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## Self-Reflections Through a Screen: Self-Identity, Social Media, and Psychological Well-Being

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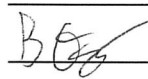
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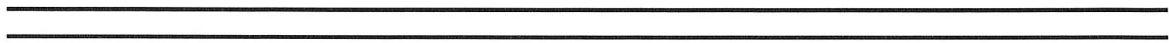
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**Self-Reflections Through a Screen:  
Self-Identity, Social Media, and Psychological Well-Being**

A Thesis

Presented to the Department of Psychology

College of Liberal Arts and Sciences

and

The Honors Program

of

Butler University

In Partial Fulfillment

of the Requirements for Graduation Honors

Jeremy Serio

### **Abstract**

Social media use among emerging adults is assumed to be related to a variety of negative psychological outcomes and has, in recent years, become a widely studied phenomenon (Kim, 2017, Pew Research Center, 2018). Despite the widespread assumption, the results from empirical studies of the effects of social media use on mental health in this population have been inconsistent and inconclusive (Keles et al., 2020, Yang et al., 2021). Several meta-analyses (e.g., Keles et al., 2020) demonstrate these inconsistent results across studies and point to the need to consider individual difference factors when researching this issue. Different self-identity styles have adaptive and maladaptive self-reflective processes which impact how individuals use social media (Berzonsky & Luyckx, 2008). This study examined the role of differences in self-identity styles among emerging adults and how those differences influence the ways emerging adults use social media as important mediators of psychological well-being. Partial support was found for the hypothesis that more negative identity styles (e.g., diffuse and normative styles) were associated with negative social media use (e.g., social comparison and self-disclosure). Stronger support was found for the hypothesis that such negative social media use was associated with higher levels of depression and anxiety.

## **Self-Reflections Through a Screen:**

### **Self-Identity, Social Media, and Psychological Well-Being**

Individual's use of social media is a widely studied phenomenon, and often assumed to cause negative psychological well-being (e.g., depression, jealousy, anxiety, fear of missing out) (Keles et al., 2020, Kim, 2018). Other aspects of social media like group affiliation and maintenance of existing relationships have been shown to lead to more positive psychological well-being (Keles et al., 2020, Meshi & Ellithorpe, 2021). The present study sought to address how individual differences in self-identity might explain why social media use results in such discrepant findings in the literature. Self-identity is a form of identity which places emphasis on an individual's willingness to reflect and change their identity when presented with new information or events (Berzonsky, 1988, 1990). An individual without a strong sense of identity may try to form their identity on social media instead of the real-world. These differences in self-identity may explain why some individuals have negative psychological well-being after using social media. In the present study, concepts of identity formation are addressed as potential contributors to emerging adults' development of addictive, depressive, and anxiety symptoms. Psychological well-being is also described throughout the study, in particular depression and anxiety and their relation to social media. Finally, the literature on social media is presented, as well as social media's associations with both self-identity and psychological well-being.

#### **Identity Formation**

The development of identity has been studied and philosophized for centuries by Plato, Descartes, and psychologists like Erik Erikson (Erikson, 1963). Erikson defined

identity as the sense of oneself resulting from past, present, and future experiences (Erikson, 1963). Recent research by Elder and colleagues (2022) has pointed to the network approach. The network approach is a network of experiences, relationships, and beliefs about ourselves that influences our identities. During emerging adulthood, individuals between 18 and 25 years of age, explore different identity styles due to changing responsibilities and environments (e.g., Manzi et al., 2010). These changes in identity styles during such an important stage of life are typically associated with higher levels of anxiety during life transitions (e.g., Manzi et al., 2010). Lacking a coherent and strong sense of self impacts social functioning, self-esteem, and general well-being (e.g., Atkins & Styles, 2015).

While many theories about identity formation and change exist, the present study focuses on a theory of identity first described by Berzonsky (1988, 1990) and later expanded on by Berzonsky & Luyckx (2008). This theory is particularly relevant to the emerging adult population and their social interactions, including social media interactions with others. Berzonsky's (1988, 1990) social-cognitive perspective focuses on how emerging adults can develop maladaptive self-reflective processes and how certain self-identity styles are predisposed to experiencing identity confusion. Berzonsky (2008) proposed that identity is a self-theory, meaning that identity is constructed by the self's assumptions and constructs. During this identity process, individuals either self-reflect and decide to adjust their identity or they decide to avoid information that will cause an identity change.

Self-reflection can occur in adaptive and maladaptive ways, influenced by epistemic or neurotic motives. Self-reflection motivated by epistemic interest in

analyzing the self would be adaptive and constructive due to an increased awareness of internal processes. On the other hand, self-reflection caused by neurotic motives (fear, anxiety, threats to self) would be more dysfunctional (Berzonsky & Luyckx, 2008, Trapnell & Campbell, 1999). Along with different modes of self-reflection, different self-identity styles engage in contrasting defense mechanisms. Adaptive self-reflective individuals tend to engage in mature defense mechanisms (humor, anticipation, suppression) while maladaptive self-reflective individuals tend to engage in immature defense mechanism (projection, isolation, denial) (Seaton & Beaumont, 2011).

In their more recent work, Berzonsky and Luyckx (2008) discuss three main self-identity styles: Informational, Diffuse-Avoidant, and Normative. Varying levels of these different styles can lead to both adaptive and maladaptive self-reflective processes. Individuals high on the "Informational self-identity style" reflect on themselves often as a way to gain new self-insight and learn new things about themselves. They tend to associate more with others as a way to explore and examine identity-relevant options and alternatives (e.g., Berzonsky & Luyckx, 2008). Individuals high on Informational self-identity style also tend to cope positively with problems (e.g., Clancy & Dollinger, 1993). Such individuals are at lower risk of maladaptive behaviors and outcomes. Individuals high on "Diffuse-avoidant style," on the other hand, try to avoid self-reflection and tend to avoid making decisions about their future. High diffuse-avoidant individuals rarely reflect on the reasons behind their actions but tend to ruminate more about other people's thoughts and actions. Such individuals are argued to be at higher risk for addiction, low self-esteem, and depression (e.g., Berzonsky & Luyckx, 2008, Clancy & Dollinger, 1993). Individuals high in "Normative self-identity style" deal with identity confusion by

conforming more to the expectations of others that they want to be like or to those they see as more ideal. They generally show a low tolerance for ambiguity and a strong need for structure, and as such, are not open to exploring varying views of themselves or others (Berzonsky & Luyckx, 2008). When threatened by a personal problem, normative individuals defend their current identity and protect themselves from experiencing distress or low self-esteem (Clancy & Dollinger, 1993). Different self-identity styles lead to different levels of psychological well-being. Specifically, the present study focuses more intently on diffuse-avoidant individuals because their behavior increases the risk for developing depression, anxiety, and addiction.

### **Psychological Well-Being**

Depression and anxiety are widely studied mental illnesses and are among the most common mental health problems in the United States. In 2015, 16.1 million adults in the US reported having experienced a depressive episode (World Health Organization, 2017, Center for Behavioral Health Statistics and Quality, 2017). An estimated 19.1% of US adults had any anxiety disorder, making anxiety and related disorders one of the most common mental illnesses (National Institute of Mental Health, 2023). With an established literature on biological, chemical, and social factors associated with both mental illnesses, the correlations with social media are still quite new (Seabrook et al., 2016). Individuals with depression may tend to engage in problematic behavior on social media and frequently engage in negative social comparisons.

Depression may be a social disorder, and the development of symptoms is heavily reliant on the individual's social involvement. Negative emotional biases, upward comparisons, and negative self-esteem lead to social withdrawal and loneliness (e.g., Petwal et al.,



2023). Depressive symptoms have some association with social comparison, especially on social media where most individuals engage in upward comparisons (e.g., Robinson et al., 2019). Individuals with existing major depressive disorder (MDD) engaged in more social comparisons on social media compared to healthy individuals, which lends credence to the idea that depressive symptoms are enforced through social actions (e.g., Robinson et al., 2019).

Anxiety symptoms are frequently comorbid with depressive symptoms, and both involve rumination. Higher levels of rumination are associated with greater negative outcomes like social isolation and mood disorders (e.g., Petwal et al., 2023). Focusing on social anxiety (SAD), people with this disorder frequently engage in negative and unstable self-views (e.g., Goodman et al., 2021). Interestingly, individuals with SAD reported more favorable social comparisons with a group of people compared to when they were alone (e.g., Goodman et al., 2021). People suffering from anxiety disorders tend to not disclose much information about themselves in fear of judgement from others (e.g., Meleshko & Alden, 1993). Reciprocal disclosure of intimate details about oneself (relationships, emotions) is crucial to developing friendships or new relationships. Socially anxious individuals tend to not disclose intimate information, which may make them less likable and inhibit a relationship from developing (e.g., Meleshko & Alden, 1993). Individuals with anxiety and depression, as well as diffuse self-identity cannot avoid social media. Almost all emerging adults use social media (Pew Research Center, 2018), forcing individuals with diffuse self-identities to engage in content that may have negative effects on their psychological well-being. There is little research on the interaction between self-identity and social media in the literature.

## **Social Media Use**

Social media is used by 3.5 billion people worldwide (Statista, 2021). Emerging adults (18-29 years old) have one of the highest rates of social media usage in the U.S., around 90% (Pew Research Center, 2018). Social rewards such as likes and social engagement bring people to websites or apps for a substantial amount of time (e.g., Stewart, 2016). Social media has been shown to have both positive and negative effects. Individuals can find groups of people that relate to them in terms of identity or shared interest (e.g., Keles et al., 2020). However, by providing rewards, social media use can mirror substance abuse disorders (Stewart, 2016). Adolescents and emerging adults in the US are experiencing the highest rates of feelings of loneliness compared to other generations (Pew Research Center, 2018). There may be other factors contributing to the spike, but social media use is a likely contributing factor (Keles et al., 2020).

The association between depression and social media is a widely debated topic, especially concerning adolescents and young adults (World Health Organization, 2017). The simultaneous increase in social media use and mental health diagnosis has led to increased studies on social media's effect on mental health (e.g., Kim, 2018). However, meta-analytic studies on the negative and positive relationship between social media use and mental health are, at best, inconclusive (e.g., Keles et al., 2020). Negative influences, like unrealistic body image and decreased self-esteem, have overshadowed the positives of social media use, including increased social support, connections with family and friends, and providing a safe space for minority groups (Keles et al., 2020). Problematic social media use is very complex due to various factors including pre-existing mental illness and lack of social support which may lead to problematic usage. Meshi and

Ellithorpe (2021) found that a perceived lack of social support is negatively associated with social media use. Among internet-addicted individuals or people who spend 6+ hours on social media, internet forums, or internet gaming, major depressive and anxiety disorders were more prevalent compared to a healthy control group (e.g., Lemenager et al., 2018). Another study pointed to the role of self-identity confusion in the development of internet addiction (IA). Self-identity confusion may lead to a fragmentation of different identities interacting with other users in separate online environments which makes individuals more at ease online compared to the real-world (Hsieh et al., 2019).

Many studies of the effects of social media use focus on the amount of time their subjects spend on it rather than focusing on what they are doing on apps or websites. Sewall and colleagues (2022) investigated the statistical limitations of studying social media use by using Apple's screen time feature, and the number of phone pickups. Limited evidence was found indicating a relationship between the frequency of smartphone social media use and its influence on psychological distress (depression, anxiety, social isolation) (e.g., Sewall et al. 2022). The vast majority of studies on social media and well-being utilized total frequency or time spent on social media which led to mixed results (e.g., Seabrook 2019). The goal of using objective measures of social media use fails to capture the reasoning behind user's behaviors on social media applications (Sewall et al. 2022). A study done by Escobar-Viera and colleagues (2018) evaluated how passive versus active social media use impacted mental well-being. Passive social media use or a user not posting content on social media was positively associated with depressive symptoms (Escobar-Viera et al. 2018). Given the ambiguous and conflicting results that exist in this literature, they recommended that future research

should focus both on the varying ways individuals differentially use social media and how that use might be driven by differing goals for social interaction based on factors like self-identity (e.g., Meshi & Ellithorpe, 2021).

Some studies have attempted to establish a definition for problematic social media use. One study uses a social media addiction scale (BSMAS, Andreassen et al. 2016) to establish a cut-off where higher scores reflect problematic social media use and lower scores represent the opposite (e.g., Banyai et al., 2017). Studies in multiple countries seek to establish the prevalence of problematic social media use. But the various definitions and scales used have led to wildly different prevalence rates including 4.5% of adolescents in Hungary, 1% of adolescents in Nigeria, and 47% of Malaysian college students (Banyai et al., 2017). Another study done by Shensa and colleagues (2017) found that social media use frequency was significantly associated with depression. Frequency was measured by how many times participants picked up their phones (e.g., Shensa et al., 2017). Screen time was also measured but did not have a significant association with depression symptoms (e.g., Shensa et al., 2017). The one aspect missing from studies of problematic social media use is the different ways people engage with social media. Time spent on social media may be insignificant in evaluating the effect of social media on mental health (Shensa et al., 2017). The present study addresses the gap in the literature surrounding social media's connection to mental health by investigating how self-identity styles influence how individuals behave on social media.

### **Present Study**

The present study investigated individual differences in self-identity styles, especially individuals high in maladaptive identity styles, who engage in more

problematic social media usage which, in turn, might lead to problems in psychological well-being. Rather than simply measuring time on social media as is typical of most studies, the present study examined the type of usage participants engaged in (Sewall et al., 2022). The three categories of social media use captured included social support/affiliation, social comparison, and self-disclosure. Social support/affiliation includes using social media to connect with others and groups with similar interests and values. Social comparison refers to usage aimed at comparing attitudes, abilities, and traits of themselves to other relevant social media users. Self-disclosure captures the degree of communicating information about oneself to other relevant social media users and focuses on the disclosures relevant others make.

Two primary hypotheses were tested and one overall model of how self-identity styles and social media use might relate to overall psychological well-being. First, participants who score higher on measures of social comparison, and self-disclosure will have higher levels of depression, anxiety, and social isolation compared to participants who score lower on social comparison and self-disclosure. Second, participants who score high on the diffuse-avoidant self-identity style measure will tend to show higher levels of social media anxiety/addiction and will tend to score lower overall on psychological well-being (i.e., higher on depression, anxiety, and social isolation).

The present study proposed a model (Figure 1) of how differences in both adaptive and maladaptive self-identity styles are related to both the beneficial and problematic use of social media. This model is illustrated in the figure below. I hypothesized that self-identity styles drive the goals individuals have when using social media. Individuals with a strong sense of self-identity (high informational, low diffuse-

avoidant, moderate normative) use social media more for social support and affiliation and are less focused on social comparison and self-disclosure. Such styles are believed to be related to higher psychological well-being. On the other hand, more maladaptive self-identity styles (high in diffuse-avoidant and normative) predict social media use focused more on social comparison and self-disclosure. When extreme enough to result in high levels of social media anxiety and addiction, poor psychological well-being is the likely result. The present study tested this hypothesis with a path model using the lavaan package in R.

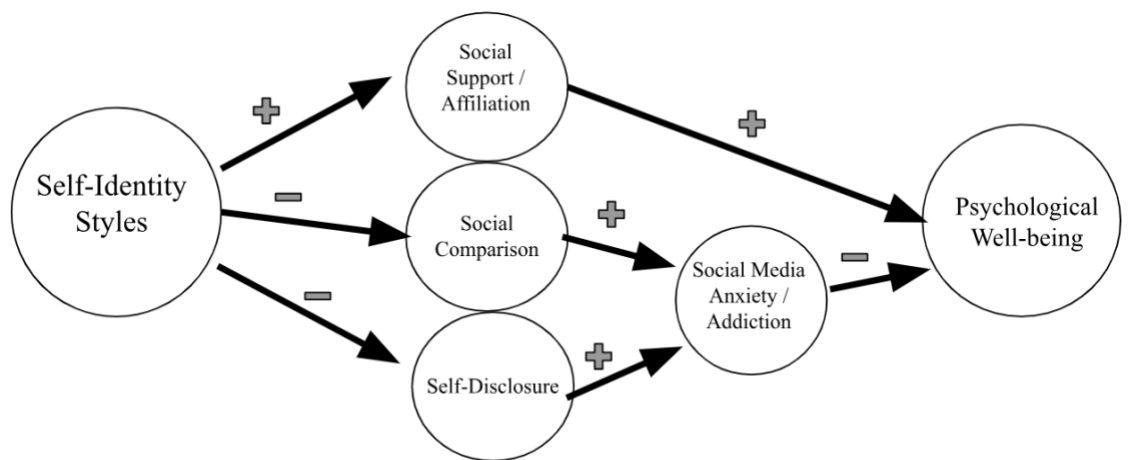


Figure 1

## Method

### Participants

Participants were recruited using Prolific, a survey recruiting service that pays participants hourly for completing surveys (Palan & Schitter, 2018). Around 100 participants were recruited. All participants were prescreened to ensure they were 18 and 24 and currently enrolled in college. Participants were removed from the results due to failure of attention checks, described below, prolonged, or brief completion times ( $M = 12.08$  minutes,  $SD = 5.48$  minutes), and incorrect pre-validation screening items. Prolific

participants were paid for 15 minutes of their time or roughly \$12 per hour to complete the study. Participants were paid via a stipend given to us by Butler University.

Participants who took less than 5 minutes to complete the survey and/or failed the two attention checks were eliminated, leaving 80 participants for data analysis.

## **Measures**

### **Self-Identity Styles**

The three self-identity styles; Informational (11 items,  $\alpha = .75$ ), diffuse-avoidant (10 items,  $\alpha = .78$ ), and normative (9 items,  $\alpha = .71$ ) self-identities were measured using the ISI-3 scale (Berzonsky and Lucykx, 2008). The items were arranged on a Likert scale ranging from “Not at like me” to “Very much like me.” Included at the end of these measures were self-reflection (12 items,  $\alpha = .89$ ) and rumination (12 items,  $\alpha = .90$ ) measures (Trapnell & Campbell, 1999). Reflection and rumination are arranged on a similar Likert scale from “Strongly disagree” to “Strongly Agree.” Scales are located in Appendix A.

### **Social Media Usage**

The three measures of social media use, Social Support/Affiliation (8 items,  $\alpha = .79$ ), Social Comparison (8 items,  $\alpha = .95$ ), and Self-Disclosure (8 items,  $\alpha = .89$ ) were measured by having participants respond to a Likert scale set of items ranging from “Never” to “Always.” The prompt for these items said: “Reflecting on your social media usage in the past two weeks (across all platforms you use), indicate for the items below if you used social media for that purpose. Examples of social support/affiliation items include: *I sought out new people who have similar interests to me; I sent a direct message to a friend to check in with them; I responded affirmatively to a friend of follow*

*request.* Examples of social comparison items include: *I compared my health/fitness to someone I'm friends with or that I follow; I compared the number of friends/followers I have to someone I am friends with or follow.* Examples of self-disclosure items include: *I posted something about my relationship with my significant other; I searched my friend's posts for information about their significant other; I discussed a grade or a performance evaluation on social media.* Scores on the measures consisted of the weighted sum of the indicated items. Scales are located in Appendix C

### **Social Media Anxiety/Addiction**

The Bergen Social Media Addiction Scale (6 items,  $\alpha = .90$ ) (Andreassen et al. 2016) was used for this scale. The items are scaled from “Very Rarely” to “Very Often.” Example scale items include: *Spent a lot of time thinking about social media or planned use of social media; Tried to cut down on the use of social media without success.* Scales are located in Appendix E

### **Psychological Well-Being**

Psychological well-being was measured using two scales from PROMIS (Patient Reported Outcomes Measurement Information System) (Pilkonis et al., 2011). Scales asked about symptoms of depression (23 items,  $\alpha = .99$ ), and anxiety (30 items,  $\alpha = .98$ ). The scale is arranged from “Never” to “Always.” Social isolation was measured using the 12-item Multidimensional Scale of Perceived Social Support (12 items,  $\alpha = .95$ ) (Zimet et al. 1988). The Likert scale ranged from “Very Strongly Disagree” to “Very Strongly Agree.” Scales are located in Appendix D.

### **Attention Checks**



Two attention checks were added to the questionnaire to ensure participants answered questions honestly and focused on the survey. For the PROMIS scale for anxiety (Pilkonis et al., 2011) the item “I died” was added, which was scaled on Never to Always, participants who chose any answer other than “Never” were removed from the study. “I used my phone” was added to the Social Comparison scale (Never to Always) and participants who answered Never were removed from the study.

### **Procedure**

Participants were first presented with the informed consent form and asked to agree or disagree to participate. After agreeing to participate, the first survey presented was the ISI-3 scale (Berzonsky & Luckyxk, 2009), which consisted of 40 items presented in random order. Self-reflection and rumination scales (Trapnell & Campbell, 1999) were also included in this section of identity scales but were not analyzed as part of the study. Next, participants were asked to complete the social media usage scales. First, social support/affiliation items were presented, second, social comparison items were presented, and finally, self-disclosure items were presented. All scales were in random order. Additionally, two measures of psychological well-being were presented. The first was the PROMIS depression scale followed by the PROMIS anxiety scale (Pilkonis et al., 2011). The survey included the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) but the data from that scale was not included in this study. Finally, The Bergen Social Media Addiction Scale (Andreassen et al., 2016) was presented to participants last.

### **Results**

The present study was specifically interested in testing the two primary hypotheses and the overall path model that was proposed. Hypothesis 1 was that participants who scored higher on measures of social comparison and self-disclosure would have higher levels of depression, anxiety, and social isolation compared to participants who scored lower on social comparison and self-disclosure. This hypothesis was supported via a variety of analyses. The results showed that overall scores on the social comparison scale were positively correlated with levels of depression ( $r = .59, p < .001$ ). Additionally, as illustrated in Figure 2 below, the difference between groups with low, medium, and high scores on social comparison showed significantly different levels of depressive symptoms ( $F(2,77) = 16.74, p < .001$ ). Post-hoc tests confirmed that participants with high (scores above 3.625), as compared to low (scores below 1.75), social comparison scores reported more depressive symptoms (mean diff = 1.74,  $p < .001$ ).

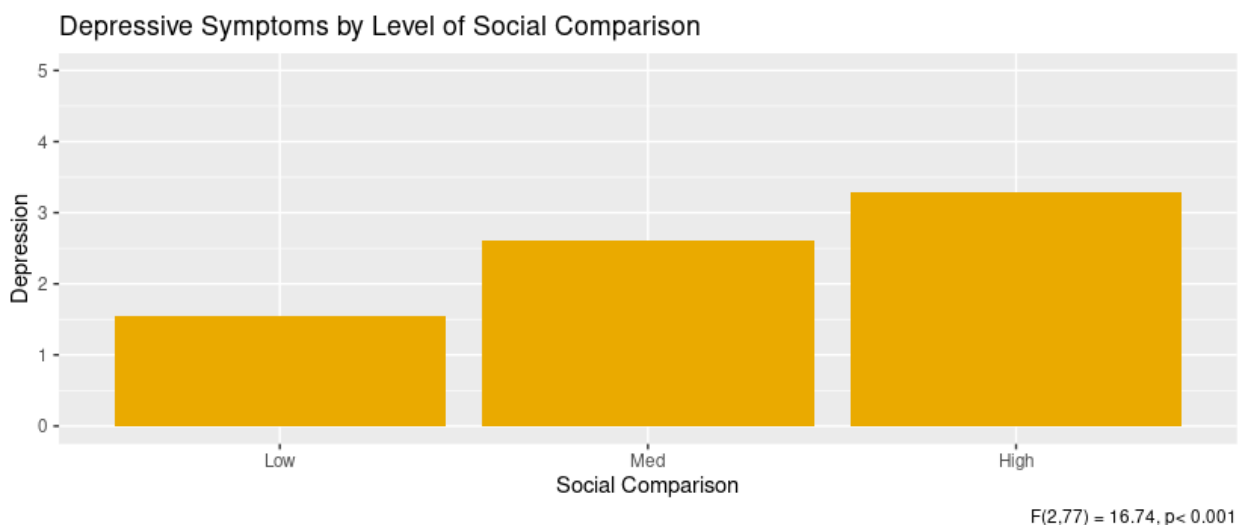


Figure 2

Hypothesis 1 was further supported as overall scores on the social comparison scales were positively correlated with anxiety ( $r = .58, p < .001$ ). Additionally, as illustrated in Figure 3 below, the difference between groups with low, medium, and high scores on social comparison differed in overall levels of anxiety ( $F(2,77) = 17.63, p < .001$ ). Post-hoc tests confirmed that groups with high (scores above 2.75) social comparison scores differed from those with low (scores below 1.375) social comparison scores (mean diff = 1.63,  $p < .001$ ).

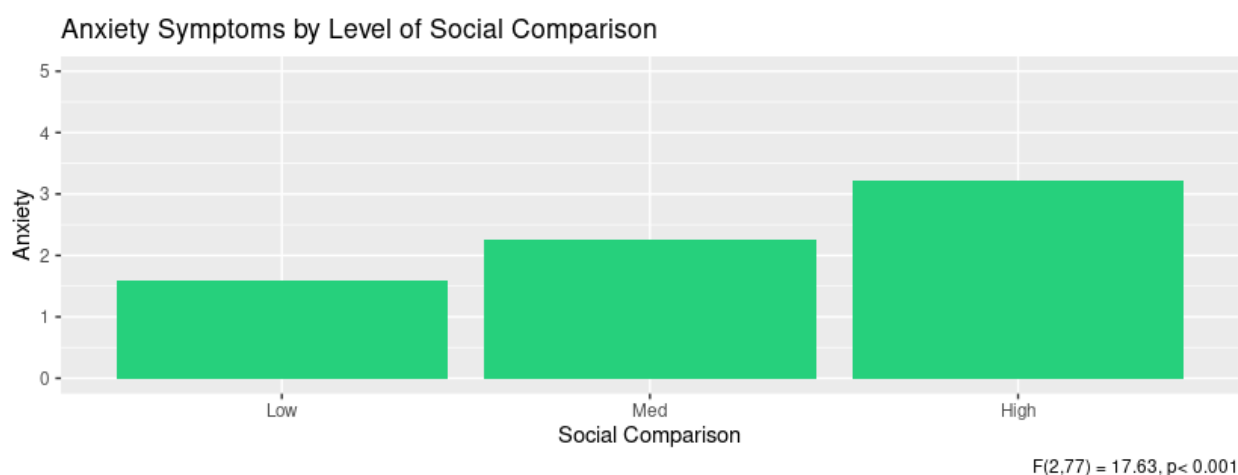


Figure 3

The second hypothesis was that participants who scored high on the diffuse self-identity style measure would tend to show higher levels of social media anxiety/addiction and would tend to score higher on depression and anxiety. Hypothesis 2 was partially supported in that Diffuse identity had a significant positive correlation with social media addiction ( $r = .29, p < .05$ ). Additionally, as illustrated in the Figure 4 below, the difference between groups with low, medium, and high scores on diffuse identity showed significantly different levels of addictive symptoms ( $F(2,77) = 3.1, p < .05$ ). Post-hoc

tests confirmed that groups with high diffuse identity scores (scores above 3.4) compared to low (scores below 2.5) were significantly different from each other (mean diff = .76,  $p < 0.05$ ).

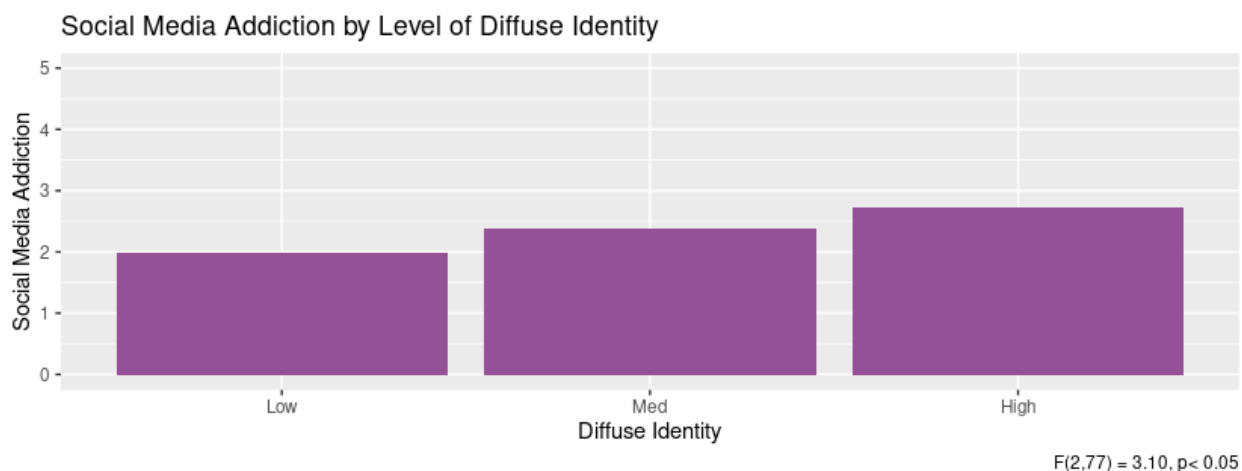


Figure 4

Consistent with our hypothesis, participants with high (scores above 3.44), as compared to low (scores below 2.5), diffuse identity reported higher levels of social media addiction (TukeyHSD  $p < .05$ ). For self-disclosure ( $M = 2.2, SD = 1.08$ ), there were inconsistent results regarding the relationship with psychological well-being and social media addiction. Self-disclosure was negatively correlated with depression ( $r = -.04, ns$ ) but this correlation was statistically insignificant. Anxiety was not correlated with self-disclosure ( $r = .12, ns$ ). For the second hypothesis, diffuse identity had no significant correlation with depression ( $r = .07, ns$ ) and depression ( $r = .09, ns$ ). Normative self-identity ( $M = 3.02, SD = 0.65$ ) was removed from the study due to its statistical insignificance with all variables of interest.

### Theoretical Path

### Model Test

The theoretical model initially proposed related to how identity would relate to

social media use, which could lead to both positive and negative psychological well-being. The model predicted that individuals high in informational identity styles would lead to more social media activity consistent with seeking social support and affiliation and ultimately low levels of depression and anxiety. On the other hand, individuals high in Diffuse and Normative styles would lead to more negative social media use, like social comparison and self-disclosure, and would ultimately be associated with higher levels of depression and anxiety. However, every path model tested where the model included informational styles and social support resulted in fit indices well below any acceptable levels (CFI values below .50). I decided to drop any model that included the informational identity styles and social support/affiliation measures. The final path model that resulted in the best fit for the observed data is presented below. This model focuses on how the diffuse and normative identity styles predict social comparison and self-disclosure social media use which in turn is associated with social media addiction, depression, and anxiety.

As can be seen in the model (Figure 5), individuals with higher levels of diffuse identity tend to engage in more social comparison when using social media leading to social media addiction, and ultimately higher levels of depression and anxiety. Individuals with higher levels of normative identity tend to engage in more self-disclosure when using social media which likewise leads to social media addiction, higher levels of anxiety. Self-disclosure does not, on the other hand, lead to higher levels of depression. This revised final model resulted in a poor, but acceptable fit ( $\chi^2(12, N = 80) = 50.82, p < .001, CFI = .80, RMSEA = .21$ ) of the data especially for an exploratory analysis (Hu & Bentler, 1995).

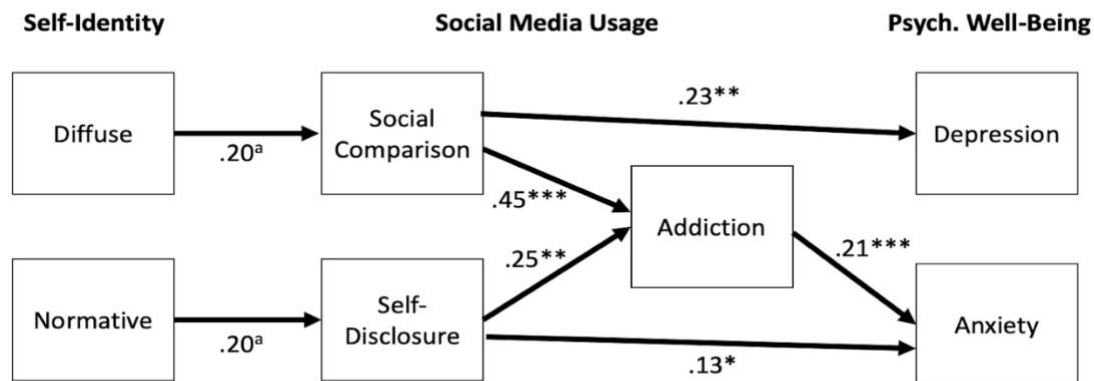


Figure 5:  $a = p < .01$ ,  $* = p < .05$ ,  $** = p < .01$ ,  $*** = p < .001$

## Discussion

This study analyzed how different self-identity styles (e.g., diffuse, normative) impact social media activity (e.g., social comparison, self-disclosure) which, in turn, affect psychological well-being and may result in the development of addictive symptoms. 80 participants took part in an online study. Our results indicated that specific types of social media use led to more negative psychological outcomes. The results were somewhat in line with our hypotheses in which I predicted higher scores on social comparison and self-disclosure would lead to lower psychological well-being. Social comparison had a significant association with social media addiction and depressive symptoms. Diffuse self-identity styles also had a significant association with depressive symptoms which was predicted in our hypothesis that higher diffuse self-identity would score lower on psychological well-being measures. There was no association between social support/affiliation and lower scores on psychological well-being measures (e.g., depression and anxiety) suggesting better overall psychological well-being.

A modified path model was also tested. The revised model (Figure 5) included only variables where significant associations were observed between the observed variables. Our path model demonstrated two self-identity styles (normative and diffuse) were associated with the tendency to engage in social comparison and self-disclosure on social media. Social comparison led to addictive and depressive symptoms, while self-disclosure was associated with addiction and anxiety symptoms. Finally, addictive symptoms were also significantly associated with anxiety symptoms. Self-disclosure had a relatively weaker association with psychological well-being measures compared to social comparison. Future studies should explore if self-disclosure or a lack of self-disclosure reflects the moods or identity of users.

Our study contributes to the literature in several ways. Firstly, an important contribution of this study to the literature is the development of a new way of measuring social media usage that does not rely on participants screen time. The experience of using social media is not simply looking at a screen, but a much more complex social phenomenon. Social media usage impacts multiple aspects of the mind (social, emotional, mental etc.). Measuring screen time is one coarse-grained measure that gives an introductory glimpse into the amount of usage but not much more. Our unique measure that captured the frequency of individuals' specific online activities involving self-disclosure, social comparison, and affiliation/social support is shown to be statistically reliable and useful in predicting the different types of social media usages. These new measures may begin to capture the complexities of social media usage. Future studies should be done using and building on these scales to evaluate specific social media platforms, general internet activity, and how such measures correlation with screen time.

Secondly, our study also adds to the growing data showing that social media use affects psychological outcomes — and that the effects are mostly negative (Yang et al., 2021). This study attempted to look at ways social media might contribute to more positive psychological outcomes, by including measures of individuals' social support seeking activities including individuals with more informational seeking identity styles, but those measures were not statistically related to psychological well-being. More research should be done on the positive effects of social media use including different groups affiliations, especially for those from minority identities. The present study was limited to looking at social support as a positive way for emerging adults to use social media. Including measures of the use of social media information about other cultures. A future study using survey data or tracking of social media activity of individuals from minority groups or those with specific interests may provide us with a broader understanding of how differences in self-identities might lead to differential social media activity and, in turn, differential psychological outcomes.

Finally, our study's focus on differential self-identity styles sheds some clarifying light on the contrasting negative and positive outcomes of social media use that have been found in the literature (e.g., Keles et al., 2020, Kim 2018, Lemenager et al., 2018, Meshi & Ellithorpe, 2021). The self-identity style or "self-view" of social media users was shown to relate to the types of social media activities individuals' engaged in, which lead to differential levels of psychological well-being. For example, diffuse self-identity styles with increased social comparison online activities were associated with more depressive symptoms. Since individuals with diffuse self-identity style tend not to engage in self-reflection, their social media use was less productive. Engaging in self-reflection



to realize one's self-identity style may lead toward more productive social media use. There was no strong evidence regarding more positive self-identity styles leading to more social support seeking social media activity, leading to lower levels of depression and anxiety. Such a finding was expected in our initial theoretical model but the measures in this study may not have been sensitive enough to find such an effect. The hypothesis merits more research. A more sensitive measure needs to include how social media is used to maintain already existing relationships as well as foster new ones. Perhaps identifying and studying known healthy functioning individuals and then tracking their engagement with social media and measuring their identity styles might help improve our measures of both social media use and self-identity styles. An improvement that might allow our model to better understand more healthy social media usage.

Emerging adult social media users should understand their self-identity style and adopt intentional use patterns of social media. Especially, individuals with diffuse self-identity should recognize unhealthy social comparison before depressive symptoms develop. Individuals with normative self-identity style should recognize their tendency to disclose personal information. Self-disclosure on social media may lead to more anxious and addictive symptoms, which users should monitor in order to not develop maladaptive symptoms. It may be hard for users, especially those with diffuse self-identity, to recognize their self-identity style. Those with diffuse self-identity often do not engage in self-reflection, so these realizations may need to occur with a therapist before they become disorders.

The main limitation of our study is our data was based on self-reported measures, including the variables of interest, type of social media use. With all self-report data there

is a chance participants may not have the general cognitive ability to reflect on themselves or pay attention and interpret items correctly (Sewall et al., 2022). Participants may also have answered somewhat dishonestly due to social desirability bias. Additionally, participants may have not wanted to disclose depressive, anxiety, as well as the extent of their addictive symptoms. Yet, many participants did disclose symptoms as evidenced by a number of participants who scored quite highly on measures of anxiety and depression. Future studies should try to develop a way to track participants usage that is not related to screen time but that does not also rely so heavily on self-reports. Some studies (e.g., Sewall et al., 2022, Shensa et al., 2017) have tried to establish an objective measurement of social media using screen time. Our study tried to capture the more subjective measurements of social media which have not been addressed in the literature. Such subjective self-reported measurements are the only practical way to capture participants social media use at a large scale.

In conclusion, our study addresses a gap in the literature by providing a scale evaluating the types of social media use users engage in. Our study provides some evidence for certain self-identity styles having an association with negative forms of social media use, which are significantly correlated with negative psychological outcomes (depression, anxiety, addiction). Future research should address how social groups/affiliations on social media positively impact on well-being

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## Appendix A

### List of items used in this study

#### ISI-3 Self-Identity styles (Berzonsky 1998)

Not at all like me (1-5) Very much like me

1. Regarding religious beliefs, I know basically what I believe and don't believe.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
2. I've spent a great deal of time thinking seriously about what I should do with my life.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
3. I'm not really sure what I'm doing in school; I guess things will work themselves out.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
4. I've more-or-less always operated according to the values with which I was brought up.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
5. I've spent a good deal of time reading and talking to others about religious ideas.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
6. When I discuss an issue with someone, I try to assume their point of view and see the problem from their perspective.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
7. I know what I want to do with my future.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
8. It doesn't pay to worry about values in advance; I decide things as they happen.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
9. I'm not really sure what I believe about religion.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
10. I've always had purpose in my life; I was brought up to know what to strive for.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
11. I'm not sure which values I really hold.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
12. I have some consistent political views; I have a definite stand on where the government and country should be headed.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
13. Many times by not concerning myself with personal problems, they work themselves out.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
14. I'm not sure what I want to do in the future.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
15. I'm really into my major; it's the academic area that is right for me.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
16. I've spent a lot of time reading and trying to make some sense out of political issues.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
17. I'm not really thinking about my future now; it's still a long way off.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)

18. I've spent a lot of time and talked to a lot of people trying to develop a set of values that make sense to me.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
19. Regarding religion, I've always known what I believe and don't believe; I never really had any serious doubts.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
20. I'm not sure what I should major in (or change to).  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
21. I've known since high school that I was going to college and what I was going to major in.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
22. I have a definite set of values that I use in order to make personal decisions.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
23. I think it's better to have a firm set of beliefs than to be open-minded.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
24. When I have to make a decision, I try to wait as long as possible in order to see what will happen.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
25. When I have a personal problem, I try to analyze the situation in order to understand it.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
26. I find it's best to seek out advice from professionals (e.g., clergy, doctors, lawyers) when I have problems.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
27. It's best for me not to take life too seriously; I just try to enjoy it.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
28. I think it's better to have fixed values, than to consider alternative value systems.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
29. I try not to think about or deal with problems as long as I can.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
30. I find that personal problems often turn out to be interesting challenges.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
31. I try to avoid personal situations that will require me to think a lot and deal with them on my own.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
32. Once I know the correct way to handle a problem, I prefer to stick with it.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
33. When I have to make a decision, I like to spend a lot of time thinking about my options.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
34. I prefer to deal with situations where I can rely on social norms and standards.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)
35. I like to have the responsibility for handling problems in my life that require me to think on my own.  
(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)

36. Sometimes I refuse to believe a problem will happen, and things manage to work themselves out.

(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)

37. When making important decisions I like to have as much information as possible.

(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)

38. When I know a situation is going to cause me stress, I try to avoid it.

(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)

39. To live a complete life, I think people need to get emotionally involved and commit themselves to specific values and ideals.

(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)

40. I find it's best for me to rely on the advice of close friends or relatives when I have a problem.

(NOT AT ALL LIKE ME) 1 2 3 4 5 (VERY MUCH LIKE ME)

### **Appendix B**

#### **Rumination and Self-Reflection Scales (Trapnell and Campbell 1999)**

1. I love exploring my "inner" self.
2. I often love to look at my life in philosophical ways.
3. I love to meditate on the nature and meaning of things.
4. I don't really care for introspective or self-reflective thinking.
5. My attitudes and feelings about things fascinate me.
6. I love analyzing why I do things.
7. I don't care much for self-analysis.
8. I'm not really a meditative type of person.
9. Philosophical or abstract thinking doesn't appeal to me that much.
10. Contemplating myself isn't my idea of fun.
11. People often say I'm a "deep," introspective type of person.
12. I'm very self-inquisitive by nature.
13. I tend to "ruminate" or dwell over things that happen to me for a really long time afterward.
14. Often I'm playing back over in my mind how I acted in a past situation.
15. I always seem to be rehashing in my mind recent things I've said or done.
16. Long after an argument or disagreement is over with, my thoughts keep going back to what happened.
17. I don't waste time rethinking things that are over and done with.
18. I often find myself reevaluating something I've done.
19. I often reflect on episodes in my life that I should no longer concern myself with.
20. I spend a great deal of time thinking back over my embarrassing or disappointing moments.
21. I never ruminate or dwell on myself for very long.
22. It is easy for me to put unwanted thoughts out of my mind.
23. Sometimes it is hard for me to shut off thoughts about myself.
24. My attention is often focused on aspects of myself I wish I'd stop thinking about.

### **Appendix C**

#### **SOCIAL MEDIA USAGE**

**AFFILIATION/SOCIAL SUPPORT (Never Rarely Sometimes Frequently Always)**

In the past two weeks:

1. I sought out new people that have similar interests to me on social media
2. I sent a direct message to a friend to check in with them
3. I talk to others on social media about topics I am interested in
4. I keep in contact with friends that have moved away or do not live close to me
5. I use social media to keep in contact with my extended family members
6. I talked to one or more friends on social media almost daily
7. I received messages from another user
8. I joined a group or community online

**SOCIAL COMPARISON (Never Rarely Sometimes Frequently Always)**

In the past two weeks:

1. I compared the number of friends/followers I have to someone I am friends with or follow
2. I found myself wondering about how my life is better or worse than others I follow
3. After posting on social media, I wondered about how others would perceive me
4. I compared my body/shape to someone I'm friends with or that I follow
5. I felt like I have not achieved as much as other people I follow on social media
6. After looking at other people's profiles for a period of time I felt like my life was more mundane or uninteresting
7. After looking at other people's profiles for a period of time I felt unattractive
8. I felt jealous of other users (e.g., wealth, attractiveness, social status) when looking at their profiles

**SELF-DISCLOSURE (Never Rarely Sometimes Frequently Always)**

In the past two weeks:

1. I posted pictures of myself on social media
2. I posted about an accomplishment in school/job on social media
3. I posted something on social media that was visible to every user
4. I posted about my significant other on social media
5. I posted something on social media that was only visible to friends
6. I looked through other people's accounts even if I do not know them in real life
7. I discussed my personal life with other social media users
8. I posted/commented something about my personal life or beliefs

**Appendix D****PSYCHOLOGICAL WELL-BEING****PROMIS Scale for Anxiety and Depression (Pilkonis et al. 2011)****DEPRESSION**

In the past two weeks:

I felt hopeless

I felt depressed

I felt worthless

I felt helpless

I felt like a failure  
 I felt that I had nothing to look forward to  
 I felt that nothing could cheer me up  
 I felt unhappy  
 I felt sad  
 I felt that I wanted to give up on everything  
 I felt that my life was empty  
 I felt discouraged about the future  
 I felt I had no reason for living  
 I found that things in my life were overwhelming  
 I felt disappointed in myself  
 I felt that I was not needed  
 I felt that nothing was interesting  
 I withdrew from other people  
 I felt that I was to blame for things  
 I felt emotionally exhausted  
 I had trouble making decisions  
 I felt lonely  
 I had trouble feeling close to people

**ANXIETY**

In the past two weeks:

I found it hard to focus on anything other than my anxiety  
 My worries overwhelmed me  
 I felt uneasy  
 I felt fearful  
 I felt like I needed help for my anxiety  
 I felt frightened  
 I felt nervous  
 I felt anxious  
 I felt tense  
 It scared me when I felt nervous  
 I had difficulty calming down  
 Many situations made me worry  
 I felt worried  
 I had sudden feelings of panic  
 I felt something awful would happen

**Perceived Social Support (Zimet et al. 1988)**

Rated from (1-7), Circle the "1" if you Very Strongly Disagree

Circle the "2" if you Strongly Disagree

Circle the "3" if you Mildly Disagree

Circle the "4" if you are Neutral

Circle the "5" if you Mildly Agree

Circle the "6" if you Strongly Agree

Circle the "7" if you Very Strongly Agree

1. There is a special person who is around when I am in need. 1 2 3 4 5 6 7

2. There is a special person with whom I can share joys and sorrows. 1 2 3 4 5 6 7
3. My family really tries to help me. 1 2 3 4 5 6 7
4. I get the emotional help & support I need from my family. 1 2 3 4 5 6 7
5. I have a special person who is a real source of comfort to me. 1 2 3 4 5 6 7
6. My friends really try to help me. 1 2 3 4 5 6 7
7. I can count on my friends when things go wrong. 1 2 3 4 5 6 7
8. I can talk about my problems with my family. 1 2 3 4 5 6 7
9. I have friends with whom I can share my joys and sorrows. 1 2 3 4 5 6 7
10. There is a special person in my life who cares about my feelings. 1 2 3 4 5 6 7
11. My family is willing to help me make decisions. 1 2 3 4 5 6 7
12. I can talk about my problems with my friends. 1 2 3 4 5 6 7

### **Appendix E**

#### **Bergen Social Media Addiction Scale (BSMAS; Andreassen et al. 2012)**

How often during the last year have you... (Very rarely to very often)

1. ...spent a lot of time thinking about social or planned use of social media?
2. ...felt an urge to use social media more and more?
3. ...used social media to forget about personal problems?
4. ...tried to cut down on the use of social media without success?
5. ...become restless or troubled if you have been prohibited from using social media?
6. ...used social media so much that it has a negative impact on your job/studies?