one person	1	2	3	4	5
23. Starting a conversation with someone of the opposite sex that I like	1	2	3	4	5
24. Being reprimanded about something I have done wrong	1	2	3	4	5
25. While having dinner with colleagues, classmates or workmates, being asked to speak on behalf of the entire group	1	2	3	4	5
26. Telling someone that their behavior bothers me and asking them to stop	1	2	3	4	5
27. Asking someone I find attractive to dance	1	2	3	4	5
28. Being criticized	1	2	3	4	5
29. Talking to a superior or a person in authority	1	2	3	4	5
30. Telling someone I am attracted to that I would like to get to know them better	1	2	3	4	5

Social anxiety questionnaire (SAQ-A30)

Instrument Title: Social Anxiety Questionnaire for Adults (SAQ-A30)

Instrument Author: Caballo, V. E., Salazar, I. C., Irurtia, M. J., Arias, B.,
and CISO-A Research Team

Cite instrument as: Caballo, V. E., Salazar, I. C., Irurtia, M. J., Arias, B.,
and CISO-A Research Team. (2012) . Social Anxiety
Questionnaire for Adults (SAQ-A30) . Measurement
Instrument Database for the Social Science.
Retrieved from www.midss.ie



Appendix E
Social Media Questionnaire (SMQ)

Do you have at least one Instagram account?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

How many Instagram accounts do you have? _____

How would you classify your account(s)? Check as many that apply.

Account	“Finsta”	“Rinsta”	Non-Finsta/Rinsta account for personal use	Non-Finsta/Rinsta account for professional use
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are these account(s) private, public, or business accounts? Check as many that apply, in reference to the same accounts indicated above.

Account	Private	Public	Business
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please respond to the following questions as they pertain to your primary Instagram account (i.e., the one you use most frequently):

About how old were you when you joined Instagram? _____

As of today, how many followers do you have on Instagram? _____

As of today, how many people are following you on Instagram? ____
 As of today, how many visible (not archived) posts do you have on Instagram? ____
 As of today, how many “close friends” have you designated for Instagram stories? ____
 Of the people/accounts you follow on Instagram, how many do you personally know?

None	A Few	Some	A lot	All of them
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Of the people/accounts who follow you on Instagram, how many do you personally know?

None	A Few	Some	A lot	All of them
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Regarding content that you post on Instagram, how frequently do you disable comments for individual posts?

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Of the content that you post on Instagram, approximately how long do you edit and annotate photos/videos you share in posts or stories?

5 minutes or less	6-10 min	11-20 min	21-30 min	More than 30 min
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How often do you edit the captions of your posts after you have posted?

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In the past month, about how much time do you think you’ve generally spent on Instagram each **day**?

10 minutes or less	11-30 min	31-60 min	1-2 hours	More than 2 hours
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

In general, how bothered are you—as far as not being aware of what others are doing and posting— when you’re *not* checking Instagram?

Not at all	Slightly	Moderately	Very	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Instagram Usages (Adapted from Koroleva et al. (2011)’s scale; original scale looked at Facebook usage instead of Instagram.)

In the past month on Instagram, how often did you...		Never	Rarely	Sometimes	Often	Always
1.	Post content (photos, videos, etc)?	1	2	3	4	5
2.	Post stories?	1	2	3	4	5
3.	Share thoughts and feelings in your own posts?	1	2	3	4	5
4.	Share thoughts and feelings in comments you make on others’ posts?	1	2	3	4	5
5.	Share something you are interested in?	1	2	3	4	5
6.	Comment on friends’ posts?	1	2	3	4	5
7.	“Like” friends’ posts?	1	2	3	4	5
8.	Viewed (but not liked) friends’ posts?	1	2	3	4	5
9.	Viewed (and liked) friends’ photos?	1	2	3	4	5
10.	Keep up with friends’ lives?	1	2	3	4	5
11.	Click on the content shared by friends	1	2	3	4	5
12.	Browse the profiles of your followers?	1	2	3	4	5
13.	Browse through followers of your followers?	1	2	3	4	5

14.	Look at profiles of other people whom you do not follow?	1	2	3	4	5
15.	Search for people/accounts to follow?	1	2	3	4	5
16.	Find someone new to follow?	1	2	3	4	5
17.	Follow accounts suggested by Instagram?	1	2	3	4	5

Active vs. Passive Usage

Below, we would like to find out how you typically use Instagram.

Although there are many factors that contribute to Instagram's popularity, studies suggest that there are two key reasons.

- First, Instagram allows users to **browse** their social world conveniently. By **browsing**, we mean **looking at others' profiles, pictures, and comments**.
- Second, Instagram allows users to have **direct communication** with others conveniently. By **direct communication**, we mean **sharing pictures and updates, or reacting and commenting on others' photos**.

In the past month,		Not at all	A little	Somewhat	Quite a bit	Very much
1.	To what extent would you say that you use Instagram mainly for browsing ?	1	2	3	4	5
2.	To what extent would you say that you use Instagram mainly for direct communication ?	1	2	3	4	5

Support Giving on Instagram

In the past month, how often did you...		Never	Rarely	Sometimes	Often	Always
1.	Compliment someone's Instagram post/s?	1	2	3	4	5
2.	"Like" posts or comments on your Instagram feed?	1	2	3	4	5
3.	Write nice things to someone on Instagram?	1	2	3	4	5

Support Received on Instagram

In the past month, how often did others...		Never	Rarely	Sometimes	Often	Always
1.	Compliment you on your Instagram posts?	1	2	3	4	5
2.	“Like” your posts or comments on Instagram?	1	2	3	4	5
3.	Say nice things to you on Instagram?	1	2	3	4	5

Social Comparison on Instagram

In the past month, how often did you...		Never	Rarely	Sometimes	Often	Always
1.	Look at photos of other Instagram users whose lives may be worse off than you?	1	2	3	4	5
2.	Compare yourself with other Instagram users who may be worse off than you?	1	2	3	4	5
3.	Look at photos of other Instagram users whose lives may be better off than you?	1	2	3	4	5
4.	Compare yourself with other Instagram users who may be better off than you?	1	2	3	4	5

Instagram Contingent Self-Worth

Please indicate the extent to which you agree with the following statements.		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1.	When I get a lot of likes and new followers on my Instagram, my self-esteem increases.	1	2	3	4	5
2.	I feel worthwhile when I have others like or comment on my Instagram posts.	1	2	3	4	5
3.	When my Instagram posts or comments go unnoticed, I feel badly about myself.	1	2	3	4	5
4.	My self-esteem depends on how popular and active my Instagram profile is.	1	2	3	4	5

Jane's Pursuit of "Indicator" items

In the past month,		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	There were things I did to pursue a higher # of likes on Instagram.	1	2	3	4	5
2.	There were things I did to pursue a higher # of followers on Instagram.	1	2	3	4	5
3.	Sometimes I got so focused on getting a higher # of likes on Instagram that I neglected other ways of connecting meaningfully with others.	1	2	3	4	5
4.	Sometimes I got so focused on getting a higher # of followers on Instagram that I neglected other ways of connecting meaningfully with others.	1	2	3	4	5

Reasons/Motives for using Instagram (Tobin & Chulpaiboon, 2016)

In the past month, I used Instagram...		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Because it's enjoyable.	1	2	3	4	5
2.	Because it's entertaining.	1	2	3	4	5
3.	Because it relaxes me.	1	2	3	4	5
4.	Because it allows me to unwind.	1	2	3	4	5
5.	Because it is a pleasant rest.	1	2	3	4	5
6.	To provide information.	1	2	3	4	5
7.	To present information about a special interest of mine.	1	2	3	4	5
8.	To share information that may be of use or interest to others.	1	2	3	4	5
9.	To provide personal information about myself.	1	2	3	4	5
10.	To tell others a little bit about myself.	1	2	3	4	5
11.	So I can forget about school, work, or other things.	1	2	3	4	5
12.	So I can get away from the rest of my family or others.	1	2	3	4	5

13.	So I can get away from what I'm doing.	1	2	3	4	5
14.	Because everybody else is doing it.	1	2	3	4	5
15.	Because it is the thing to do.	1	2	3	4	5
16.	Because it is cool.	1	2	3	4	5
17.	So I won't have to be alone.	1	2	3	4	5
18.	When there's no one else to talk or be with.	1	2	3	4	5
19.	Because it makes me feel less lonely.	1	2	3	4	5
20.	Because it is helpful for my professional future/academics.	1	2	3	4	5
21.	To post my work online.	1	2	3	4	5
22.	To help me network with other students/professional contacts.	1	2	3	4	5
23.	To keep in touch with friends and family.	1	2	3	4	5
24.	To communicate with distanced friends.	1	2	3	4	5
25.	To meet new people.	1	2	3	4	5
26.	Because I just like to spend time on Instagram.	1	2	3	4	5
27.	Because it is a habit, just something I do.	1	2	3	4	5
28.	When I have nothing better to do.	1	2	3	4	5
29.	To pass the time, particularly when I am bored.	1	2	3	4	5
30.	Because it gives me something to do to occupy my time.	1	2	3	4	5

In the past month, approximately how much time did you spend on these other social media platforms per day, on average?

Platform	≤ 10 min	11-30 min	31-60 min	1-2 hours	More than 2 hours
Facebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Twitter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Snapchat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
YouTube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pinterest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tumblr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tik-Tok	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix F
SMQ breakdown⁵

Affiliation	Preferred Impression	Affect	General Information
Is your profile set to public or private?	Do you have a "finsta" account as well as a "rinsta" account?	In general, how bothered are you - as far as not being aware of what others are doing and posting - when you are not checking Instagram?	Do you have at least one Instagram account?
Do you have a "finsta" account as well as a "rinsta" account?	How often do you edit the captions of your posts after you have posted?	Of the content that you post on Instagram, approximately how long do you edit and annotate photos/videos you share in posts or stories?	How many Instagram accounts do you have? How would you classify those accounts? Are these accounts private, public, or for business?
As of today, how many people are following you on Instagram?	As of today, how many visible (not archived) posts do you have on Instagram?	In the past month, how often did you: comment on someone's photos on Instagram?	About how old were you when you joined Instagram?
As of today, how many followers do you have on Instagram?	Regarding content that you post on Instagram, how frequently do you disable comments for individual posts?	In the past month, how often did you: "like" friends' photos or comments on your Instagram feed?	In the past month, about how much time do you think you spend on Instagram per day?
Of the people/accounts you follow on Instagram, how many do you know personally?	In the past month on Instagram, how often did you: post stories?	In the past month, how often did you: say nice things to someone on Instagram?	In general, how bothered are you—as far as not being aware of what others are doing and posting—when you're not checking Instagram?
Of the people/accounts who follow you on Instagram, how many do you know personally?	In the past month on Instagram, how often did you: share thoughts and feelings in your own post?	In the past month, how often did you: look at photos of other Instagram users whose lives may be worse off than you?	In the past month on Instagram, how often did you: view (but not like) a friend's post?
As of today, how many "close friends" have you designated for Instagram stories?	In the past month on Instagram, how often did you: share thoughts and feelings in comments you make on other's posts?	In the past month, how often did you: compare yourself with other Instagram users who may be worse off than you?	In the past month on Instagram, how often did you: view (and like) a friend's post?
In the past month on Instagram, how often did you: post stories?	In the past month on Instagram, how often did you: comment on a friend's post?	In the past month, how often did you: look at photos of other Instagram users whose lives may be better off than you?	In the past month on Instagram, how often did you: keep up with friends' lives?
In the past month on Instagram, how often did you: share thoughts and feelings in comments you make on other's posts?	In the past month: to what extent would you say that you use Instagram mainly for direct communication (ie. a Direct message)?	In the past month, how often did you: compare yourself with other Instagram users who may be better off than you?	In the past month on Instagram, how often did you: click on content shared by friends?
In the past month on Instagram, how often did you: share something you are interested in?	In the past month: there were things I did to pursue a higher # of likes on Instagram	When I get a lot of likes and new followers on my Instagram, my self-esteem increases	In the past month on Instagram, how often did you: browse the profiles of your friends?
In the past month on Instagram, how often did you: search for people to follow?	In the past month: sometimes I got so focused on getting a higher # of likes on Instagram that I neglected other ways of connecting meaningfully with others	I feel worthwhile when I have others like or comment on my Instagram posts	In the past month on Instagram, how often did you: browse through friends of your friends?
In the past month on Instagram, how often did you: find someone new to follow?	In the past month, I used Instagram: to share information that may be of use or interest to others	When my Instagram posts or comments go unnoticed, I feel badly about myself	In the past month on Instagram, how often did you: look at profiles of other people who you do not follow?
In the past month on Instagram, how often did you: follow accounts suggested by Instagram?	In the past month, I used Instagram: to provide personal information about myself	My self-esteem depends on how popular and active my Instagram profile is	In the past month: to what extent would you say that you use Instagram mainly for browsing?
In the past month: to what extent would you say that you use Instagram mainly for direct communication (ie. a Direct message)?	In the past month, I used Instagram: to tell others a little bit about myself	In the past month, I used Instagram: because it is enjoyable	In the past month, I used Instagram: because it is entertaining
In the past month, how often did others: compliment you on your Instagram posts/feed?		In the past month, I used Instagram: because it relaxes me	In the past month, I used Instagram: because it allows me to unwind
In the past month, how did others: "like" your photos or comments on Instagram?		In the past month, I used Instagram: so I can forget about school, work, or other things	In the past month, I used Instagram: because it is a pleasant rest
In the past month, how did others: leave positive/nice comments on your Instagram posts?		In the past month, I used Instagram: so I can get away from the rest of my family or others	In the past month, I used Instagram: to provide information
In the past month: there were things I did to pursue a hInstagrammer # of followers on Instagram		In the past month, I used Instagram: because it makes me feel less lonely	In the past month, I used Instagram: to get away from what I'm doing
In the past month: sometimes I got so focused on getting a hInstagrammer # of followers on Instagram that I neglected other ways of connecting meaningfully with others		In the past month, I used Instagram: when I have nothing better to do	In the past month, I used Instagram: because everybody else is doing it
In the past month, I used Instagram: to present information about a special interest of mine		In the past month, I used Instagram: because I have nothing better to do	In the past month, I used Instagram: because it is the thing to do
In the past month, I used Instagram: to share information that may be of use or interest to others		In the past month, I used Instagram: to pass the time, particularly when I'm bored	In the past month, I used Instagram: because it is cool
In the past month, I used Instagram: so I won't have to be alone			In the past month, I used Instagram: because it is helpful for my professional future/academics
In the past month, I used Instagram: when there was no one else to talk or be with			In the past month, I used Instagram: to post my work online
In the past month, I used Instagram: because it makes me feel less lonely			In the past month, I used Instagram: because I just like spend time on Instagram
In the past month, I used Instagram: to help me network with other students/professional contacts			In the past month, I used Instagram: because it gives me something to do to occupy my time
In the past month, I used Instagram: to keep in touch with friends and family			Additional social media questionnaire
In the past month, I used Instagram: to communicate with distanced friends			
In the past month, I used Instagram: to meet new people			

⁵ Not that not all questions are listed, only ones that may provide potential variables of interest.

Appendix G
Demographic Questionnaire

1. What is your age (in years and months)? _____
2. What is your gender? Male Female Other
3. What is your race or ethnicity? ___ White ___ African-American/Black ___ Hispanic/Latino
___ Asian ___ Native American ___ Other
4. Major / Intended Major:
5. Major Division: _____ SM&C _____ ART _____ L&L _____ Social Studies

Appendix H Ten-item Personality Inventory (TIPI)

Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

Disagree strongly	Disagree moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree strongly
1	2	3	4	5	6	7

I see myself as:

1. _____ Extraverted, enthusiastic.
2. _____ Critical, quarrelsome.
3. _____ Dependable, self-disciplined.
4. _____ Anxious, easily upset.
5. _____ Open to new experiences, complex.
6. _____ Reserved, quiet.
7. _____ Sympathetic, warm.
8. _____ Disorganized, careless.
9. _____ Calm, emotionally stable.
10. _____ Conventional, uncreative.

TIPI scale scoring ("R" denotes reverse-scored items):

Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness: 3, 8R; Emotional Stability: 4R, 9;

Openness to Experiences: 5, 10R.

Appendix I
Positive and Negative Affect Schedule (PANAS-SF)

Indicate the extent you have felt this way over the past week.		Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
PANAS 1	Interested	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 2	Distressed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 3	Excited	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 4	Upset	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 5	Strong	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 6	Guilty	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 7	Scared	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 8	Hostile	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 9	Enthusiastic	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 10	Proud	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 11	Irritable	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 12	Alert	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 13	Ashamed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 14	Inspired	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 15	Nervous	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 16	Determined	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 17	Attentive	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 18	Jittery	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 19	Active	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PANAS 20	Afraid	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Scoring:

Positive Affect Score: Add the scores on items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19. Scores can range from 10 – 50, with higher scores representing higher levels of positive affect. Mean Scores: 33.3 (SD±7.2)

Negative Affect Score: Add the scores on items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20. Scores can range from 10 – 50, with lower scores representing lower levels of negative affect. Mean Score: 17.4 (SD ± 6.2)

Your scores on the PANAS: Positive: _____ Negative: _____

Appendix J Perceived Stress Scale

Sheldon Cohen

The *Perceived Stress Scale* (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way.

Evidence for Validity: Higher PSS scores were associated with (for example):

- failure to quit smoking
- failure among diabetics to control blood sugar levels
- greater vulnerability to stressful life-event-elicited depressive symptoms
- more colds

Health status relationship to PSS: Cohen et al. (1988) show correlations with PSS and: Stress Measures, Self-Reported Health and Health Services Measures, Health Behavior Measures, Smoking Status, Help Seeking Behavior.

Temporal Nature: Because levels of appraised stress should be influenced by daily hassles, major events, and changes in coping resources, predictive validity of the PSS is expected to fall off rapidly after four to eight weeks.

Scoring: PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.

Norm Groups: L. Harris Poll gathered information on 2,387 respondents in the U.S.

Norm Table for the PSS 10 item inventory

Category	N	Mean	S.D.
Gender			
Male	926	12.1	5.9
Female	1406	13.7	6.6
Age			
18-29	645	14.2	6.2
30-44	750	13.0	6.2
45-54	285	12.6	6.1
55-64	282	11.9	6.9
65 & older	296	12.0	6.3
Race			
white	1924	12.8	6.2
Hispanic	98	14.0	6.9
black	176	14.7	7.2
other minority	50	14.1	5.0

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

- | | | | | | |
|--|---|---|---|---|---|
| 1. In the last month, how often have you been upset because of something that happened unexpectedly? | 0 | 1 | 2 | 3 | 4 |
| 2. In the last month, how often have you felt that you were unable to control the important things in your life? | 0 | 1 | 2 | 3 | 4 |
| 3. In the last month, how often have you felt nervous and "stressed"? | 0 | 1 | 2 | 3 | 4 |
| 4. In the last month, how often have you felt confident about your ability to handle your personal problems? | 0 | 1 | 2 | 3 | 4 |
| 5. In the last month, how often have you felt that things were going your way? | 0 | 1 | 2 | 3 | 4 |
| 6. In the last month, how often have you found that you could not cope with all the things that you had to do? | 0 | 1 | 2 | 3 | 4 |
| 7. In the last month, how often have you been able to control irritations in your life? | 0 | 1 | 2 | 3 | 4 |
| 8. In the last month, how often have you felt that you were on top of things? .. | 0 | 1 | 2 | 3 | 4 |
| 9. In the last month, how often have you been angered because of things that were outside of your control? | 0 | 1 | 2 | 3 | 4 |
| 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? | 0 | 1 | 2 | 3 | 4 |

Appendix K
State-Trait Anxiety Inventory Form Y-2 (STAI Y-2)

DIRECTONS: A number of statements which people have used to describe themselves are given below. Read each statement and then write the number in the blank at the end of the statement that indicates **how you generally feel**. There is no right or wrong answer. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

S. No.		Almost Never	Some - time	Often	Almost Always
21.	I feel pleasant	1	2	3	4
22.	I feel nervous and restless	1	2	3	4
23.	I feel satisfied with myself	1	2	3	4
24.	I wish I could be as happy as others seem to be	1	2	3	4
25.	I feel like a failure	1	2	3	4
26.	I feel rested	1	2	3	4
27.	I am calm, cool, and collected	1	2	3	4
28.	I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4
29.	I worry too much over something that really doesn't matter	1	2	3	4
30.	I am happy	1	2	3	4
31.	I have disturbing thoughts	1	2	3	4
32.	I lack self confidence	1	2	3	4
33.	I feel secure	1	2	3	4
34.	I make decision easily	1	2	3	4
35.	I feel inadequate	1	2	3	4
36.	I am content	1	2	3	4
37.	Some unimportant thoughts runs through my mind and bothers me	1	2	3	4
38.	I take disappointments so keenly that I can't put them out of my mind	1	2	3	4
39.	I am a steady person	1	2	3	4
40.	I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

Appendix L
Internal Control Index (ICI)

Please read each statement and decide what your normal/usual attitude, feeling, or behavior would be, using the following scale: 1=rarely; 2=occasionally; 3=sometimes; 4=frequently; 5=usually/always

1. When faced with a problem I try to forget it.
2. I need frequent encouragement from others to keep working at a difficult task.
3. I like jobs where I can make decisions and be responsible for my own work.
4. I change my opinion when someone I admire disagrees with me.
5. If I want something I work hard to get it.
6. I prefer to learn the facts about something from someone else rather than having to dig them out myself.
7. I will accept jobs that require me to supervise others.
8. I have a hard time saying "no" when someone tries to sell me something.
9. I like to have a say in any decisions made by any group I'm in.
10. I consider the different sides of an issue before making any decisions.
11. What other people think has a great influence on my behavior.
12. Whenever something good happens to me I feel it is because I earned it.
13. I enjoy being in a position of leadership.
14. I need someone else to praise my work before I am satisfied with what I've done.
15. I am sure enough of my opinions to try to influence others.
16. When something is going to affect me I learn as much about it as I can.
17. I decide to do things on the spur of the moment.
18. For me, knowing I've done something well is more important than being praised by someone else.
19. I let other peoples demands keep me from doing things I want to do.
20. I stick to my opinions when someone disagrees with me.
21. I do what I feel like doing, not what other people think I ought to do.
22. I get discouraged when doing something that takes a long time to achieve results.
23. When part of a group I prefer to let other people make all the decisions.
24. When I have a problem I follow the advice of friends or relatives.
25. I enjoy trying to do difficult tasks more than I enjoy doing easy tasks.
26. I prefer situations where I can depend on someone else's ability rather than my own.
27. Having someone important tell me I did a good job is more important to me than feeling I've done a good job.
28. When I'm involved in something I try to find out all I can about what is going on, even when someone else is in charge.

Appendix M
Environmental Momentary Affect Measure (EMA)

CurrentStressorCheck

Are you currently feeling stressed, or have you felt stressed within the last 20 minutes (and/or since the last text message you received)?

- Yes, currently
 Yes, recently
 No

Indicate what you're feeling stressed about.

Please list only one situation/thought/etc. in the box. If you're feeling stressed about multiple things, please list the stressor for which you're experiencing the greatest distress.

Stressor:

You indicated: $\{q://QID2/ChoiceTextEntryValue/1\}$

Is this correct? If so, please select "Next" below. If not, please select "Back" and change your response.

Into which category/life domain would you place $\{q://QID2/ChoiceTextEntryValue/1\}$?

- Interpersonal/social (e.g., family, friends, significant other/romantic partner)
 Academic/career related (e.g., classes you're taking, picking major or major requirements, securing a job or internship, etc.)
 Extracurricular activities/clubs/committees
 Athletics/sports related (including: varsity sports, intramural sports, club sports, etc.)
 Money/financial related
 Health related
 Other:

You've indicated that you haven't recently experienced stress (i.e., since the last text message you received). If that's correct, please press the "Next" button below. If not, please

press the "Back" button and change your response.

Emotion_DVs

Did you use any strategies to make yourself feel differently (e.g., less negative) about whatever was causing you distress? *Check as many that apply.*

- Told myself a story to make myself feel differently.
- Distracted myself by thinking about something completely unrelated.
- Dwelling on what I was feeling.
- Put the situation in perspective and reminded myself that things like this happen.
- Holding what I was feeling inside and trying not to show anyone what I was feeling.

In general, **how successful** would you say you were implementing the strategies you indicated above?



In general, **how easy** did you find it was implementing the strategies you indicated above?



If faced with this stressor **again in the future**, how likely is it that you would use the same strategy/strategies you indicated above?



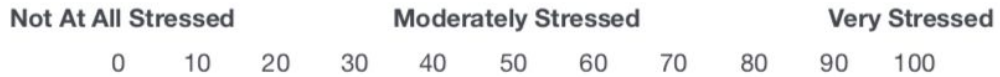
Generally, how happy do you feel right now?



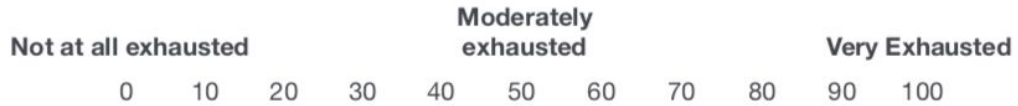
Generally, how do you feel about yourself right now?



Generally, how stressed are you right now?



Generally, how mentally exhausted are you right now?



Where are you right now?

- Home or Dorm
- Dining Hall, Cafeteria, or other on-campus eatery
- Friend's Home or Dorm
- Restaurant, Bar, or Cafe
- Workplace or Office
- Public Place, including on-campus
- Outdoors
- Other. If so, please provide a brief description:

Are you alone, or in the presence of others?

- Alone
- In the presence of others

Appendix N

Pre-registration (AsPredicted template) for submission to OSF

Title: Perceptions of control on social media: Individual differences in social anxiety and self-presentation behaviors on Instagram.

What's the main question being asked or hypothesis being tested in this study?

Hypothesis 1: individuals with higher levels of social anxiety are more likely to control their self-image on Instagram than individuals with lower levels of social anxiety.

Hypothesis 2: individuals with higher levels of social anxiety are more likely to engage in control behaviors (mapping onto the constructs of affiliation and preferred impression from Schlenker and Leary's (1982) Social Anxiety and Self-Presentation (SASP) model) on both a profile and post level, which would create positive affect and thus socially anxious individuals should be motivated to spend a greater amount of time on Instagram than individuals with lower levels of social anxiety. Conversely, individuals with lower levels of social anxiety are less likely to engage in control behaviors (affiliation and preferred impression) and there will be no correlation between affect and control behaviors.

Describe the key dependent variable(s) specifying how they will be measured.

The primary criterion variables will be various control behaviors participants report engaging in while using Instagram (e.g., editing captions, enabling/disabling comments, etc.), average time spent on Instagram per day, and participants' general affective experiences (see below for all measures).

Social media use (including Instagram use) and Control behaviors (affiliation and preferred impression) will be assessed by a revised by a newly developed Social Media Questionnaire (SMQ; see Appendix). The SMQ was distributed to participants to gather information about social media behavior. Questions on the SMQ were adapted from various scales related to social media in addition to questions created for the current study. The two main scales used for the SMQ include the Facebook Usage scale, created by Koroleva et. al (2011) and the Reasons/Motives for using Instagram scale, created by Tobin and Chulpaiboon (2016). Though the scale was originally used for Facebook usage, questions and measures are relevant to Instagram behavior and control constructs. Additional information from the SMQ includes general information including time spent on other social media platforms, including Facebook, Twitter, Snapchat, YouTube, Pinterest, Tumblr, and Tik-Tok.

The goal of the revised SMQ was to take social anxiety constructs provided by the SASP model and map them onto Instagram behaviors and constructs. The revised SMQ aimed to assess control through affiliation and preferred impression, and affect, in addition to general information. Questions aimed to target at least one of the aforementioned constructs; some questions overlapped in their categorization. It is through this questionnaire that affiliation and preferred impression will be used to operationalize control behaviors. Given the relationship between socially anxious individuals and the need for perceived control as a way to cultivate a preferred impression through selective affiliation, there are multiple Instagram constructs that can allow the socially anxious performer to develop a sense of control. The SMQ provides a way to observe how user-enabled control occurs on both a profile and post level.

The SMQ contained questions aimed at identifying affiliation. Examples of such questions included: “Is your profile set to public or private?”, “Do you have a ‘Finsta’ account as well as a ‘rinsta’ account?”, “As of today, how many followers do you have on IG?”, and “Of the people who follow you on IG, how many do you know personally?” In addition to questions, the SMQ posed statements that the participant would respond to on a scale based on how much they agreed with the statement. Examples of such prompts included: “In the past month, I used IG: because it makes me feel less lonely”, “In the past month, I used IG: to meet new people”, and “In the past month: there were things I did to pursue a higher # of followers on IG.”

The SMQ also contained questions aimed at identifying preferred impression. Examples of such questions included: “In the past month on IG, how often did you: post stories?”, “In the past month on IG, how often did you: share thoughts and feelings in comments you make on other's posts?”, “In the past month: to what extent would you say that you use IG mainly for direct communication (ie. a Direct message)?”, and “In the past month on IG, how often did you: share thoughts and feelings in your own post?” Statements were also included in the questionnaire, to which the participant would respond based on how much they agree with the statement. Examples of such statements included: “In the past month, I used IG: to share information that may be of use or interest to others”, “In the past month, I used IG: to provide personal information about myself”, “In the past month: sometimes I got so focused on getting a higher # of likes on IG that I neglected other ways of connecting meaningfully with others”, and “In the past month, I used IG: to tell others a little bit about myself.”

Time spent on Instagram: Measured by sections of the social media questionnaire. Additional measures of daily in-app Instagram will be collected through Instagram where an activity graph displays the recorded time on Instagram per day (for 7 days) and an average time spent on Instagram per day.

Trait Affect measures: Measured by the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), the Perceived Stress Scale (PSS; Cohen, 1994), and the State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

How many and which conditions will participants be assigned to?

No participants underwent any experimental manipulation of an independent variable. The proposed analyses use cross-sectional data and are therefore correlational in nature. Specifically, we will be testing for linear relationships between hypothesized, a priori predictor variables, namely: trait levels of social anxiety, as measured by the Social Anxiety Questionnaire for Adults (SAQ; Caballo, Salazar, Irurtia, Arias, & CISO-A Research Team, 2012), and the criterion variables described above.

Specify exactly which analyses you will conduct to examine the main question/hypothesis.

First, we will compute zero-order correlations between SAQ scores, including the SAQ subscale most directly implicated in negative social evaluation, factor 4 (criticism and embarrassment), and participants’ Instagram control behaviors, namely: editing captions, enabling/disabling comments, and time spent editing photos. We will also compute a composite IG control score consisting of the average of the scores for these three behaviors. For all correlations, we will also compute bootstrapped confidence intervals. Next, we will run adjusted multiple regression models with the IG control composite measure as the criterion variable, and SAQ scores (total

score and factor 4 subscale score) as the key predictor variable(s). We will also control for participants' gender, age, neuroticism (as measured by the Ten-Item Personality Inventory; Gosling, Rentfrow, & Swann, 2003), and Internal Locus of Control (Duttweiler, 1984).

Any secondary analyses?

N/A.

How many observations will be collected or what will determine sample size? No need to justify the decisions, but be precise about exactly how the numbers will be determined.

The study's target sample size was 50 participants, determined by an a priori power analysis assuming 80% power and that hypothesized a moderate effect size ($r = 0.4$) for zero-order correlations of interest. This was computed by executing the following command in R using the *pwr* package (Champely, 2018):

```
pwr.r.test(r=0.4,power=0.80,sig.level=0.05,alternative="two.sided")
```

Anything else you would like to pre-register?

There is nothing else we would like to pre-register.

Have any data been collected for this study already?

Yes.