Summer 8-1-2021

Development and Validation of a Novel Social Networking Site Use Measure

Alison Tuck

WASHINGTON UNIVERSITY IN ST. LOUIS

Department of Psychological & Brain Sciences

Development and Validation of a Novel Social Networking Site Use Measure

by

Alison B. Tuck

A thesis presented to
The Graduate School
of Washington University in
partial fulfillment of the
requirements for the degree
of Master of Arts

August 2021
St. Louis, Missouri

Table of Contents

List of Tables

Acknowledgments

I offer special thanks to Dr. Renee J. Thompson for her mentorship on this project. I also thank the members of my master's committee, Drs. Tammy English, Thomas L. Rodebaugh, and Michael J. Strube, for their ongoing guidance and support.

Alison B. Tuck

Washington University in St. Louis

August 2021

ABSTRACT OF THE MASTER'S THESIS

Development and Validation of a Novel Social Networking Site Use Measure

by

Alison B. Tuck

Master of Arts in Psychological & Brain Sciences

Washington University in St. Louis, 2021

Professor Renee J. Thompson, Chair

Use of social networking sites (SNS) has been primarily operationalized as frequency of use (e.g., minutes per day) or whether use is "passive" (e.g., scrolling through feed) versus "active" (e.g., posting). However, these constructs have shown largely mixed associations with various psychological constructs. We hypothesize that this may be because the factor structure underlying SNS use has yet to be fully identified. Indeed, to date, there is no SNS use measure that assesses engagement in a comprehensive list of SNS activities across a host of different SNS platforms. In the current investigation, we developed such an SNS use measure and had college students (N = 701) report how frequently they engaged in 40 SNS activities. We tested three possible factor structures: (1) a hypothesized five-factor structure, (2) passive versus active activities, and (3) positive, negative, and neutral activities. We follow-up these confirmatory tests with an exploratory factor analysis. While none of our confirmatory models produced acceptable fits, an exploratory factor analysis suggested four factors: Voicing (e.g., posting about fundraising), Content Seeking (e.g., catching up on news), Browsing (e.g., looking 'aimlessly' at others' stories), and Image Managing (e.g., editing social media content). Psychometric properties for these final factors are strong, and we found some evidence for convergent and

discriminant validity for each factor. Taken together, our findings suggest that contrary to the notion that SNS use can be grouped into strictly active and passive categories, a more nuanced, four-factor structure underlies SNS use in college students. It will be important for future research to examine the psychometric properties of the scale with more diverse samples.

Chapter 1

Introduction

Use of social networking sites (SNS) has grown considerably over the past decade. Approximately 72% of adults in the United States report using SNS. Further, among those who use SNS, 74% of Facebook users, 65% of Instagram users, and 61% of Snapchat users report that they use these sites daily (Pew Research Center, 2019). Globally, the number of people using SNS grew by over 8% in 2019 compared to the year prior, and numbers are projected to continue growing (Statista, 2021). Among college-aged adults specifically, a striking 94% report using SNS (Smith & Anderson, 2019).

Given the widespread use and growth of new users of SNS along with findings that rates of mental illness have increased over the past several years (Richter et al., 2019), researchers have been quick to begin examining the role of SNS in individuals' psychological wellbeing. There is a large literature examining how SNS use relates to various forms of psychological functioning including depression, anxiety, loneliness, happiness, and general wellbeing. However, much of this research has yielded inconsistent findings. For instance, although some investigations have found a positive association between number of friends on SNS and loneliness (Skues et al., 2012), others have found a negative association (LaRose et al., 2011). Several review articles have also highlighted the largely mixed findings in the literature regarding associations between SNS use and constructs such as self-esteem (Saiphoo et al., 2020), depression and anxiety (Seabrook et al., 2016), and general psychological wellbeing (Erfani & Abedin, 2018).

A possible explanation for these mixed findings is that SNS use has been measured in many different and inconsistent ways. To date, much of the extant literature assesses only time per day spent on SNS. This variable has typically been measured by retrospective participant reports or through tracking cellphone usage with various software. However, time per day spent on SNS does not appear to be a reliable predictor of psychological outcomes. For example, some investigations have found positive associations between time per day spent on SNS and symptoms of depression, whereas others have found negative or null associations (see Huang, 2017; Seabrook et al., 2016 for reviews). The same pattern of mixed findings have been revealed among investigations examining the associations between SNS use and general psychological wellbeing (see Verduyn et al., 2017 for a review). Indeed, Coyne et al. (2020) underscored a need for researchers to move beyond a focus on time per day spent on SNS after their eight-year longitudinal study found no associations between SNS screen time and symptoms of depression or anxiety.

Another common method to examine SNS use is to assess passive versus active use. Passive SNS use is defined as a non-directed consumption of SNS content (sometimes referred to as "lurking"; Escobar-Viera et al., 2018). Passive SNS use includes activities, such as scrolling through newsfeed without engaging with content (Escobar-Viera et al., 2018). Conversely, active SNS use is better understood as a more directed engagement in social connections on SNS (sometimes referred to as "directed communication"; Burke et al., 2010). Activities characteristic of active use include making SNS posts and commenting on others' content (Burke et al., 2010). Although the literature assessing associations between psychological wellbeing and passive and active SNS use has yielded more consistent results compared to the literature assessing only time

per day, there are nevertheless many inconsistent findings. Much of the literature examining active versus passive use has found that passive use is associated with worse psychological wellbeing, whereas active use is associated with greater psychological wellbeing (Escobar-Viera et al., 2018; Seabrook et al., 2016; Thorisdottir et al., 2019; Wang et al., 2018). However, several other findings have contradicted this notion. For example, active SNS use has been found to be *negatively* associated with wellbeing (Frison & Eggermont, 2016; Shensa et al., 2018), and these constructs have resulted in null associations as well (Hanna et al., 2017; Seabrook et al., 2016; Tartaglia & Bergagna, 2021).

Measuring SNS use in terms of passive and active use has started to clarify how SNS use may be associated with psychological wellbeing. Nevertheless, there are notable limitations in measuring SNS use in this way. A first consideration is that measures of passive versus active SNS use do not assess individuals' evaluations of the activities in which they engage on SNS. For this reason, it can be very challenging to classify an SNS activity as strictly active or passive. For instance, the current literature would likely suggest that watching an entertaining video on SNS would be classified as a "passive" activity. Video watching does not have a strictly social or directed component. However, a compelling argument could be made that watching an entertaining video on SNS is "active". An individual could reasonably actively seek out a mood boosting stimulus and feel more socially connected knowing that the video they are watching has been viewed by others in their social network. Without knowing the internal experiences and evaluations of the individual engaging in these activities, it seems problematic to conclude that SNS use can be classified into strictly "active" or "passive" categories.

Another limitation to measuring SNS use in terms of passive and active use is that researchers use different measures to assess these constructs. Namely, many researchers create their own, non-validated scales to assess engagement in passive (non-social) activities versus active (social) activities. This leaves it up to each research teams' best judgement in deciding which activities encompass these constructs. Researchers likely take this approach because to date, there is only one empirically validated measure of passive and active SNS use: The Passive and Active Facebook Use Measure (PAUM; Gerson et al., 2017). The PAUM is a 13-item scale that differentiates Facebook use into three categories: active-social (e.g., "posting status updates"), active non-social (e.g., "tagging videos"), and passive (e.g., "viewing photos"). Despite its strong psychometric properties including both acceptable internal consistency (α = .71-.77) and test-retest reliability (active social, r = 0.76; active non-social, r = 0.66; passive, r = 0.65), like all scales, the PAUM is not without limitations. Perhaps most importantly, this scale was only validated for use on Facebook. As a result, it is unclear how or if the PAUM would generalize for use on other SNS platforms (e.g., Instagram, Snapchat). A related concern is that the PAUM assesses SNS activities that pertain to Facebook but not to other platforms (e.g., "posting status updates"), and vice vera; it does not include activities in which individuals engage on platforms that are not Facebook. For these reasons, Trifiro and Gerson (2019) have urged researchers in the field to develop a new, universal measure for assessing passive and active social media use— one that can be used across a host of SNS platforms and is less susceptible to the ever-evolving nature of these sites.

A final crucial consideration regarding measuring SNS use in terms of passive and active use is that these constructs may simply not be an adequate representation of the range of ways in

which individuals use SNS. Although active social, active non-social, and passive SNS use constructs have yielded interesting research findings, SNS platforms have rapidly evolved over the past decade, and individuals may now use these sites in a host of different ways. For this reason, it is important that the field take a step back and examine SNS use from a macro perspective and start to consider whether there may be additional and better ways of categorizing the ways in which individuals use SNS. Indeed, Saiphoo et al. (2020) recommended that a more nuanced measure of SNS use be developed.

In the current investigation, we aimed to develop and validate a new, global SNS use questionnaire by focusing on the wide range of activities in which individuals engage on these platforms. Namely, we test whether individuals' use of SNS can be categorized beyond active social, active non-social, and passive use. We argue that it is important to consider SNS users' objective and subjective evaluations of SNS use to uncover the more nuanced ways in which these platforms are used. Although scales assessing specific activities related to evaluations of SNS use are lacking, literature shows that individuals report using SNS for a variety of reasons. Commonly addressed reasons for use include for the purposes of (a) content creation, (b) entertainment seeking, (c) information seeking, (d) self-fixation, and (e) prosocial versus antisocial behavior. Taken together, we hypothesize that our SNS use measure, which includes evaluations of SNS use, will have a five-factor structure that parallels these reasons for use.

Producing SNS content, what we will refer to as content creation, includes activities such as making status updates, commenting on posts, posting pictures to SNS, and generally being an active participant on SNS (Hoffmann et al., 2015). Those who are more extraverted are likely to produce SNS content (Bowden-Green et al., 2020; Hall & Pennington, 2013; Pagani et al., 2013).

Content creation on SNS has also been shown to be correlated with facets of the behavioral approach system (BAS; Carver & White, 1994), including reward interest and reward reactivity (Gerson et al., 2017). Since the BAS is implicated in reward responsiveness and motivational drive (Carver & White, 1994), as well as social rewards, such as forming relationships and gaining praise (Corr, 2016), it is likely that content creation on SNS is negatively associated with behavioral inhibition.

Entertainment seeking is defined as using SNS for entertainment and enjoyment purposes (Whiting & Williams, 2013). The fun seeking aspect of the BAS is likely implicated in entertainment seeking, as entertainment seeking has been shown to be related to escapism—engagement in an activity that is pleasurable, fun, and enjoyable (Korgaonkar & Wolin, 1999; Whiting & Williams, 2013). In addition, self-reported drive for entertainment is associated with higher levels of SNS use (Wang, 2017), further suggesting that individuals use SNS for fun seeking purposes.

Information seeking, defined as using SNS for the purposes of self-education (Whiting & Williams, 2013), has also been shown to be implicated in SNS use (Aillerie & McNicol, 2018; Kim et al., 2014). At the trait level, using SNS for information seeking purposes is associated with greater need for cognition (Arquero et al., 2017; Hughes et al., 2012), which is the tendency for individuals to engage in and enjoy thinking (Cacioppo & Petty, 1982). A trait related to need for cognition which has also been implicated in media use is intolerance of uncertainty, or difficulty in enduring ambiguous situations in which insufficient information is known (Carleton, 2016). Indeed, research has postulated that need for cognition motivates individuals to seek clarity (Iannello et al., 2017). Of note, intolerance of uncertainty has been linked to “non-social”

smartphone use (e.g., using one's smartphone in order to stay up to date on the latest news; Rozgonjuk et al., 2019).

Perhaps one of the most largely studied areas in psychological SNS research is the tendency for individuals to focus on themselves when engaged on SNS, what we are calling self-fixation. Self-fixation refers to activities such as engaging in social comparison, reminiscing about one's own past experiences, and viewing one's own SNS content, following count, and "reactions" (e.g., likes) to content. Several traits related to self-fixation have been examined in the SNS literature. Specifically, a plethora of investigations have linked grandiose narcissism— a trait reflected by grandiosity, aggression, and dominance (Miller et al., 2011)— to increased time spent and engagement on SNS (see Barry & McDougall, 2018; Casale & Banchi, 2020; McCain & Campbell, 2018 for reviews). A related construct studied to a smaller degree in the SNS literature is fear of negative evaluation. Like grandiose narcissism, fear of negative evaluation has been shown to be positively associated with time spent on SNS (Kelly et al., 2020; Wolniewicz et al., 2018). A final trait related self-fixation examined in the literature is self-esteem. Specifically, increased SNS use— defined as frequency of use, intensity of emotional investment in SNS, and problematic SNS use— has been found to be associated with lower self-esteem (see Saiphoo et al., 2020 for a review).

Prosocial and antisocial behavior have also been implicated in SNS use. Based on prior research examining online prosocial and antisocial behaviors in adolescents (Erreygers et al., 2017), prosocial SNS behavior likely includes activities such as liking others' posts, commenting supportively on others' content, or using SNS to donate money to a cause. In contrast, antisocial SNS behavior includes activities such as disliking others' posts or commenting unsupportively

on others' content. Prior research has demonstrated that prosocial and antisocial media use parallel offline prosocial and antisocial behavior such that those who engage in more prosocial (versus antisocial) behavior online are more likely to engage in helping behaviors offline, and those who engage in more antisocial behavior (versus prosocial) are more likely to engage in harming behaviors offline (Prot et al., 2014). Taken together, it is likely that individuals use social media as a tool to engage in prosocial and antisocial behaviors.

Based on the literature reviewed above, regarding concurrent and discriminant validity, we make the following predictions: Content seeking with be positively associated with extraversion and negatively associated with behavioral inhibition. Entertainment seeking will be positively associated with fun seeking and need for entertainment. Information seeking will be positively associated with need for cognition and intolerance of uncertainty. Self-fixation will be positively associated with grandiose narcissism, fear of negative evaluation, and low self-esteem. And prosocial behavior on SNS will be positively associated with offline prosocial behavior and negatively associated with offline antisocial behavior.

Of note, we think that these trait measures are important to consider regardless of whether our five-factor structure is supported since these traits have been implicated in SNS use. In addition, although we only make specific hypotheses regarding the personality trait of extraversion, we also assess the remaining four of the Big Five personality traits (open-mindedness, conscientiousness, agreeableness, and negative emotionality) because (a) personality dimensions are often measured together (e.g., Gerson et al., 2017; Hughes et al., 2012; Wang et al., 2012) and (b) we aim to demonstrate that facets of SNS use are not simply capturing any of the Big Five personality traits.

We recruited a large sample of undergraduate students to complete the SNS use measure. College students represent the largest adult group to use SNS, although they also represent a convenient sample. To test our central hypotheses, we conduct three confirmatory factor analyses. The first consists of our hypothesized five-factor structure: Content creation, entertainment seeking, information seeking, self-fixation, and prosocial behavior (Model 1). We also consider the possibility that the factor structure may be consistent with that proposed by Gerson et al. (2017): Active social, active non-social, and passive use (Model 2). We also tested a model with three groups of activities based on valence as determined by face-validity: Positive, negative, and neutral activities (Model 3). Finally, we investigated how the final factors were associated with various trait measures of beliefs, behaviors, and personality to examine their concurrent and discriminant validity.

Chapter 2

Methods

2.1 Phase 1: Initial Scale Development

We first developed an initial list of SNS activities by creating experimenter-generated items and through conducting informal focus groups with undergraduate students. The goal of this initial scale development was to create an all-encompassing list of activities that individuals report doing on SNS that were both objective, observable activities (i.e., "read, watched, or caught up on news"), relatively subjective activities (e.g., "actively sought out content that I morally or ethically disagreed with"), and emotional activities (e.g., "Read or watched news with content that I found negative or upsetting"). This initial endeavor yielded a list of 47 discrete SNS activities (see Table 1).

Table 1

Original List of SNS Activities Developed and Tested During Phase 1 and Modified List of SNS Activities Used in Phase 2

#	Item Wording in Phase 1	Modification Made	Item Wording in Phase 2
1	Shared a post(s) about negative events or emotions	Modified Language	Reposted a post(s) with negative content or experiences
2	Shared a post(s) about neutral (neither positive nor negative) events or emotions	Consolidated Item with 1 & 3	
3	Shared a post(s) about positive events or emotions	Modified Language	Reposted a post(s) with positive content or experiences
4		Added Item	Reposted a post(s) advertising events or meetups
5		Added Item	Reposted a post(s) about fundraising or benefits
6	Made a post(s) about negative events or emotions	Modified Language	Made a text post(s) with negative content or experiences
7	Made a post(s) about neutral (neither positive nor negative) events or emotions	Consolidated Item with 6 & 8	
8	Made a post(s) about positive events or emotions	Modified Language	Made a text post(s) with positive content or experiences

9		Added Item	Made a text post(s) advertising events or meetups
10		Added Item	Made a text post(s) about fundraising or benefits
11	Posted or sent a picture(s) about negative events or emotions	Modified Language	Posted a picture(s) with negative content or experiences
12	Posted or sent a picture(s) about neutral (neither positive nor negative) events or emotions	Consolidated Item with 11 & 13	
13	Posted or sent a picture(s) about positive events or emotions	Modified Language	Posted a picture(s) with positive content or experiences
14		Added Item	Posted a picture(s) advertising events or meetups
15		Added Item	Posted a picture(s) about fundraising or benefits
16	Watched videos that I found entertaining or amusing	Modified Language	Watched videos that were ***not*** memes, news content, or how-tos, recipes, etc.
17	Looked at memes	Modified Language	Looked at or watched memes
18	Actively sought out content that I found humorous or entertaining other than videos or memes	Modified Language	Actively sought out entertaining content that other than videos or memes

19	Played with photo filtering/photo editing	Retained	Played with photo filtering/photo editing
20	Played a game	Removed Item	
21	Scrolled “aimlessly” through newsfeed(s)	Modified Language	Scrolled “aimlessly” through feed(s)
22	Looked “aimlessly” at others’ stories	Retained	Looked “aimlessly” at others’ stories
23	Navigated “aimlessly” to groups’ pages	Modified Language	Navigated to interest groups’ feeds (e.g., searching for hashtags, visiting a subreddit)
24	Watched videos such as how-tos, recipes, inspirational/motivational videos, etc.	Modified Language	Looked at or watched videos such as how-tos, recipes, DIY projects, etc.
25	"Hate stalked" (sought out another person's profile or posts who I dislike or who makes me feel negative or upset)	Modified Language	Hate "stalked" (sought out the profile of someone I dislike)
26	Viewed events in my area	Retained	Viewed events in my area
27	“Aimlessly” read my notifications	Retained	“Aimlessly” read my notifications
28	Read or watched news with content that I found negative or upsetting	Consolidated Items 28-30	Read, watched, or caught up on news
29	Read or watched news with content	Consolidated	

	that I found neutral (neither positive nor negative)	Items 28-30	
30	Read or watched news with content that I found positive or happy	Consolidated Items 28-30	
31	Actively sought out content that I morally or ethically disagreed with	Retained	Actively sought out content that I morally or ethically disagreed with
32	Actively sought out content that I morally or ethically agreed with	Retained	Actively sought out content that I morally or ethically agreed with
33	Navigated to others' profiles and learned information that I found upsetting or negative	Consolidated Items 33-35	Navigated to others' profiles in my social network
34	Navigated to others' profiles and learned information that I found neutral (neither good nor bad)	Consolidated Items 33-35	
35	Navigated to other's profiles and learned information I found happy or positive	Consolidated Items 33-35	
36		Added Item	Navigated to others' pages who I do not know (influencers or other famous people)

37	Donated money to a cause	Retained	Donated money to a cause
38	Disliked or “reacted” negatively or unsupportively on other’s post(s)	Modified Language	Disliked/"reacted" unsupportively to other's post(s)
39	Liked other’s post(s)	Modified Language	Liked/“reacted” supportively to other’s post(s)
40	Commented negatively or unsupportively on other’s post(s)	Modified Language	Commented unsupportively on other's posts(s)
41	Commented positively or supportively on other’s post(s)	Modified Language	Commented supportively on other's posts(s)
42		Added Item	Signed a petition
43	Edited and/or deleted my own social media content that I feel or had felt bad about	Consolidated Items 43 & 44	Edited and/or deleted my own social media content
44	Edited my own social media content that I already felt good about in order to feel better	Consolidated Items 43 & 44	
45	Viewed my own social media content that I already felt bad about in order to feel worse	Consolidated Items 45-48	Viewed my own social media content and/or read comments to my own content

46	Viewed my own social media content that I already felt good about in order to feel better	Consolidated Items 45-48	
47	Read comments to your own post(s) that are negative or unsupportive	Consolidated Items 45-48	
48	Read comments to your own post(s) that are positive or supportive	Consolidated Items 45-48	
49	Reminisced about the past in a way that made me feel bad	Consolidated Items 49 & 50	Reminisced about the past
50	Reminisced about the past in a way that made me feel good	Consolidated Items 49 & 50	
51	Engaged in social comparison in a way that made me feel bad	Consolidated Items 51 & 52	Compared my life or experiences to others'
52	Engaged in social comparison in a way that made me feel good	Consolidated Items 51 & 52	
53	Engaged in body comparison in a way that made me feel bad	Consolidated Items 53 & 54	Compared my body or appearance to others'

54	Engaged in body comparison in a way that made me feel good	Consolidated Items 53 & 54	
55		Added Item	Looked at how many people liked, commented on, shared my content, or followed/friended me

2.1.1 Participants

We administered this measure in an online format to 176 undergraduate students (95 women or 54%) who were recruited from undergraduate psychology courses at a private university in the Midwestern United States. Participant ages ranged from 18 to 23 years (M = 20.00, SD = 1.26). About 10% identified as Hispanic or Latinx. Regarding race, our participants identified as follows: 45% White, 27% Asian, 20% Black, and 9% multi-racial.

Students learned about the study via a university portal that lists active studies. The first webpage of the study presented interested individuals with an informed consent. Those who consented were directed to complete a demographics questionnaire followed by the rest of the study measures. Participants received course research credit for participating in the study, and all procedures were reviewed and approved by the Human Research Protection Office at Washington University in St. Louis. This investigation was part of a larger study examining associations between SNS use and emotion. Relevant measures are described below.

2.1.2 Procedures

First, after providing informed consent, participants were instructed to go on their own social media for three minutes on any device of their choosing (i.e., their phones, laptops, iPads, etc.). They were told to use Facebook, Instagram, Twitter, Snapchat, Reddit, Tumblr, and/or LinkedIn (they could use more than one site if desired). These SNS platforms were selected based on two selection criteria: (a) SNS on which the people in one's online network are people whom one is likely to know "in real life" and/or (b) there is a significant focus on *both*

consuming and commenting on content. We excluded sites on which most individuals in one's online network are unlikely to know one another in real life and on which there is not a significant focus on commenting on content (e.g., TikTok). In addition, sites that are strictly text/communication based (e.g., Facebook Messenger) were also excluded since direct texting communication is not unique to SNS and is outside the scope of the current study. Participants were prompted when to begin, and a chime rang at the end of three minutes to direct them back to the survey. Participants were then presented with a textbox in which they were asked to write everything that they could remember doing on social media over the course of the previous three minutes in their own words. One participant was excluded for failing to complete a text-box entry.

The author of this thesis and a trained undergraduate research assistant independently read and coded each of the participants' open ended self-reported activities to assess whether (a) all of the SNS activities in which individuals reported engaging could be captured by the developed list and (b) wording of activities on the developed list adequately reflected the wording that individuals use to describe engagement in these activities. Responses were coded as one of the 47 SNS activities from the developed measure. Inter-rater agreement was calculated by dividing the number of codes that the raters initially agreed upon by the total number of codes in the data. Proportion of inter-rater agreement was substantial at .89. Based on results from this coding process, we made three general changes to the initial list of 47 SNS activities. First, we decided to remove activities that included participants' emotional responses. This was because (a) the vast majority of pilot participants simply endorsed the activity with the neutral valence, suggesting that they either did not experience an emotional response to activities, or they were

unaware of their emotions, and (b) we felt that many activities on SNS likely produce mixed emotional responses, and therefore ascribing a specifically valanced emotion can be challenging. We therefore consolidated these activities. For example, the two parallel activities "viewed my own social media content that I already felt good about in order to feel better" and "viewed my own social media content I already felt bad about in order to feel worse" along with the two parallel activities "read comments to my own post(s) that are positive or supportive" and "read comments to my own post(s) that are negative or unsupportive" were all consolidated to form the activity, "viewed my own social media content and/or read comments to my own content". Second, we modified language of 16 items to more closely match how individuals described engagement in activities. For example, "shared a post(s) about negative events and emotions" became "reposted a post(s) with negative content or experiences". Finally, we removed one item that was never endorsed ("played a game"), and we added 8 new activities we realized we had previously missed (e.g., "signed a petition"). The final, updated measure included a total of 40 SNS activities. See Table 1 for all changes made to the scale after Phase 1 of the study.

2.2 Phase 2: Scale Validation

2.2.1 Participants

A total of 701 participants (64.9% women, 34.8% male, .29% nonbinary) were recruited from undergraduate psychology courses at a private university in the Midwestern United States. Participant ages ranged from 18 to 23 years (M = 19.24, SD = 1.15). Regarding race, our participants identified as follows: 54.9% White, 27.4% Asian, 10.4% African American or Black, 6.67% mixed race, 0.58% Native American or Alaska Native.

Like Phase 1, students learned about the study via a university portal that lists active studies. The first webpage of the study presented interested individuals with an informed consent, and those who consented were directed to complete the rest of the study measures. Participants received course research credit for participating in the study, and all procedures were reviewed and approved by the Human Research Protection Office at Washington University in St. Louis.

2.2.2 Procedures

The entire study was administered online. After reading and agreeing to the informed consent and completing a demographics questionnaire, participants were presented with our SNS use scale. Participants additionally completed a series of eleven questionnaires to assess various traits of interest. The order of these trait measures was randomized across participants.

2.2.3 Measures

SNS Use. Participants were first presented with our list of 40 SNS activities. The order of these activities was randomized across all participants. For each activity, participants were asked to rate how frequently they had engaged in the activity on platforms including Facebook, Instagram, Twitter, Snapchat, Reddit, Tumblr, and LinkedIn over the previous seven days on a nine-point Likert scale. Again, participants were prompted not to report on activities related to direct messaging such as on Facebook Messenger or Instagram direct messages. Scale anchors included “never”, “1-2 times per week”, “3-4 times per week”, “5-6 times per week”, “once daily”, “2-5 times daily”, “6-9 times daily”, “10-13 times daily”, and “hourly or more”. Scale points were assigned a numerical value from 1 to 9.

Personality. We measured extraversion, open-mindedness, conscientiousness, agreeableness, and negative emotionality by administering the Big Five Inventory 2 (BFI-2; Soto & John, 2017). This scale consists of sixty characteristics for which participants rate how much the characteristic applies to them from 1 (*disagree strongly*) to 5 (*agree strongly*). Sample characteristics include "is talkative" (extraversion), "is curious about many different things" (open-mindedness), "is dependable, steady" (conscientiousness), "is compassionate, has a soft heart" (agreeableness), and "can be tense" (negative emotionality). Subscale items are averaged to compute a total score for each of the five personality traits. This scale has been validated on a sample of undergraduate college students as well as community and internet samples (α for student sample = .88). Reliability in the current student sample ranged from good to excellent (extraversion α = .86; open-mindedness α = .84; conscientiousness α = .86; agreeableness α = .82; negative emotionality α = .91).

Behavioral Inhibition. We measured behavioral inhibition using the behavioral inhibition system (BIS) subscale of the BIS/BAS (Carver & White, 1994). This scale consists of seven items scored on a scale from 1 (*very true for me*) to 4 (*very false for me*) which are averaged to compute a total score. Sample items include "criticism or scolding hurts me quite a bit" and "I worry about making mistakes". The BIS subscale has been validated on a sample of undergraduate college students (α = .74). Reliability of items in the subscale was good (α = .82).

Need for Entertainment. Need for Entertainment was measured with the Need for Entertainment Scale (Brock & Livingston, 2004). This scale contains nineteen items scored on a scale from 1 (*extremely unlike me*) to 5 (*extremely like me*). Item scores are averaged to compute total scores. Sample items include "entertainment is the most enjoyable part of life" and "if I

don't have enough fun in the evening, I find it hard to function properly the next day". It has been validated on two combined samples of undergraduate college students (α = .81), and reliability in the current student sample was acceptable (α = .73).

Fun Seeking. Participants' propensity for fun seeking was assessed using the Fun Seeking subscale of the BIS/BAS (Carver & White, 1994). This subscale is composed of four items scored on a scale from 1 (*very true for me*) to 4 (*very false for me*) which are averaged to compute a total score. Sample items include "I am always willing to try something new if I think it will be fun" and "I crave excitement and new sensations". Like the Behavioral Inhibition Scale, the Fun Seeking subscale of the BIS/BAS has been validated on a sample of undergraduate college students (α = .66). Reliability in the current student sample was questionable (α = .64), though like the college sample on which it was validated.

Need for Cognition. Need for cognition was assessed using the Need for Cognition Scale (Cacioppo & Petty, 1982). This scale contains eighteen items which participants rate from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). Items are summed to compute a total score. Sample items include "I prefer complex to simple problems" and "the notion of thinking abstractly is appealing to me". The Need for Cognition Scale has been validated on a sample of undergraduate college students (α = .80-.90), and reliability in the current student sample was good (α = .80).

Intolerance of Uncertainty. We administered the 12-item Intolerance of Uncertainty Scale (IUS-12; Carleton et al., 2007) in order to measure this construct. Items are scored from 1 (*not at all characteristic of me*) to 5 (*entirely characteristic of me*) and are summed to compute a

total score. Sample items include “unforeseen events upset me greatly” and “when I am uncertain I can’t function very well”. The IUS-12 has been validated on two combined samples of undergraduate college students (α = .91). Reliability in the current student sample was excellent (α = .92).

Grandiose Narcissism. We assess grandiose narcissism using the Narcissist Personality Inventory-16 (NPI-16; Ames et al., 2006). This scale contains sixteen pairs of statements for which individuals endorse which statement is closest to describing their feelings and beliefs about themselves. A sample pair of statements is “I try not to be a show off” versus “I am apt to show off if I get the chance”. Proportion of responses consistent with narcissism are computed to derive total scores. The NPI-16 has been validated on two samples of undergraduate college students (α = .78-.81). Reliability in the current student sample was acceptable (α = .70).

Fear of Negative Evaluation. We measure fear of negative evaluation with the Brief Fear of Negative Evaluation Scale (Leary, 1983). This scale consists of twelve items scored from 1 (*not at all characteristic of me*) to 5 (*extremely characteristic of me*) which are summed to compute a total score. Sample items include “I am frequently afraid of other people noticing my shortcomings” and “I am usually worried about what kind of impression I make”. The Brief Fear of Negative Evaluation Scale has been validated on a sample of undergraduate college students (α = .71-.94; Rodebaugh et al., 2004). Reliability in the current student sample was excellent (α = .92).

Self-Esteem. We measure self-esteem using the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979). This scale contains ten items scored from 1 (*strongly agree*) to 4 (*strongly*

disagree) which are summed to compute a total. Sample items include "I feel that I have a number of good qualities" and "I feel I do not have much to be proud of" (reverse scored). Cronbach's alpha for the RSE has ranged from .77 to .88 (Rosenberg, 1979). Reliability in the current student sample was excellent (α = .90).

Prosocial Behavior. We measure trait-level prosocial behavior using the Prosocialness Scale for Adults (Caprara et al., 2005). This scale contains sixteen items scored from 1 (*never/almost never true*) to 5 (*almost always/always true*). Items are averaged to compute a total score. Sample items include "I try to console those who are sad" and "I easily lend money or other things". The Prosocialness Scale for Adults has demonstrated excellent internal reliability (α = .91). Reliability in the current student sample was also excellent (α = .92).

Antisocial Behavior. We measure trait level antisocial behavior with the Social Aggression subscale of the Antisocial Behavior Questionnaire (Burt & Donnellan, 2009). This subscale contains eleven behaviors which participants are asked to score from 1 (*never*) to 5 (*nearly all the time*) in relation to the past year. Scores are summed to compute a total score. Sample items include "tried to hurt someone's feelings" and "made negative comments about other's appearance". The Social Aggression subscale has been validated on a college student sample (α = .86). Reliability in the current student sample was good (α = .86).

2.2.4 Analytic plan

We begin by conducting confirmatory factor analyses for each of the three models being tested. Model 1 was our hypothesized five-factor model (content creation, entertainment seeking, information seeking, self-fixation, and prosocial behavior; See Table 2). Model 2 was a three-

factor model composed of active social, active non-social, and passive SNS use (see Table 3). Model 3 was a three-factor model based on the valence of SNS activities (i.e., positive, negative, and neutral SNS activities; See Table 4). See Table 5 for a consolidated table of activity loadings across all three models.

Table 2

Hypothesized Factor Loading for the Content Creation, Entertainment Seeking, Information Seeking, Prosocial Behavior, and Self-Fixation Model of SNS Use

Hypothesized Factor	Activity
Content Creation	Reposted a post(s) with negative content or experiences
	Reposted a post(s) with positive content or experiences
	Reposted a post(s) advertising events or meetups
	Reposted a post(s) about fundraising or benefits
	Made a text post(s) with negative content or experiences
	Made a text post(s) with positive content or experiences
	Made a text post(s) advertising events or meetups
	Made a text post(s) about fundraising or benefits
	Posted a picture(s) with negative content or experiences
	Posted a picture(s) with positive content or experiences
	Posted a picture(s) advertising events or meetups
	Posted a picture(s) about fundraising or benefits
Entertainment Seeking	Watched videos that were ***not*** memes, news content, or how-tos, recipes, etc.
	Looked at or watched memes

	Actively sought out entertaining content that other than videos or memes
	Played with photo filtering/photo editing
	Scrolled “aimlessly” through feed(s)
	Looked “aimlessly” at others’ stories
	Navigated to interest groups’ feeds (e.g., searching for hashtags, visiting a subreddit)
Information Seeking	Looked at or watched videos such as how-tos, recipes, DIY projects, etc.
	Hate "stalked" (sought out the profile of someone I dislike)
	Viewed events in my area
	“Aimlessly” read my notifications
	Read, watched, or caught up on news
	Actively sought out content that I morally or ethically disagreed with
	Actively sought out content that I morally or ethically agreed with
	Navigated to others' profiles in my social network
	Navigated to others' pages who I do not know (influencers or other famous people)
Prosocial Behavior	Liked/“reacted” supportively to other’s post(s)
	Disliked/"reacted" unsupportively to other's post(s) (R)
	Commented supportively on other's posts(s)
	Commented unsupportively on other's posts(s) (R)
	Signed a petition

	Donated money to a cause
Self-Fixation	Edited and/or deleted my own social media content
	Viewed my own social media content and/or read comments to my own content
	Reminisced about the past
	Compared my life or experiences to others'
	Compared my body or appearance to others'
	Looked at how many people liked, commented on, shared my content, or followed/friended me

Table 3

Hypothesized Factor Loadings for the Active Social, Active Non-Social, and Passive SNS Use Model

Hypothesized Factor	Activity
Active Social	Reposted a post(s) with negative content or experiences
	Reposted a post(s) with positive content or experiences
	Reposted a post(s) advertising events or meetups
	Reposted a post(s) about fundraising or benefits
	Made a text post(s) with negative content or experiences
	Made a text post(s) with positive content or experiences
	Made a text post(s) advertising events or meetups
	Made a text post(s) about fundraising or benefits
	Posted a picture(s) with negative content or experiences
	Posted a picture(s) with positive content or experiences

	Posted a picture(s) advertising events or meetups
	Posted a picture(s) about fundraising or benefits
	Disliked/"reacted" unsupportively to other's post(s)
	Commented unsupportively on other's posts(s)
	Liked/“reacted” supportively to other’s post(s)
	Commented supportively on other's posts(s)
Active Non-Social	Actively sought out entertaining content that other than videos or memes
	Navigated to interest groups’ feeds (e.g., searching for hashtags, visiting a subreddit)
	Viewed events in my area
	Actively sought out content that I morally or ethically disagreed with
	Actively sought out content that I morally or ethically agreed with
	Donated money to a cause
	Signed a petition
	Edited and/or deleted my own social media content
	Played with photo filtering/photo editing
Passive	Watched videos that were ***not*** memes, news content, or how-tos, recipes, etc.
	Looked at or watched memes
	Scrolled “aimlessly” through feed(s)
	Looked “aimlessly” at others’ stories
	Looked at or watched videos such as how-tos, recipes, DIY

	projects, etc.
	Hate "stalked" (sought out the profile of someone I dislike)
	“Aimlessly” read my notifications
	Read, watched, or caught up on news
	Navigated to others' profiles in my social network
	Navigated to others' pages who I do not know (influencers or other famous people)
	Viewed my own social media content and/or read comments to my own content
	Reminisced about the past
	Compared my life or experiences to others'
	Compared my body or appearance to others'
	Looked at how many people liked, commented on, shared my content, or followed/friended me

Table 4

Hypothesized Factor Loading for the Positive, Negative, and Neutral SNS Use Model

Hypothesized Factor	Activity
Positive	Reposted a post(s) with positive content or experiences
	Made a text post(s) with positive content or experiences
	Posted a picture(s) with positive content or experiences
	Played with photo filtering/photo editing
	Actively sought out content that I morally or ethically agreed with
	Looked at or watched memes

	Actively sought out entertaining content that other than videos or memes
	Donated money to a cause
	Liked/“reacted” supportively to other’s post(s)
	Commented supportively on other's posts(s)
	Signed a petition
Negative	Reposted a post(s) with negative content or experiences
	Made a text post(s) with negative content or experiences
	Posted a picture(s) with negative content or experiences
	Hate "stalked" (sought out the profile of someone I dislike)
	Actively sought out content that I morally or ethically disagreed with
	Disliked/"reacted" unsupportively to other's post(s)
	Commented unsupportively on other's posts(s)
	Edited and/or deleted my own social media content
Neutral	Reposted a post(s) advertising events or meetups
	Reposted a post(s) about fundraising or benefits
	Made a text post(s) advertising events or meetups
	Made a text post(s) about fundraising or benefits
	Posted a picture(s) advertising events or meetups
	Posted a picture(s) about fundraising or benefits
	Watched videos that were ***not*** memes, news content, or how-tos, recipes, etc.
	Scrolled “aimlessly” through feed(s)

	Looked “aimlessly” at others’ stories
	Navigated to interest groups’ feeds (e.g., searching for hashtags, visiting a subreddit)
	Looked at or watched videos such as how-tos, recipes, DIY projects, etc.
	Viewed events in my area
	“Aimlessly” read my notifications
	Read, watched, or caught up on news
	Navigated to others' profiles in my social network
	Navigated to others' pages who I do not know (influencers or other famous people)
	Viewed my own social media content and/or read comments to my own content
	Reminisced about the past
	Compared my life or experiences to others'
	Compared my body or appearance to others'
	Looked at how many people liked, commented on, shared my content, or followed/friended me

Table 5

Hypothesized Factor Loading for All Three Models Tested

Activity	Model 1	Model 2	Model 3
Reposted a post(s) with negative content or experiences	Content Creation	Active Social	Negative
Reposted a post(s) with positive content or experiences	Content Creation	Active Social	Positive

Reposted a post(s) advertising events or meetups	Content Creation	Active Social	Neutral
Reposted a post(s) about fundraising or benefits	Content Creation	Active Social	Neutral
Made a text post(s) with negative content or experiences	Content Creation	Active Social	Negative
Made a text post(s) with positive content or experiences	Content Creation	Active Social	Positive
Made a text post(s) advertising events or meetups	Content Creation	Active Social	Neutral
Made a text post(s) about fundraising or benefits	Content Creation	Active Social	Neutral
Posted a picture(s) with negative content or experiences	Content Creation	Active Social	Negative
Posted a picture(s) with positive content or experiences	Content Creation	Active Social	Positive
Posted a picture(s) advertising events or meetups	Content Creation	Active Social	Neutral
Posted a picture(s) about fundraising or benefits	Content Creation	Active Social	Neutral
Watched videos that were ***not*** memes, news content, or how-tos, recipes, etc.	Entertainment Seeking	Passive	Neutral
Looked at or watched memes	Entertainment Seeking	Passive	Neutral
Actively sought out entertaining content that other than videos or memes	Entertainment Seeking	Active Non-Social	Positive
Played with photo filtering/photo editing	Entertainment Seeking	Active Non-Social	Positive

Scrolled “aimlessly” through feed(s)	Entertainment Seeking	Passive	Neutral
Looked “aimlessly” at others’ stories	Entertainment Seeking	Passive	Neutral
Navigated to interest groups’ feeds (e.g., searching for hashtags, visiting a subreddit)	Entertainment Seeking	Active Non-Social	Neutral
Looked at or watched videos such as how-tos, recipes, DIY projects, etc.	Information Seeking	Passive	Neutral
Hate "stalked" (sought out the profile of someone I dislike)	Information Seeking	Passive	Negative
Viewed events in my area	Information Seeking	Active Non-Social	Neutral
“Aimlessly” read my notifications	Information Seeking	Passive	Neutral
Read, watched, or caught up on news	Information Seeking	Passive	Neutral
Actively sought out content that I morally or ethically disagreed with	Information Seeking	Active Non-Social	Negative
Actively sought out content that I morally or ethically agreed with	Information Seeking	Active Non-Social	Positive
Navigated to others' profiles in my social network	Information Seeking	Passive	Neutral
Navigated to others' pages who I do not know (influencers or other famous people)	Information Seeking	Passive	Neutral
Liked/“reacted” supportively to other’s post(s)	Prosocial Behavior	Active Social	Positive
Disliked/"reacted" unsupportively to other's post(s)	Prosocial Behavior	Active Social	Negative

Commented supportively on other's posts(s)	Prosocial Behavior	Active Social	Positive
Commented unsupportively on other's posts(s)	Prosocial Behavior	Active Social	Negative
Signed a petition	Prosocial Behavior	Active Non-Social	Positive
Donated money to a cause	Prosocial Behavior	Active Non-Social	Positive
Edited and/or deleted my own social media content	Self-Fixation	Active Non-Social	Negative
Viewed my own social media content and/or read comments to my own content	Self-Fixation	Passive	Neutral
Reminisced about the past	Self-Fixation	Passive	Neutral
Compared my life or experiences to others'	Self-Fixation	Passive	Neutral
Compared my body or appearance to others'	Self-Fixation	Passive	Neutral
Looked at how many people liked, commented on, shared my content, or followed/friended me	Self-Fixation	Passive	Neutral

For each model tested, we conduct a confirmatory factor analysis on each individual factor within the model. This was done to ensure that each factor explained an acceptable amount of common variance for the items making up the factor. In this way, we can ensure that each factor can be reliably interpreted individually. With regard to establishing adequate factor fit, we considered the following fit indices: The comparative fit index (CFI; Hu & Bentler, 1999), the root mean square error of approximation (RMSEA; Hu & Bentler, 1999), and the standardized root mean square residual (SRMR; Schumacker, 1992). We aim to derive models in which each

factor has a CFI $\geq$ .90, an RMSEA $\leq$ .06, and an SRMR $\leq$ .08 (Hu & Bentler, 1999; Schumacker, 1992; Sun, 2005). For models that demonstrate adequate fit for each factor, we fit all factors into one model to determine full-model fit utilizing the same fit indices and cutoff values noted above (i.e., CFI $\geq$ .90; RMSEA $\leq$ .06; SRMR $\leq$ .08).

To ensure optimal model fit, we additionally conduct an exploratory factor analysis. We do so by first conducting a parallel analysis to determine the number of latent variables underlying the data (Floyd & Widaman, 1995). In the case that the scree plot produced from the parallel analysis displays an "elbow" with an ambiguous number of factors, a chi-square difference test is used to determine the optimal number of factors to be retained in the data (Cattell, 1966). It is important to note, however, that chi-square difference tests with sample sizes greater than 500 often produce significant χ^2 values that should not be meaningfully interpreted (Hu & Bentler, 1999). Consequently, we additionally utilize the Bayesian information criterion (BIC; Raftery, 1986) to interpret as a criterion for model selection. Since adding parameters to a model can increase the likelihood of improved fit at the cost of overfitting the data, the BIC introduces a penalty term for number of parameters added such that a smaller BIC term is considered favorable (Raftery, 1995). Therefore, the model that has a significant χ^2 value *and* a significantly smaller BIC will be chosen as the best-fitting model for our data. In order to achieve simple structure— allowing each item to load highly on as few factors as possible, thereby making the factors more interpretable— we utilize oblimin rotation in the exploratory factor analysis (Floyd & Widaman, 1995). Again, we aim for each factor (as well as the full model) to have a CFI $\geq$ .90, an RMSEA $\leq$ .06, and an SRMR $\leq$ .08 (Hu & Bentler, 1999; Schumacker, 1992; Sun, 2005).

After the factor structure has been determined, we examine item loadings to determine which items to retain in the measure. One suggestion that has been proposed in the literature for establishing cutoff criteria is the ".40-.30-.20 rule": That satisfactory items load onto their primary factor at .40 or above, load onto alternative factors below .30, and have a difference of .20 between their primary factor and any alternative factors (Howard, 2016). However, Howard (2016) states that the most important criterion is that items load onto their primary factor at .40 or above (i.e., "the .40 rule"). Howard (2016) further presents review findings that almost half of reviewed papers chose a cutoff value of .40 as their criterion and noted that this is "generally appropriate". Others have also noted that a .40 cut-off value for primary factor loading is the most commonly used criterion (Costello & Osborne, 2005; Peterson, 2000; Schönrock-Adema et al., 2009). Since the aim of this investigation is to develop a relatively comprehensive list of SNS activities that can be organized and better understood by researchers, we choose the option that allows us to retain the greatest number of activities from our measure, and we only employ the ".40 rule".

In the event that a full model does not produce acceptable fit despite each individual factor within the model producing good fit, we utilize modification indices. Modification indices allow us to relax parameter restraints that had been imposed in oblimin rotation of the data (Jorgensen, 2017). Specifically, we allow individual items and factors to correlate with one another until modifications no longer produced a significantly better fit in the full model at an alpha level of .05 (Whittaker, 2012).

For our chosen model, we compute (a) split-half reliabilities (i.e., the mean correlation between simulated halves of the data) and internal consistencies (i.e., the mean of all possible

split-half correlations; Warrens, 2015) for each factor and (b) correlations between factors to ensure that (a) item responding for each factor is reliable in the current data and (b) the factors are distinct from one another. Item responding is deemed reliable if split-half reliability is greater than or equal to .60 (Ursachi et al., 2015) and Cronbach's alpha is greater than .58, which is considered satisfactory (Taber, 2018). Factors are determined to be distinct if their correlations with one another are less than .70, suggesting that they do not share a great deal of common variance (Costello & Osborne, 2005).

We end by conducting correlated correlations (Cohen, 1989) for each factor with trait measures assessed in our sample to establish discriminant and convergent validity. In other words, we determine which associations between a given trait and the four factors are significantly correlated with one another and which are significantly different. Since our factor analyses utilize oblique rotation, allowing all factors to correlate with one another, it is likely that several factors will be significantly correlated with the same trait. Therefore, a trait that correlates *most* strongly with one factor is determined to be the most significant predictor of just that factor and not of other factors.

Chapter 3

Results

3.1 Confirmatory Factor Analysis

We first conducted confirmatory factor analyses for Model 1 (i.e., content creation, entertainment seeking, information seeking, self-fixation, and prosocial behavior). Fit indices for these five factors did not quite meet our cutoff values for adequate model fit, CFIs = .738-.858, RMSEAs = .078-.219, SRMRs = .060-.111 (see Table 6).

We next tested Model 2 (i.e., active social, active non-social, and passive SNS use). Again, fit indices for these three factors did not meet our cutoff values for adequate model fit, CFIs = .656-.821, RMSEAs = .078-.168, SRMRs = .049-.133 (see Table 6).

We lastly conducted a confirmatory factor analysis testing Model 3 (i.e., positive, negative, and neutral SNS activities). Although the negative factor fit the data well, neither the positive nor neutral factors demonstrated acceptable fit, CFIs = .474-.940, RMSEAs = .046-.139, SRMRs = .055-.195 (see Table 6).

Table 6

Fit Indices for Each of the Three Tested Models

Hypothesized Five-Factor Model	**Active Social, Active Non-Social, and Passive SNS Use Model**	**Positive, Negative, and Neutral SNS Use Model**
Content Creation *CFI* = .858	Active Social *CFI* = .821	Positive *CFI* = .780

RMSEA = .078	*RMSEA* = .078	*RMSEA* = .128
SRMR = .072	*SRMR* = .049	*SRMR* = .080
Entertainment Seeking	Active Non-Social	Negative
CFI = .738	*CFI* = .656	*CFI* = .940
RMSEA = .158	*RMSEA* = .168	*RMSEA* = .046
SRMR = .100	*SRMR* = .133	*SRMR* = .055
Information Seeking	Passive	Neutral
CFI = .844	*CFI* = .673	*CFI* = .474
RMSEA = .092	*RMSEA* = .125	*RMSEA* = .139
SRMR = .060	*SRMR* = .092	*SRMR* = .195
Prosocial Behavior		
CFI = .778		
RMSEA = .174		
SRMR = .105		
Self-Fixation		
CFI = .779		
RMSEA = .219		
SRMR = .111		

3.2 Exploratory Factor Analysis

We next conducted a parallel analysis on the full dataset (Cattell, 1966). The scree plot produced by the parallel analyses revealed that either three or four factors should be retained. Consequently, we fit models utilizing oblimin rotation for both a three-factor model and a four-factor model. Models were compared using a chi-square difference test to determine which

model fit the data best. The chi-square difference test revealed that the four-factor model fit the data significantly better than the three-factor model as indicated by a significant chi-square value, χ^2 (626, N = 701) = 2864.4, $p < 0.001$, and by a significantly smaller BIC value (BIC = -1257.50, $p < .001$). Thus, we retained four factors in the following analyses.

Item loadings for each of the four factors can be found in Table 7. We analyzed the factor loadings and removed all items that did not meet the ".40 rule". Five items from our measure that did not demonstrate primary factor loadings of .40 or above were removed, indicated by asterisks in Table 7.

Table 7

Factor Loadings for Each of the 40 Scale Items

Activity	MR1	MR2	MR3	MR4
Made a text post(s) about fundraising or benefits	**0.88**	0.08	0.01	0.05
Posted a picture(s) advertising events or meetups	**0.86**	0.06	0.03	0.06
Posted a picture(s) about fundraising or benefits	**0.84**	0.11	0.02	0.06
Reposted a post(s) advertising events or meetups	**0.83**	0.09	0.09	0.05
Made a text post(s) advertising events or meetups	**0.81**	0.05	0.07	0.03
Posted a picture(s) with negative content or experiences	**0.74**	0.02	0.09	0.15
Reposted a post(s) about fundraising or benefits	**0.72**	0.07	0.10	0.10
Donated money to a cause	**0.72**	0.02	0.04	0.14
Made a text post(s) with negative content or experiences	**0.66**	-0.1	0.25	0.21
Commented unsupportively on other's posts(s)	**0.65**	-0.05	0.09	0.05

Reposted a post(s) with negative content or experiences	**0.64**	-0.02	0.16	0.17
Signed a petition	**0.64**	0.06	0.05	0.24
Posted a picture(s) with positive content or experiences	**0.59**	-0.05	0.12	0.37
Reposted a post(s) with positive content or experiences	**0.57**	-0.04	0.19	0.25
Made a text post(s) with positive content or experiences	**0.51**	-0.11	0.25	0.25
Hate "stalked" (sought out the profile of someone I dislike)*	**.36***	0.14	0.16	0.33
Disliked/"reacted" unsupportively to other's post(s)*	**.35***	-0.01	0.22	0.18
Actively sought out entertaining content that other than videos or memes	0.02	0.20	**0.63**	0.16
Actively sought out content that I morally or ethically agreed with	0.11	0.19	**0.59**	0.15
Watched videos that were ***not*** memes, news content, or how-tos, recipes, etc.	0.02	0.18	**0.54**	0.09
Read, watched, or caught up on news	0.09	0.31	**0.52**	0.03
Actively sought out content that I morally or ethically disagreed with	0.24	0.11	**0.50**	0.05
Navigated to interest groups' feeds (e.g., searching for hashtags, visiting a subreddit)	0.17	0.08	**0.46**	0.11
Viewed events in my area*	0.26	0.16	**.32***	0.13
Looked "aimlessly" at others' stories	-0.01	**0.77**	0.11	0.21
Scrolled "aimlessly" through feed(s)	-0.08	**0.76**	0.21	0.18
"Aimlessly" read my notifications	0.03	**0.61**	0.26	0.24
Navigated to others' profiles in my social network	0.03	**0.52**	0.28	0.40
Looked at or watched memes	-0.03	**0.41**	0.30	0.08

Looked at or watched videos such as how-tos, recipes, DIY projects, etc.*	0.07	**.28***	0.21	0.10
Viewed my own social media content and/or read comments to my own content	0.24	0.15	0.06	**0.74**
Looked at how many people liked, commented on, shared my content, or followed/friended me	0.26	0.12	0.07	**0.74**
Commented supportively on other's posts(s)	0.27	0.15	0.10	**0.60**
Compared my body or appearance to others'	0.07	0.29	0.08	**0.57**
Edited and/or deleted my own social media content	0.43	0.02	0.03	**0.54**
Compared my life or experiences to others'	0.08	0.29	0.18	**0.54**
Reminisced about the past	0.09	0.23	0.22	**0.49**
Liked/"reacted" supportively to other's post(s)	0.02	0.35	0.18	**0.43**
Played with photo filtering/photo editing	0.34	0.06	0.18	**0.41**
Navigated to others' pages who I do not know (influencers or other famous people)*	0.07	0.37	0.3	**.38***

Note. * indicates items removed due to weak primary factor loadings

Next, we conducted confirmatory factor analyses on each of the individual four factors to determine whether each demonstrated acceptable fit. Results of these factor analyses did suggest adequate fit, CFIs = .892-.971, RMSEAs = .064-.092, SRMRs = .032-.063. Fit indices for each of the four factors can be found in Table 8.

Finally, we fit all four factors in one CFA model to determine full model fit. Initial fit indices were not adequate, CFI = .802, RMSEA = .068, SRMR = .084. Consequently, we utilized modification indices until modifications no longer significancy improved fit. This resulted in a total of twelve modifications. The final modified full model demonstrated excellent fit, CFI =

.932, RMSEA = .042, SRMR = .056. Hence, we chose these four factors as our final model and name them Voicing (i.e., using SNS for the purposes of making one's voice heard), Content Seeking (i.e., using SNS to seek and consume content), Browsing (i.e., using SNS simply for passive scrolling), and Image Managing (i.e., using SNS to manage how one is viewed by oneself and others; see Table 8).

Table 8

Items and Fit Indices for Each of the Four Factors

Factor	Activity	CFI	RMSEA	SRMR
Voicing	Made a text post(s) about fundraising or benefits	.892	.064	.059
	Posted a picture(s) advertising events or meetups			
	Posted a picture(s) about fundraising or benefits			
	Reposted a post(s) advertising events or meetups			
	Made a text post(s) advertising events or meetups			
	Posted a picture(s) with negative content or experiences			
	Reposted a post(s) about fundraising or benefits			
	Donated money to a cause			
	Made a text post(s) with negative content or experiences			
	Commented unsupportively on other's posts(s)			
	Reposted a post(s) with negative content or experiences			
	Signed a petition			
	Posted a picture(s) with positive content or			

	experiences			
	Reposted a post(s) with positive content or experiences			
	Made a text post(s) with positive content or experiences			
Content Seeking	Actively sought out entertaining content that other than videos or memes	.971	.064	.032
	Actively sought out content that I morally or ethically agreed with			
	Watched videos that were ***not*** memes, news content, or how-tos, recipes, etc.			
	Read, watched, or caught up on news			
	Actively sought out content that I morally or ethically disagreed with			
	Navigated to interest groups' feeds (e.g., searching for hashtags, visiting a subreddit)			
Browsing	Looked "aimlessly" at others' stories	.962	.091	.037
	Scrolled "aimlessly" through feed(s)			
	"Aimlessly" read my notifications			
	Navigated to others' profiles in my social network			
	Looked at or watched memes			
Image Managing	Viewed my own social media content and/or read comments to my own content	.926	.092	.063
	Looked at how many people liked, commented on, shared my content, or followed/friended me			
	Commented supportively on other's posts(s)			
	Compared my body or appearance to others'			

	Edited and/or deleted my own social media content			
	Compared my life or experiences to others'			
	Reminisced about the past			
	Liked/"reacted" supportively to other's post(s)			
	Played with photo filtering/photo editing			

3.3 Reliability and Correlations

Split-half reliabilities for each of the four factors were adequate (r = .66-.93), and internal consistency for each of the four factors ranged from acceptable to excellent (α = .76-.95; see Table 9). In addition, each of the factors was significantly correlated, but appeared distinct. Factor correlations ranged from small (r = .12) to moderate (r = .50; see Table 9).

Table 9

Split-Half Reliabilities, Internal Consistencies, and Correlations for Each of the Four Factors

	Split-Half *r*	α	1	2	3
1. Voicing	.93	.95	-		
2. Content Seeking	.66	.76	.28	-	
3. Browsing	.71	.82	.12	.50	-
4. Image Managing	.77	.86	.45	.40	.45

3.4 Convergent and Discriminate Validity

Correlations for our four factors with each of the measured trait variables can be found in Table 10. Among traits measured, behavioral inhibition, antisocial behavior, agreeableness, and open-mindedness were most strongly associated with Voicing. Need for cognition, intolerance of uncertainty, fear of negative evaluation, self-esteem, and negative emotionality were most strongly associated with Image Managing. Extraversion, need for entertainment, fun seeking, narcissism, prosocial behavior, and conscientiousness did not clearly differentiate factors. While eleven out of the fifteen measured traits were significantly associated with Browsing and Content Seeking, none were *most* strongly correlated with either of these two factors.

Table 10

Pearson's Correlations between Each of the Four Factors and the Fifteen Measured Trait Variables

	Voicing	Content Seeking	Browsing	Image Managing
Extraversion	.02[a]	.00[a]	.05[a]	.05[a]
Behavioral Inhibition	**-.09[c]**	.02[b]	**.20[a]**	**.25[a]**
Need for Entertainment	**.10[b]**	**.17[a]**	**.20[a]**	**.21[a]**
Fun Seeking	.04[a]	.04[a]	.06[a]	**.07[a]**
Need for Cognition	**-.11[b]**	-.06[c]	**-.18[b]**	**-.23[a]**
Intolerance of Uncertainty	**.12[b]**	**.11[b]**	**.11[b]**	**.25[a]**
Grandiose Narcissism	**.13[a]**	**.08[ab]**	.02[c]	.07[b]

Fear of Negative Evaluation	.03[c]	**.08[c]**	**.23[b]**	**.33[a]**
Self-Esteem	**.11[b]**	**.11[b]**	**.12[b]**	**.27[a]**
Prosocial Behavior	-.02[c]	**.08[b]**	**.16[a]**	**.16[a]**
Antisocial Behavior	**.30[a]**	**.19[c]**	**.19[c]**	**.26[b]**
Agreeableness	**-.30[a]**	**-.11[b]**	-.02[c]	**-.14[b]**
Conscientiousness	**-.22[ab]**	**-.16[b]**	**-.14[b]**	**-.24[a]**
Negative Emotionality	**.10[c]**	**.11[c]**	**.20[b]**	**.35[a]**
Open-Mindedness	**-.21[a]**	**-.08[b]**	**-.12[b]**	**-.07[b]**

Note. Same superscript letters denote no significant differences between correlations in pairwise comparisons. Correlations in bold indicate significance at $p < .05$.

Chapter 4

Discussion

Despite growing interest and research on SNS use in the field, until now, there has not been a validated measure which assesses a comprehensive list of SNS activities across different SNS platforms. By designing such a measure, we sought to create a new instrument that could be used to classify nuanced categories of SNS use. Our findings— which analyzed 40 SNS activities across a host of SNS platforms— point to a four-factor model of use. Each of these factors had adequate to excellent reliability and demonstrated strong individual fit, and the full four-factor model fit the data well. These factors include activities related to Voicing, Content Seeking, Browsing, and Image Managing.

Although our initially hypothesized five-factor model was not the best fit for the data, it is notable that the structure of the best model, the four-factor model, is roughly similar to our initial hypotheses. More specifically, all twelve activities from our initially hypothesized factor of content creation loaded onto our final factor of Voicing along with three out of five activities from our hypothesized prosocial behavior factor. All six items from our initially hypothesized self-fixation factor loaded onto Image Managing along with the remaining two from prosocial behavior, and one from entertainment seeking. The remaining six activities from our initially hypothesized entertainment seeking factor divided, three each, into our final factors of Content Seeking and Browsing. Similarly, of the five factors initially hypothesized to compose information seeking, three loaded onto our final factor of Content Seeking, and two loaded onto Browsing. The notion that our final four-factor structure was conceptually similar to our

hypothesized five-factor model is also demonstrated by the fact that fit indices for each factor in our five-factor model were, on average, stronger compared to the other two models tested, further lending theoretical support to the validity of our final four-factor structure. Although our hypothesized five-factor model was not supported, because of the overlap found between our hypothesized model and our final structure, we use these similarities to determine convergent and discriminant validity with measured traits to the extent possible.

Voicing items capture activities that seem to serve the function of projecting one's voice onto SNS. These include activities such as making and sharing posts, donating money to causes, and signing petitions. Consistent with the notion that Voicing includes items initially hypothesized to makeup content creation and prosocial behavior, Voicing claimed the strongest negative association with behavioral inhibition and the strongest association with antisocial behavior, as was expected of content creation and prosocial behavior. However, Voicing was not significantly correlated with extraversion or prosocial behavior, which were expected to be associated with hypothesized factors of content creation and prosocial behavior. Results provide partial support for convergent and discriminant validity. We think it is important for future research to examine how Voicing is associated with related constructs specific to social settings. For example, prior research found associations between perceived SNS expertise and outspokenness (Rubino et al., 2019), a trait that we predict would be strongly associated with Voicing. Voicing also claimed the strongest negative associations with agreeableness and open-mindedness. Interestingly, concurrent low levels of agreeableness and open-mindedness are the most consistent predictors of prejudice and intolerance (Aichholzer et al., 2018; Sibley & Duckitt, 2008). This, coupled with high levels of antisocial behavior and low inhibition suggest

that Voicing may be a pattern of SNS use characterized by being vocal about one's beliefs, ideas, and opinions.

Content Seeking includes activities that involve actively searching for content such as watching videos, catching up with the news, and navigating to interest group pages. Although Content Seeking did not have the strongest correlation with any of the measured trait variables, it showed significant correlations with need for entertainment and intolerance of uncertainty, traits initially thought to be correlated with hypothesized factors of entertainment seeking and information seeking respectively, which is consistent with the notion that the activities composing Content Seeking were initially hypothesized to make up these two factors. Still, we think that future research should examine how Content Seeking is related to constructs more closely associated with cognitive motivation. For example, prior research has linked epistemic curiosity— a tendency to be curious for the purposes of gaining knowledge (Berlyne, 1954)— with "lurking" behaviors on SNS (Schneider et al., 2013). Epistemic curiosity is therefore likely associated with Content Seeking.

Browsing reflects activities that point towards a more passive consumption of SNS content such as looking "aimlessly" at others' stories, scrolling "aimlessly" through feed(s), and reading notifications. Like Content Seeking, although Browsing also did not have the strongest correlation with any of the measured trait variables, it showed significant correlations with need for entertainment and intolerance of uncertainty, which is again consistent with the notion that the activities composing Browsing were initially thought to make up entertainment seeking and information seeking factors. We posit that Browsing is associated with traits related to cognitive engagement. For instance, research has shown that individuals use SNS as a means for

procrastination (Sternberg et al., 2020), and we hypothesize that trait procrastination would likely correlate with Browsing.

Since both Content Seeking and Browsing are composed of activities initially hypothesized to form the entertainment seeking and information seeking factors, we briefly discuss them in unison. First, we note that we predicted the items in these factors were distinguished by the type of content being consumed (i.e., entertaining versus informative content), but the data show they were better distinguished by the extent to which individuals actively sought out the content. Although Content Seeking and Browsing shared many correlations of similar magnitude with the measured traits, where they seem to differ most strikingly is that, compared to Content Seeking, Browsing showed stronger positive associations with behavioral inhibition, fear of negative evaluation, and negative emotionality, and a more negative association with need for cognition. Browsing, then, seems to be characterized by more inhibition and internalizing symptoms compared to Content Seeking; Content Seeking may be better characterized by a desire to be more cognitively stimulated compared to Browsing.

Image Managing reflects items that capture activities associated with managing how individuals view themselves and are viewed by others. These include activities such as viewing and/or reading comments to ones' own content, editing and/or deleting one's own content, engaging in social comparison, commenting supportively on others' posts, and liking others' posts. Consistent with the notion that each of the items in the Image Managing factor were initially hypothesized to compose the self-fixation or prosocial behavior factors, Image Managing claimed the strongest associations with fear of negative evaluation and prosocial behavior, which is what was expected of self-fixation and prosocial behavior. However, Image

Managing was not associated with narcissism and was positively associated with self-esteem, contrary to expectations for self-fixation. In this way, convergent and discriminant validity were again partially supported for Image Managing. We posit that Image Managing is more closely associated with traits related to self-image in social settings such as image management, which has been implicated in SNS use (Cunningham, 2013; Paliszkiewicz & Mądra-Sawicka, 2016). Image Managing also showed the strongest associations with need for cognition, intolerance of uncertainty, self-esteem, and negative emotionality. In other words, people who engage in more Image Managing are likely to behave prosaically, fear being poorly evaluated, struggle with uncertainty, and have less desire for cognitive stimulation while also having high self-esteem. Taken together, it seems that Image Managing may be a pattern of SNS use associated with impression management and heightened self-directed attention.

The elucidation of Image Managing as an SNS use factor is particularly noteworthy, as multiple investigations have speculated that SNS can facilitate social comparison and impression management (Appel et al., 2016; Hanna et al., 2017; Wang, 2017; Zhu & Bao, 2018). In fact, many use this rationale to support findings that passive SNS use and depression are related (Burnell et al., 2019; Pang, 2021; Rozgonjuk, Ryan, et al., 2019). However, these claims have only been speculative. If it is the case that "passive" SNS use is associated with depression due to social comparison, then we would expect depression to be associated with our factor of Image Managing but not Browsing. Consistent with this theorizing, Image Managing was the factor most strongly associated with internalizing symptoms including intolerance of uncertainty, fear of negative evaluation, self-esteem, and negative emotionality, constructs that are all significantly associated with depression and anxiety (Carleton et al., 2011, 2012; Power &

Tarsia, 2007; Sowislo & Orth, 2013). Still, it is intriguing that Image Managing is associated with elevated levels of both self-esteem and internalizing symptoms. Perhaps it is the case that people "image manage" by engaging in downward social comparison or that they view their own SNS content because they are savoring. In these cases, it is reasonable that Image Managing and self-esteem are positively related. However, we predict that that these associations may not hold for those scoring very high in Image Managing since we expect greater internalizing psychopathology (i.e., depression) to be associated with this factor. Because depression and self-esteem are negatively associated (Power & Tarsia, 2007), it is possible that in a sample particularly high in Image Managing, no positive associations with self-esteem will be found. To date, the literature examining associations between SNS use and long-term psychological wellbeing has yielded inconsistent findings. We think that clearer patterns will begin to emerge with this more nuanced measure of SNS use.

Although ample research over recent years has assessed SNS use in terms of active versus passive use— constructs developed through an analysis of relatively few SNS activities specific to Facebook— our findings suggest that SNS use activities can be classified into more nuanced categories. In fact, when we divided our comprehensive list of SNS activities into three factors representing active social, active non-social, and passive use, none of these factors produced acceptable fits. Still, it is important to note that, when examined as a whole, our four-factor classification of SNS use is similar in essence to active versus passive classifications of SNS use. Namely, our factor of Voicing is similar to "active social" use (otherwise known as "directed communication") in that it involves actively making one's voice heard on SNS. Content Seeking is similar to "active non-social" SNS use in that it involves active but non-vocal

engagement. Browsing is similar to “passive” SNS use in that it involves non-goal-directed consumption of content. However, our measure is more nuanced in that Image Managing includes a mix of activities that would conventionally be classified into one of the three active and passive categories.

A potential limitation to the current investigation is that we chose to only employ the “.40 rule” (i.e., that satisfactory items load onto their primary factor at .40 or above) and not the “.30” or “.20 rule” (i.e., that satisfactory items load onto alternative factors below .30 and have a difference of .20 between their primary factor and any alternative factors; Howard, 2016). The limitation to this decision is that items loading onto secondary factors at .30 or above (e.g., "read, watched, or caught up on news”) or that do not have a difference of at least .20 between their primary and secondary factors (e.g., “liked/“reacted” supportively to other’s post(s)”) may not be the “purest” indicators of their factor; these items, to some degree, represent secondary factors in addition to their primary factor. However, the advantage to this decision is that we were able to maintain a relatively comprehensive list of SNS activities in which individuals engage— one that researchers can adapt and utilize to better understand the very specific ways in which SNS platforms are used. In addition, it is imperative to retain the greatest number of items from our scale for future research to examine item loadings across other groups of individuals (e.g., older adults).

It is also important to note that each of our four factors showed only small to medium effects with measured traits. This points to both a strength and a limitation in the current study. On the one hand, we have demonstrated that our identified four factors of SNS use are unique constructs that cannot be better explained by other traits or personalities assessed. On the other

hand, these relatively small correlations provided limited evidence for convergent and discriminant validity. This was likely due, in part, to the fact that we assessed traits we predicted would support our initially hypothesized five-factor model, which was not supported by the data.

The data were collected and analyzed using a college student sample, so it will be important to assess the psychometric properties of this measure among more diverse samples. For example, although college students represent the largest *adult* group to engage with SNS, just as many teenagers report using these platforms (Anderson & Jiang, 2018). Since both these groups grew up with SNS in a similar day-in-age, we anticipate that our four factors of SNS use will represent the data well in a teenage sample, although this awaits empirical examination. In addition, although SNS use has been largely understudied in older adults, the extant research utilizing older adult samples suggests that they commonly struggle to navigate SNS platforms (Leist, 2013; Wu & Chiou, 2020). The older adult population may therefore be unique in that they might use SNS differently from one another. Notably, older adults are heterogeneous in their internet use more generally (Boekel et al., 2017). As a result, it is possible that our four-factor model of SNS use will not generalize to all members of the older adult population. For instance, it is possible that some older adults use SNS for the purposes of social connection more so than younger adults, and this new factor may emerge with an older adult sample.

We think another fruitful avenue of future research is to examine how these four factors of SNS use are associated with momentary emotional experiences. Despite the ubiquity of emotion, there is a dearth of research on how emotion is associated with SNS use, and the few studies that do exist have, again, yielded inconsistent findings; while some investigations have found associations between SNS use and momentary positive emotions (Lin & Utz, 2015), others

have found associations with momentary negative emotions (Berry et al., 2018; Willoughby et al., 2020). We propose that these mixed findings may be explained, at least in part, by the ways in which individuals use SNS. For instance, we predict that using SNS to get one's voice out there (i.e., Voicing) is more likely to result in positive emotions than using SNS to engage in social comparison (i.e., Image Managing). Examining how our four nuanced categories of SNS use are associated with in-the-moment emotional experiences may help to inform healthy ways of using SNS, and with this information, we may be able to help individuals form healthier SNS habits.

It is important to account for the specific ways in which individuals use SNS when conducting SNS research. Although passive versus active SNS use has offered an initial framework for understanding how various constructs (e.g., psychological wellbeing) are implicated in SNS use, there is a great need for more specificity. Our results supported a four-factor model as a valid and detailed measure of SNS use that includes activities related to Voicing, Content Seeking, Browsing, and Image Managing. This has provided a more nuanced and detailed framework for understanding how the many activities in which individuals engage on SNS can be grouped together. Future research should examine how these four factors are associated with emotional experiences and psychological constructs such as internalizing psychopathology. We think that doing so will begin to present a clearer picture of the ways in which SNS use influences the psychological wellbeing of the billions of people who use SNS across the globe.

References

Aichholzer, J., Danner, D., & Rammstedt, B. (2018). Facets of personality and "ideological asymmetries." *Journal of Research in Personality*, *77*, 90–100. https://doi.org/10.1016/j.jrp.2018.09.010

Aillerie, K., & McNicol, S. (2018). Are social networking sites information sources? Informational purposes of high-school students in using SNSs. *Journal of Librarianship and Information Science*, *50*(1), 103–114. https://doi.org/10.1177/0961000616631612

Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of Research in Personality*, *40*(4), 440–450. https://doi.org/10.1016/j.jrp.2005.03.002

Anderson, M., & Jiang, J. (2018). Teens, social media & technology 2018. *Pew Research Center*, *31*(2018), 1673-1689. https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/

Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, *9*, 44–49. https://doi.org/10.1016/j.copsyc.2015.10.006

Arquero, J. L., del Barrio-García, S., & Romero-Frías, E. (2017). What drives students' loyalty-formation in social media learning within a personal learning environment approach? the moderating role of need for cognition. *Journal of Educational Computing Research*, *55*(4), 495–525. https://doi.org/10.1177/0735633116672056

Auxier, B., & Anderson, M. (2021). Social media use in 2021. *Pew Research Center*.

Barry, C. T., & McDougall, K. H. (2018). Social media: platform or catalyst for narcissism? In A. D. Hermann, A. B. Brunell, & J. D. Foster (Eds.), *Handbook of Trait Narcissism: Key Advances, Research Methods, and Controversies* (pp. 435–441). Springer International Publishing. https://doi.org/10.1007/978-3-319-92171-6_47

Berlyne, D. E. (1954). A theory of human curiosity. *Nom de l'éditeur non disponible*.

Berry, N., Emsley, R., Lobban, F., & Bucci, S. (2018). Social media and its relationship with mood, self-esteem and paranoia in psychosis. *Acta Psychiatrica Scandinavica*, *138*(6), 558–570. https://doi.org/10.1111/acps.12953

Boekel, L. C. van, Peek, S. T., & Luijkx, K. G. (2017). Diversity in older adults' use of the internet: Identifying subgroups through latent class analysis. *Journal of Medical Internet Research*, *19*(5), e6853. https://doi.org/10.2196/jmir.6853

Bowden-Green, T., Hinds, J., & Joinson, A. (2020). How is extraversion related to social media use? A literature review. *Personality and Individual Differences*, *164*, 110040. https://doi.org/10.1016/j.paid.2020.110040

Burke, M., Marlow, C., & Lento, T. (2010). Social network activity and social well-being. *Proceedings of the 28th International Conference on Human Factors in Computing Systems - CHI '10*, 1909. https://doi.org/10.1145/1753326.1753613

Burnell, K., George, M. J., Vollet, J. W., Ehrenreich, S. E., & Underwood, M. K. (2019). Passive social networking site use and well-being: The mediating roles of social comparison and the fear of missing out. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *13*(3). https://doi.org/10.5817/CP2019-3-5

Burt, S. A., & Donnellan, M. B. (2009). Development and validation of the subtypes of

antisocial behavior questionnaire. *Aggressive Behavior: Official Journal of the International Society for Research on Aggression*, *35*(5), 376-398. https://doi.org/10.1002/ab.20314

Cacioppo, J., & Petty, R. (1982). The need for cognition. *Journal of Personality and Social Psychology*, *42*, 116–131. https://doi.org/10.1037/0022-3514.42.1.116

Caprara, G. V., Steca, P., Zelli, A., & Capanna, C. (2005). A new scale for measuring adults' prosocialness. *European Journal of Psychological Assessment*, *21*(2), 77–89. https://doi.org/10.1027/1015-5759.21.2.77

Carleton, R. N. (2016). Into the unknown: A review and synthesis of contemporary models involving uncertainty. *Journal of Anxiety Disorders*, *39*, 30–43. https://doi.org/10.1016/j.janxdis.2016.02.007

Carleton, R. N., Collimore, K. C., McCabe, R. E., & Antony, M. M. (2011). Addressing revisions to the Brief Fear of Negative Evaluation scale: Measuring fear of negative evaluation across anxiety and mood disorders. *Journal of Anxiety Disorders*, *25*(6), 822–828. https://doi.org/10.1016/j.janxdis.2011.04.002

Carleton, R. N., Mulvogue, M. K., Thibodeau, M. A., McCabe, R. E., Antony, M. M., & Asmundson, G. J. G. (2012). Increasingly certain about uncertainty: Intolerance of uncertainty across anxiety and depression. *Journal of Anxiety Disorders*, *26*(3), 468–479. https://doi.org/10.1016/j.janxdis.2012.01.011

Carleton, R. N., Norton, M. A. P. J., & Asmundson, G. J. G. (2007). Fearing the unknown: A short version of the Intolerance of Uncertainty Scale. *Journal of Anxiety Disorders*, *21*(1), 105–117. https://doi.org/10.1016/j.janxdis.2006.03.014

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales. *Journal of Personality and Social Psychology*, *67*(2), 319–333. https://doi.org/10.1037/0022-3514.67.2.319

Casale, S., & Banchi, V. (2020). Narcissism and problematic social media use: A systematic literature review. *Addictive Behaviors Reports*, *11*, 100252. https://doi.org/10.1016/j.abrep.2020.100252

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, *1*(2), 245–276. https://doi.org/10.1207/s15327906mbr0102_10

Cohen, A. (1989). Comparison of correlated correlations. *Statistics in Medicine*, *8*(12), 1485–1495. https://doi.org/10.1002/sim.4780081208

Corr, P. J. (2016). Reinforcement sensitivity theory of personality questionnaires: Structural survey with recommendations. *Personality and Individual Differences*, *89*, 60–64. https://doi.org/10.1016/j.paid.2015.09.045

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation*, *10*(7). https://doi.org/10.7275/JYJ1-4868

Coyne, S. M., Rogers, A. A., Zurcher, J. D., Stockdale, L., & Booth, M. (2020). Does time spent using social media impact mental health?: An eight year longitudinal study. *Computers in Human Behavior*, *104*, 106160.

Cunningham, C. (2013). Social Networking and Impression Management: Self-presentation in the Digital Age. Rowman & Littlefield.

Erfani, S. S., & Abedin, B. (2018). Impacts of the use of social network sites on users' psychological well-being: A systematic review. *Journal of the Association for Information Science and Technology*, *69*(7), 900–912. https://doi.org/10.1002/asi.24015

Erreygers, S., Vandebosch, H., Vranjes, I., Baillien, E., & Witte, H. D. (2017). Nice or naughty? the role of emotions and digital media use in explaining adolescents' online prosocial and antisocial behavior. *Media Psychology*, *20*(3), 374–400. https://doi.org/10.1080/15213269.2016.1200990

Escobar-Viera, C. G., Shensa, A., Bowman, N. D., Sidani, J. E., Knight, J., James, A. E., & Primack, B. A. (2018). Passive and active social media use and depressive symptoms among united states adults. *Cyberpsychology, Behavior, and Social Networking*, *21*(7), 437–443. https://doi.org/10.1089/cyber.2017.0668

Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7(3), 286*. https://doi.org/10.1037/1040-3590.7.3.286

Frison, E., & Eggermont, S. (2016). Exploring the relationships between different types of Facebook use, perceived online social support, and adolescents' depressed mood. *Social Science Computer Review*, *34*(2), 153-171. https://doi.org/10.1177/0894439314567449

Gerson, J., Plagnol, A. C., & Corr, P. J. (2017). Passive and Active Facebook Use Measure (PAUM): Validation and relationship to the Reinforcement Sensitivity Theory. *Personality and Individual Differences*, *117*, 81–90. https://doi.org/10.1016/j.paid.2017.05.034

Geukens, F., Maes, M., Spithoven, A., Pouwels, J. L., Danneel, S., Cillessen, A. H. N., van den Berg, Y. H. M., & Goossens, L. (2020). Changes in adolescent loneliness and concomitant changes in fear of negative evaluation and self-esteem. *International Journal of Behavioral Development*, 0165025420958194. https://doi.org/10.1177/0165025420958194

Hall, J. A., & Pennington, N. (2013). Self-monitoring, honesty, and cue use on Facebook: The relationship with user extraversion and conscientiousness. *Computers in Human Behavior*, *29*(4), 1556–1564. https://doi.org/10.1016/j.chb.2013.01.001

Hanna, E., Ward, L. M., Seabrook, R. C., Jerald, M., Reed, L., Giaccardi, S., & Lippman, J. R. (2017). Contributions of social comparison and self-objectification in mediating associations between facebook use and emergent adults' psychological well-being. *Cyberpsychology, Behavior, and Social Networking*, *20*(3), 172–179. https://doi.org/10.1089/cyber.2016.0247

Hoffmann, C. P., Lutz, C., & Meckel, M. (2015). Content creation on the Internet: A social cognitive perspective on the participation divide. *Information, Communication & Society*, *18*(6), 696–716. https://doi.org/10.1080/1369118X.2014.991343

Howard, M. (2015). A review of exploratory factor analysis (EFA) decisions and overview of current practices: What we are doing and how can we improve? *International Journal of*

Human-Computer Interaction, *32*, 150914142834000. https://doi.org/10.1080/10447318.2015.1087664

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Huang, C. (2017). Time spent on social network sites and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior, and Social Networking*, *20*(6), 346–354. https://doi.org/10.1089/cyber.2016.0758

Hughes, D. J., Rowe, M., Batey, M., & Lee, A. (2012). A tale of two sites: Twitter vs. Facebook and the personality predictors of social media usage. *Computers in Human Behavior*, *28*(2), 561–569. https://doi.org/10.1016/j.chb.2011.11.001

Iannello, P., Mottini, A., Tirelli, S., Riva, S., & Antonietti, A. (2017). Ambiguity and uncertainty tolerance, need for cognition, and their association with stress. A study among Italian practicing physicians. *Medical Education Online*, *22*(1), 1270009. https://doi.org/10.1080/10872981.2016.1270009

Jorgensen, T. D. (2017). Applying permutation tests and multivariate modification indices to configurally invariant models that need respecification. *Frontiers in Psychology*, *8*, 1455. https://doi.org/10.3389/fpsyg.2017.01455

Kelly, L., Keaten, J. A., & Millette, D. (2020). Seeking safer spaces: The mitigating impact of young adults' Facebook and Instagram audience expectations and posting type on fear of

negative evaluation. *Computers in Human Behavior*, *109*, 106333. https://doi.org/10.1016/j.chb.2020.106333

Kim, K.-S., Sin, S.-C. J., & Tsai, T.-I. (2014). Individual differences in social media use for information seeking. *The Journal of Academic Librarianship*, *40*(2), 171–178. https://doi.org/10.1016/j.acalib.2014.03.001

Korgaonkar, P. K., & Wolin, L. D. (1999). A multivariate analysis of web usage. *Journal of Advertising Research*, *39*(2), 53–53.

Kothari, R. (2017). Guided internet-based cognitive behavioural therapy for perfectionism, and its impact on self-esteem and intolerance of uncertainty: A randomised controlled trial (Doctoral dissertation, UCL (University College London)).

LaRose, R., Wohn, D. Y., Ellison, N., & Steinfield, C. (2011, July). Facebook fiends: Compulsive social networking and adjustment to college. In *IADIS International Conference ICT*(pp. 3-10). Rome, Italy: IADIS.

Leary, M. R. (1983). A brief version of the fear of negative evaluation scale. *Personality and Social Psychology Bulletin*, *9*(3), 371–375. https://doi.org/10.1177/0146167283093007

Leist, A. K. (2013). Social media use of older adults: A mini-review. *Gerontology*, *59*(4), 378–384.

Lin, R., & Utz, S. (2015). The emotional responses of browsing Facebook: Happiness, envy, and the role of tie strength. *Computers in Human Behavior*, *52*, 29–38. https://doi.org/10.1016/j.chb.2015.04.064

McCain, J. L., & Campbell, W. K. (2018). Narcissism and social media use: A meta-analytic review. *Psychology of Popular Media Culture*, *7*(3), 308–327. https://doi.org/10.1037/ppm0000137

Miller, J. D., Hoffman, B. J., Gaughan, E. T., Gentile, B., Maples, J., & Keith Campbell, W. (2011). Grandiose and vulnerable narcissism: A nomological network analysis: variants of narcissism. *Journal of Personality*, *79*(5), 1013–1042. https://doi.org/10.1111/j.1467-6494.2010.00711.x

Neiss, M. B., Stevenson, J., Legrand, L. N., Iacono, W. G., & Sedikides, C. (2009). Self-esteem, negative emotionality, and depression as a common temperamental core: A study of mid-adolescent twin girls. *Journal of Personality*, *77*(2), 327–346. https://doi.org/10.1111/j.1467-6494.2008.00549.x

Nguyen, M. H., Hunsaker, A., & Hargittai, E. (2020). Older adults' online social engagement and social capital: The moderating role of Internet skills. *Information, Communication & Society*, *0*(0), 1–17. https://doi.org/10.1080/1369118X.2020.1804980

Pagani, M., E. Goldsmith, R., & F. Hofacker, C. (2013). Extraversion as a stimulus for user-generated content. *Journal of Research in Interactive Marketing*, *7*(4), 242–256. https://doi.org/10.1108/JRIM-11-2012-0052

Paliszkiewicz, J., & Mądra-Sawicka, M. (2016). Impression management in social media: The example of linkedin. *Management (18544223)*, *11*(3), 203–212.

Pang, H. (2021). Unraveling the influence of passive and active WeChat interactions on upward social comparison and negative psychological consequences among university students. *Telematics and Informatics*, *57*, 101510. https://doi.org/10.1016/j.tele.2020.101510

Peterson, R. A. (2000). A meta-analysis of variance accounted for and factor loadings in exploratory factor analysis. *Marketing Letters*, *11*(3), 261-275.

https://doi.org/10.1023/A:1008191211004Power, M. J., & Tarsia, M. (2007). Basic and complex emotions in depression and anxiety. *Clinical Psychology & Psychotherapy*, *14*(1), 19–31. https://doi.org/10.1002/cpp.515

Pew Research Center. (2021, April 7). *Social Media Fact Sheet.* [Feature]. https://www.pewresearch.org/internet/fact-sheet/social-media/

Prot, S., Gentile, D. A., Anderson, C. A., Suzuki, K., Swing, E., Lim, K. M., Horiuchi, Y., Jelic, M., Krahé, B., Liuqing, W., Liau, A. K., Khoo, A., Petrescu, P. D., Sakamoto, A., Tajima, S., Toma, R. A., Warburton, W., Zhang, X., & Lam, B. C. P. (2014). Long-term relations among prosocial-media use, empathy, and prosocial behavior. *Psychological Science*, *25*(2), 358–368. https://doi.org/10.1177/0956797613503854

Raftery, A. E. (1986). A note on Bayes factors for log-linear contingency table models with vague prior information. *Journal of the Royal Statistical Society: Series B (Methodological)*, *48*(2), 249–250. https://doi.org/10.1111/j.2517-6161.1986.tb01408.x

Raftery, A. E. (1995). Bayesian model selection in social research. *Sociological Methodology*, *25*, 111–163. https://doi.org/10.2307/271063

Richter, D., Wall, A., Bruen, A., & Whittington, R. (2019). Is the global prevalence rate of adult mental illness increasing? Systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*, *140*(5), 393–407. https://doi.org/10.1111/acps.13083

Rodebaugh, T. L., Woods, C. M., Thissen, D. M., Heimberg, R. G., Chambless, D. L., & Rapee, R. M. (2004). More information from fewer questions: The factor structure and item

properties of the original and brief fear of negative evaluation scale. *Psychological Assessment*, *16*(2), 169. https://doi.org/10.1037/1040-3590.16.2.169

Rosenberg, M. (1979). *Conceiving the self*. Basic Books.

Rozgonjuk, D., Elhai, J. D., Täht, K., Vassil, K., Levine, J. C., & Asmundson, G. J. G. (2019). Non-social smartphone use mediates the relationship between intolerance of uncertainty and problematic smartphone use: Evidence from a repeated-measures study. *Computers in Human Behavior*, *96*, 56–62. https://doi.org/10.1016/j.chb.2019.02.013

Rozgonjuk, D., Ryan, T., Kuljus, J.-K., Täht, K., & Scott, G. G. (2019). Social comparison orientation mediates the relationship between neuroticism and passive Facebook use. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *13*(1), Article 1. https://doi.org/10.5817/CP2019-1-2

Rubino, K. E., Rubino, K., Mickelson, K., Halavais, A. (2019). Social media society: The influence of social media use and expertise on perceived social acceptance and outspokenness. In *Barrett, The Honors College Thesis/Creative Project Collection*. http://hdl.handle.net/2286/R.I.52894

Saiphoo, A. N., Dahoah Halevi, L., & Vahedi, Z. (2020). Social networking site use and self-esteem: A meta-analytic review. *Personality and Individual Differences*, *153*, 109639. https://doi.org/10.1016/j.paid.2019.109639

Schneider, A., von Krogh, G., & Jäger, P. (2013). "What's coming next?" Epistemic curiosity and lurking behavior in online communities. *Computers in Human Behavior*, *29*(1), 293–303. https://doi.org/10.1016/j.chb.2012.09.008

Schönrock-Adema, J., Heijne-Penninga, M., van Hell, E. A., & Cohen-Schotanus, J. (2009). Necessary steps in factor analysis: Enhancing validation studies of educational instruments. The PHEEM applied to clerks as an example. *Medical Teacher*, *31*(6), e226–e232. https://doi.org/10.1080/01421590802516756

Schumacker, R. E. (1992). Goodness of Fit Criteria in Structural Equation Models.

Seabrook, E. M., Kern, M. L., & Rickard, N. S. (2016). Social networking sites, depression, and anxiety: A systematic review. *JMIR Mental Health*, *3*(4), e5842.

Shensa, A., Sidani, J. E., Dew, M. A., Escobar-Viera, C. G., & Primack, B. A. (2018). Social Media Use and Depression and Anxiety Symptoms: A Cluster Analysis. *American Journal of Health Behavior*, *42*(2), 116–128. https://doi.org/10.5993/AJHB.42.2.11

Shrum, L. J. (Ed.). (2012). *The psychology of entertainment media: Blurring the lines between entertainment and persuasion*. Taylor & Francis.

Sibley, C. G., & Duckitt, J. (2008). Personality and prejudice: A meta-analysis and theoretical review. *Personality and Social Psychology Review*, *12*(3), 248-279. https://doi.org/10.1177/1088868308319226

Skues, J. L., Williams, B., & Wise, L. (2012). The effects of personality traits, self-esteem, loneliness, and narcissism on Facebook use among university students. *Computers in Human Behavior*, *28*(6), 2414–2419. https://doi.org/10.1016/j.chb.2012.07.012

Smith, A., & Anderson, M. (2019). Social Media Use in 2018. Pew Research Center; 2018. *Available from: Htpp://Www. Pewinternet. Org/2018/03/01/Social-Media-Use-in-2018/.[Last Accessed on 2018 May 20]*, 1–17.

Soto, C. J., & John, O. P. (2017). The next Big Five Inventory (BFI-2): Developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power. *Journal of Personality and Social Psychology*, *113*(1), 117–143. https://doi.org/10.1037/pspp0000096

Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological Bulletin*, *139*(1), 213–240. https://doi.org/10.1037/a0028931

Statista. (July 15, 2020). Number of social network users worldwide from 2017 to 2025 (in billions) [Graph]. In *Statista*. Retrieved March 19, 2021, from https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/

Sternberg, N., Luria, R., Chandhok, S., Vickers, B., Kross, E., & Sheppes, G. (2020). When facebook and finals collide—Procrastinatory social media usage predicts enhanced anxiety. *Computers in Human Behavior*, *109*, 106358. https://doi.org/10.1016/j.chb.2020.106358

Sun, J. (2005). Assessing goodness of fit in confirmatory factor analysis. *Measurement and Evaluation in Counseling and Development*, *37*, 240–256. https://doi.org/10.1080/07481756.2005.11909764

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Tartaglia, S., & Bergagna, E. (2021). Social networking sites passive use and its effects on sad-happy mood. *Psihologija*, *00*, 8–8. https://doi.org/10.2298/PSI201002008T

Thorisdottir, I. E., Sigurvinsdottir, R., Asgeirsdottir, B. B., Allegrante, J. P., & Sigfusdottir, I. D. (2019). Active and passive social media use and symptoms of anxiety and depressed mood among icelandic adolescents. *Cyberpsychology, Behavior, and Social Networking*, *22*(8), 535–542. https://doi.org/10.1089/cyber.2019.0079

Trifiro, B. M., & Gerson, J. (2019). Social media usage patterns: Research note regarding the lack of universal validated measures for active and passive use. *Social Media and Society*, *5*(2), 2056305119848743. https://doi.org/10.1177/2056305119848743

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance*, *20*, 679–686. https://doi.org/10.1016/S2212-5671(15)00123-9

Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do social network sites enhance or undermine subjective well-being? A critical review. *Social Issues and Policy Review*, *11*(1), 274–302. https://doi.org/10.1111/sipr.12033

Wang, D. (2017). A study of the relationship between narcissism, extraversion, drive for entertainment, and narcissistic behavior on social networking sites. *Computers in Human Behavior*, *66*, 138–148. https://doi.org/10.1016/j.chb.2016.09.036

Wang, J.-L., Gaskin, J., Rost, D. H., & Gentile, D. A. (2018). The reciprocal relationship between passive social networking site (SNS) usage and users' subjective well-being. *Social Science Computer Review*, *36*(5), 511–522. https://doi.org/10.1177/0894439317721981

Wang, J.-L., Jackson, L. A., Zhang, D.-J., & Su, Z.-Q. (2012). The relationships among the Big Five Personality factors, self-esteem, narcissism, and sensation-seeking to Chinese University students' uses of social networking sites (SNSs). *Computers in Human Behavior*, *28*(6), 2313–2319. https://doi.org/10.1016/j.chb.2012.07.001

Warrens, M. J. (2015). On Cronbach's alpha as the mean of all split-half reliabilities. In R. E. Millsap, D. M. Bolt, L. A. van der Ark, & W.-C. Wang (Eds.), *Quantitative Psychology Research* (pp. 293–300). Springer International Publishing. https://doi.org/10.1007/978-3-319-07503-7_18

Whiting, A., & Williams, D. (2013). Why people use social media: A uses and gratifications approach. *Qualitative Market Research: An International Journal*, *16*(4), 362–369. https://doi.org/10.1108/QMR-06-2013-0041

Whittaker, T. A. (2012). Using the modification index and standardized expected parameter change for model modification. *The Journal of Experimental Education*, *80*(1), 26–44. https://doi.org/10.1080/00220973.2010.531299

Willoughby, J. F., Myrick, J. G., Gibbons, S., & Kogan, C. (2020). Associations between emotions, social media use, and sun exposure among young women: Ecological momentary assessment study. *JMIR Dermatology*, *3*(1), e18371. https://doi.org/10.2196/18371

Wolniewicz, C. A., Tiamiyu, M. F., Weeks, J. W., & Elhai, J. D. (2018). Problematic smartphone use and relations with negative affect, fear of missing out, and fear of negative and positive evaluation. *Psychiatry Research*, *262*, 618–623. https://doi.org/10.1016/j.psychres.2017.09.058

Wu, H.-Y., & Chiou, A.-F. (2020). Social media usage, social support, intergenerational relationships, and depressive symptoms among older adults. *Geriatric Nursing*, *41*(5), 615–621. https://doi.org/10.1016/j.gerinurse.2020.03.016

Zhu, X., & Bao, Z. (2018). Why people use social networking sites passively: An empirical study integrating impression management concern, privacy concern, and SNS fatigue. *Aslib Journal of Information Management*, *70*(2), 158–175. https://doi.org/10.1108/AJIM-12-2017-0270