January 2019

An Exploration Of In-Person And Online Social Interaction: Examining The Effects Of Two Domains Of Social Behavior

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AN EXPLORATION OF IN-PERSON AND ONLINE SOCIAL INTERACTION:
EXAMINING THE EFFECTS OF TWO DOMAINS OF SOCIAL BEHAVIOR

by

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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota
August
2019

This dissertation, submitted by Michael D. Prazak in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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Virginia Clinton

This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

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Title   An exploration of in-person and online social interaction: Examining the effects
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Department   Counseling Psychology and Community Services

Degree   Doctor of Philosophy

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August 2019

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ABSTRACT

Social interaction is a core dimension of a fulfilling life. At present, the study of social interaction has focused largely on online social interaction due to the prevalence of this behavior in modern society, and the large impact of this manner of interaction on the psychological health of individuals. In terms of online behavior, both positive and negative effects may be experienced. Better understanding predictors and outcomes of online behavior would thus be a timely and valuable contribution to literature. The present study examined anxious and avoidant attachment style as predictors of social intimacy, levels of both in-person and online intimate disclosure, a negative attitude toward technology, and problematic internet use. It was then examined whether these variables in combination predicted social well-being.

Participants were collected online using Amazon Mechanical Turk. The present sample of 314 participants was restricted to those that are currently young adults, which for the purpose of this study was defined as those individuals aged 18-25. A series of six total hierarchical regressions were conducted. It was found that both anxious and avoidant attachment positively predicted problematic internet use, neither predicted online intimate disclosure, and only avoidant attachment predicted negative attitudes toward technology. While avoidant attachment negatively predicted social intimacy and in-person disclosure, anxious attachment positively predicted both of these. Social well-being was positively predicted by social intimacy and network number and negatively predicted by negative attitudes toward technology, problematic internet use, and online self-disclosure. The present study demonstrated that attachment style has a strong relationship to many variables related to online and in-person behavior.

CHAPTER I

INTRODUCTION

Social interaction is widely regarded as a critical aspect of a well-lived life (Keyes, 1998). It is strongly and broadly linked to physical health (Cohen, Gottlieb & Underwood, 2001) and general psychological well-being (Diener, Sug, Lucas & Smith, 1999). Higher levels of social interaction are a protective factor against risks such as mortality (Holt-Lunstad, Smith & Layton, 2010) and depressive symptoms (Lin, Dean & Ensel, 2013). Contemporary research focuses largely on the study of online social interaction at present due to the ubiquity of this platform and its role in facilitating interaction (Perrin, 2015). Better understanding factors influencing online social interaction, and the impact of social interaction, especially among young adults, is a pressing area of ongoing exploration and the main focus of this research endeavor. Within this, the impact of cultural identity, including such aspects as ethnicity, age, gender, and SES are discussed throughout existing literature as available as a key factor relevant to social interaction. While previous research on social interaction and one's qualitative assessment of their interactions (Keyes & Waterman, 2003) has often focused on adolescents or older adults, focusing on young adults in particular may be particularly salient as these digital natives (Bennett, Maton & Kervin, 2008) are often understudied in existing literature and would increase the availability of literature on an otherwise somewhat understudied age group as it regards these social interaction research specifically.

The importance of social interaction includes numerous positive aspects. For instance, social interaction is an important contributing factor to flourishing (Ryff & Singer, 2000), itself a topic identified as worthy of discussion in addition to that of the more-researched areas of mental health difficulties. Decades of literature have identified that various aspects of social interaction

have a wide range of effects in both mental and physical health (Thoits, 2011). Within this

relationship some nuance exists, such as that suggested by a study of individuals in Hong-Kong

mental health residential facilities (Young, 2006), where it was found that support by staff and

friends, rather than family, predicts life satisfaction. This suggests that within social support,

some relationships may offer greater mental health benefit than others, or that other dimensions

beside the amount of individuals in one's life may be relevant. However, it is also possible that

differences exist across nationalities, and that the meaning and relative weight of family in

relation to friends may differ across cultures. Despite the subtleties that exist within the

relationship between social interaction and outcomes, literature is clear that social interaction is a

dominant and primary contributing factor to life outcomes in mental (Tew et al., 2012; Kawachi

& Berkman, 2001) and physical (Uchino, 2006; Cohen, 2004) health. Better exploring social

interactions among young adults has the potential to be particularly helpful, as young adulthood

is a transitional point with the potential to develop meaningful interventions that the young adults

may sustain moving forward.

In an online setting, the impact of social interaction has the potential to lead to a number

of positive outcomes as well. For instance, online social interaction helps young adults maintain

connections to a community, leading to social capital and well-being (Ellison, Steinfield &

Lampe, 2007). It has also been found to increase social connectedness and improve mental health

(Grieve, Indian, Witteveen, Tolan & Marrington, 2013). One study examined a broad range of

affective and social outcomes among young adults (Oh, Ozkaya & LaRose, 2014) and identified

online social interaction as leading to perceived support, positive affect, meaningful interactions,

increased perceived community, and greater satisfaction in life. Also among young adults, online

social interaction allows individuals to stay connected to previous communities, as well as build

networking in their present location (Ellison, Steinfield & Lampe, 2007). It was further found that this benefit was greatest for those with lower levels of self-esteem and life satisfaction. The implication of helping otherwise disconnected or isolated individuals has clear implications for those whose cultural identity is not that of the dominant culture in which the individuals find themselves, suggesting that it may be a tool for increased connection.

In addition to a range positive outcomes, certain negative outcomes may result from online social interaction as well. Feinstein and colleagues (2013) explored the conceptualization that it is the way social media is used, rather that the behavior, that leads to negative outcomes, by identifying that online social interaction exacerbates depressive symptoms if used to compare oneself to others and ruminate. Similar findings have been reported in relation to body image and mood (Fardouly, Diedrichs, Vartanian & Halliwell, 2015). While social media sites in the short-term may decrease loneliness (Shaw & Grant, 2002), it may also become a near-exclusive outlet for socially-anxious individuals (Caplan, 2006) and expose individuals to bullying and harassment (O'Keeffe & Clarke-Pearson, 2011). The dual possibilities of positive and negative outcomes of online interaction appears to largely be a function of the type of interactions themselves. One study demonstrated that while positive online interactions increase self-esteem and well-being, negative interactions achieve the opposite (Valkenburg, Peter & Schouten, 2006).

One aspect of online social interaction that impacts whether these interactions lead to positive or negative outcomes is that of intimate disclosure. Intimacy has been conceptualized as the relational quality that is developed through sharing personal information in a reciprocal manner in a relationship (Altman & Taylor, 1987). Intimate disclosure is measured primarily through the degree of self-disclosure in several content areas about oneself (Schouten,

Valkenburg & Peter, 2007) with leading instruments typically normed in Dutch adolescents, and as a relational quality appears to be increased online as a function of increased disinhibition resulting from the online format. Intimate disclosure has been found to lead to increased success in dating (Gibbs, Ellison & Heino, 2006) as well as increased online friendships (Peter, Valkenburg & Schouten, 2005), with both similarities and striking differences found in cultures around the world (Goodwin, Nizharadze, Luu, Kosa, & Emelyanova, 1999). Given the unique qualities of online social interaction that lead to increased self-disclosure (Valkenburg & Peter, 2009) and the relationship-building effects of this (Bargh, McKenna & Fitzsimmons, 2002), self-disclosure is considered to be a key variable in the outcomes of online social interaction.

In addition to benefits experienced psychologically and socially as previously discussed, it is clear that internet use may be used productively and consciously to improve functioning. For instance, when used to increase the degree of self-disclosure and deepen existing friendships, online social interaction has many positive effects (Valkenburg & Peter, 2009). Another study suggested that online interaction puts the focus on the conversation rather than appearance, leading to decreased feelings of social judgment (Tufekci, 2010). In the same study it was identified that African Americans within that study were more likely to initiate friendships online, and use these to increase offline relationships as well to create a greater network of social support. The use of internet to support and grow in-person relationships and develop a healthier sense of community is a use that represents a strong positive.

While online social interaction offers the potential for a great deal of positive outcomes, when online social interaction becomes one's primary or sole way of meeting this need for intimacy and interaction, the potential for problematic internet use emerges (Caplan, 2003). The idea of problematic internet use, though it has been conceptualized in several ways, is internet

use to such an extent that it becomes preoccupying or a cause of distress when without access

(Shapira, Goldsmith, Keck, Khosla & McElroy, 2000). Problematic internet use is considered to

meet DSM-IV impulse control disorder criteria (Shapira et al., 2000). It also relates to a number

of negative outcomes including depression, loneliness, and low self-esteem (Caplan, 2002).

Problematic internet use is thought to arise from either anxiety or loneliness (Caplan, 2006) but

ultimately increases social isolation in those who turn to this exclusively (Kim, LaRose & Peng,

2009), a finding replicated in a variety of populations and cultures.

The presence of problematic internet use at the far end of the continuum of internet use

and the corresponding negatives outcomes highlights the need to better understand factors that

determine how one uses the internet to socially interact and the outcomes of doing so. The model

used in the present study was developed by Caplan (2010) and first explored largely through

predominantly White American adults. Though in both the scale and the present study it is used

as a single score, the scale represents five related subscales. The first is that of preference for

internet use, which represents a higher degree of comfort or tendency to seek out interpersonal

relationships online rather than in person. The second is that of using the internet for mood

regulation, particularly feelings of anxiety and sadness which are addressed consistently with the

use of the internet. The third is that of cognitive preoccupation with the internet, which

represents ongoing thoughts throughout the day related to internet use, and desire to do so during

other activities. The fourth is that of difficulty abstaining from internet use, which measures lack

of behavioral inhibition related to internet use specifically. The fifth is that of negative outcomes

as a result of internet use, broadly assessing perceived undesired consequences due to one's use

of the internet. Each of these are combined for a total scale score of what is termed problematic

internet use.

To better understand what drives one's social interactions, it is also thought helpful to explore attachment style, a key variable in explaining the way one interacts with others. Attachment style appears to predict a number of aspects of online (Nguyen, Bin & Campbell, 2012) and in-person social interaction (Buote, Wood & Pratt, 2009), including intimate disclosure (Grabill & Kerns, 2000) and problematic internet use (Schimmenti, Passanisi, Gervasi, Manzella & Famà, 2014). It has been explored in relation to aspects of cultural identity such as age and gender (Davis, Shaver, & Cernon, 2003) as well as various cultures and levels of SES (Ijzendoorn & Bakermans-Kranenburg, 2010. As an internal psychological framework that is thought to determine how one sees and interacts with others (Meyer & Pilkonis, 2001), attachment style is examined in the present study as a predictor of various aspects of social interaction. The model of attachment style used in the present study (Bartholomew, 1990) is a four-style model in which individuals can be either high or low on both anxiety and avoidance for four total styles.

Ultimately, the impact of online and in-person social interaction is best understood in regard to their impact on social well-being. Social well-being is the primary outcome variable in the present study. Social well-being moves past social interaction to form a qualitative dimension of life satisfaction specific to interpersonal relationships (Ryff & Keyes, 1995). Though various components of this quality have been proposed, in the present study it is measured as a single variable. As social well-being is a core aspect of overall life satisfaction (Helliwell & Putnam, 2004; Pinquart & Sorensen, 2000), understanding the relationship between types of online and in-person social interaction and how they lead to social well-being is clearly important. This is partially because numerous models have been developed to explain the relationship between social network and mental health (Kawachi & Berkman, 2001), suggesting ongoing investigation

would be valuable to better understand this relationship. Each of the previously-mentioned aspects of social interaction such as online (Best, Manktelow & Taylor, 2014) and in-person interactions (Rigby, 2000), and intimate self-disclosure (Ko & Kuo, 2009), in these contexts affects one's resulting social well-being.

In order to explore the factors influencing social interaction and social well-being the present study focuses only on young adults in the age range of 18-25. The idea that young adults living in the U.S. have spent their lives using the internet is highly controversial but widely believed (Bennett, Maton, Kervin, 2008). Reviews have found modest support for quantitative differences between young adults and older generations in internet use (Helsper & Eynon, 2009). Additionally, previous literature has generally delineated and focused on one age group whether adolescence (Gross, Juvonen & Gable, 2002; Milani, Osualdella & Di Blasio, 2009), young adults (Odaci & Kalkan, 2010; Ramo, Hall & Prochaska, 2010) or older adults (Cody, Dunn, Hoppin & Wendt, 1999; Zickuhr & Madden, 2012). While examining differences between age groups in terms of internet use would be valuable, examining the use and impact of online social interaction without doing so would risk confounding the variables of interest. Thus young adults, at times termed "first generation digital natives" and commonly defined as consisting of ages 18-25 (Helsper & Eynon, 2009, p. 9) is the focus of the present study.

Because of the importance of social interaction in social well-being and the presence of numerous limitations in previous literature exploring related variables, the present study aims to further explore factors related to social interaction and the impact of these factors on social well-being in a sample of young adults. To do so, aspects of social interaction such as intimate disclosure and online social interaction are presented, with a focus on attachment style in particular as a critical factor influencing social interaction. Following this, the emerging domain

of online social interaction and the relationship between online and offline social interaction are explored. These dual online and in-person domains of social interaction, with attachment style as a contributing factor, are also examined in terms of potential outcomes in terms of social well-being.

CHAPTER II

LITERATURE REVIEW

As social well-being represents a qualitative assessment of one's social interactions (Keyes & Waterman, 2003), the following literature review begins with a discussion of the theoretical and empirical basis of social well-being. Following this, the present study explores the impact and outcomes of social well-being, including on mental health, with a focus on these outcomes in young adults as available. As a variable viewed as a primary predictor of an individual's approach to social interaction, attachment style is presented next. Anxious and avoidant attachment in particular are discussed, and related to social interactions. Following this, intimacy and intimate disclosure, as key dimensions of social interaction, are discussed. Online social interaction as distinct from in-person interaction, and the relationship of online social interaction to attachment style, is then discussed. A discussion of problematic internet use, at the extreme end of online social interaction, follows this. The limitations of previous literature and the hypothesis of the present study complete the literature review.

Social Well-Being

Social well-being is considered to reflect the qualitative evaluation of one's interpersonal interactions as an individual reflects upon oneself in relation to others and society at large (Keyes & Waterman, 2003). It represents an expansion past social interaction and specifically into the area of the meaning and impact of relationships on one's life, and the perception of oneself as

integrated into society and meaningful relationships. As the result of social interaction, social well-being is conceptualized in the literature largely as an outcome of interpersonal behavior. One leading model of social well-being was developed by Keyes (1998) in a large sample of American adults across ages, who conceptualized social well-being as a model of one's evaluation of their social interactions across domains in their life. Although in Keyes' (1998) scale development process the sample was overwhelmingly White (92%), other aspects of culture such as income, gender, and education were much more distributed across ranges.

Social well-being appears to be a core factor predicting mental health. For example, Burns and Machin (2013) examined the relationships between life events, social well-being, and mental health outcomes in a sample of Australian young adults and identified that social well-being (as measured by one's evaluation of work support and work social climate) plays a central moderating role between life events and mental health. Importantly, the reported quality of interpersonal relationships, a core aspect of social well-being, was found to moderate the relationship between life events and psychological health. It may be that difficult life events are much more detrimental to mental health to those without a healthy level of social well-being than for those with high social well-being, which may include a robust social support network.

The importance of better understanding the relationships between culture, social support and social well-being is highlighted by the fact that numerous aspects of cultural identity—especially identities that may be marginalized--may demonstrate a higher level of benefit from increased levels of interpersonal support and social connectedness. For instance, community support and sexual identity valence have been shown to largely explain the impact of bisexuality and youth in relation to mental health and social well-being (Kertzner, Meyer, Frost & Stirratt, 2009). Specifically, among bisexual individuals social support and their view of their sexuality

mediated the relationship between bisexuality and decreased social well-being. This may

highlight the importance of recognizing the responsiveness to support and the importance of self-

acceptance. Similarly, social identification and support were found to be critical mediating

factors between adversity and mental health outcomes (Inoue, Funk, Wann, Yoshida &

Nakazawa, 2015), similarly suggesting the importance of social support for a life in which

flourishing and high levels of social well-being are enjoyed across populations and subsets of

populations.

Studies have also long-identified (Mehra, Merkel & Bishop, 2004; Ess & Sudweeks,

2001) that otherwise marginalized communities are often active users of online social interaction

to achieve a degree of empowerment, connection, and fulfillment that would otherwise be not as

fully provided in the immediate environment. These studies support the conclusion that while the

broad umbrella of social support is critical to a healthy life, understanding the role of cultural

background and identity as they relate to social well-being are necessary to have a full

understanding of the meaning and weight of social well-being across the lifespan.

The concept of social well-being has been long criticized for being far more nebulous

than the equivalent of physical wellbeing (Stewart-Brown, 1998). Contemporary definitions have

related the concept of social well-being to that of happiness, sometimes including the additional

constructs of quality of life, community engagement, and level of functioning (MSD, 2004).

Such definitions appear to present what is functionally an aggregate of related constructs. For

instance, the constructs of social functioning and quality of life were not individually

operationalized when employed by the U.K. Ministry of Social Development (MSD; 2004), but

rather taken as innately meaningful and intuitively connected. This approach of creating a sense

of meaning by relating social well-being to undefined components seems to be somewhat

necessary, not least because such historical uses of the word "happiness"--defined for instance as "sufficient arable land for the expansion of agriculture" (Malthus, 1798, p. 7)--are no longer sufficient to capture the understanding of the concept in modern society.

Campbell's (1981) indirect contribution to the understanding of social well-being was that in addition to conceptualizing the broader psychosocial well-being partially as a function of one's role in society, psychosocial well-being also increasingly became understood as a personal and individual evaluation of the emotional quality of one's life. Based on interviews from 1957 to 1978, Campbell's (1981) surveys sought to shift the focus of the understanding of well-being away from the accumulation of material possessions towards a model constituted by affect, satisfaction, and strain in twelve domains including marriage/family, work, education, friendship, and et cetera. Cambell (1981) actively sought to sample across the country, including a variety of SES levels, geographic areas, age ranges, and other aspects of cultural identity to develop an understanding of social well-being that was both universal and influenced by culture. Using self-report responses, Campbell's goal was to better understand how individuals perceived their own well-being. While to some extent wealth or prosperity affected the resulting structure, Campbell's writings represented a shift toward a more qualitative and evaluative understanding of well-being.

Social well-being in particular, then, would incorporate both the self-rated emotional evaluation and one's perceived level of functioning in the social or interpersonal domain. Keyes (1998) noted that each individual must reconcile with challenges in their private, internal lives as well as their social interactions. As a result, he hypothesized that the then-current conceptualization of well-being, with its focus on symptomology and emotional functioning, did not account for well-being as a social individual. The social well-being model then proposed by

Keyes (1998) posited five components of overall social well-being (as noted earlier): social

integration, social contribution, social coherence, social actualization, and social acceptance,

each contributing to a robust total level of social well-being.

In this model (Keyes, 1998), social integration was defined as the quality of the

relationship between a given individual and their community, in their own estimation, and

incorporates the feelings of commonality and belonging. Social integration, derived largely from

the theoretical work of Durkheim (1897) as well as that of others, reflects the roles of class-

consciousness, socially-normative behavior and attitudes towards society at large. Social

acceptance refers to the attitude of the individual towards others and society, rather than self-

acceptance or a perception that society accepts them as individuals. Social contribution is the

perception of the degree to which one contributes meaningfully to society as a whole. Social

actualization is an individual's assessment of society as growing in a positive manner to fulfill

collective potential, and with that the individuals themselves may benefit from this collective

growth. Finally, social coherence represents the perceived ability of an individual to understand

their world, and with it a concern for life and its meaning. Each of these five components is

considered to contribute to overall social well-being.

Others have emphasized individual aspects of social well-being without necessarily

advancing a complete model of social well-being. For instance, Karademas (2006) proposed that

individuals' perception of social support, a marker of the degree to which they believe others are

helpful, is a meaningful dimension of social well-being. To explore this hypothesis, social

support was measured through self-report with one scale measuring emotional social support and

one scale measuring instrumental support, such as that of others sharing material and physical

involvement. Consistent with hypotheses, social support was a robust predictor of social well-being.

Social well-being has thus evolved through a number of historical contributions to represent the qualitative evaluation of one's social connectedness, and reflects the impact of a number of domains of social interaction. Social well-being appears to serve an important function in the relationship of life events to mental health, and constitutes both the level of one's interpersonal functioning and one's degree of satisfaction with this level of interpersonal interaction. Better understanding the factors that predict social well-being and further understanding the outcomes of social well-being would serve as an important contribution to identifying dimensions of a psychologically healthy life. Research around the world also has increasingly explored this in young adulthood specifically, as this is a pivotal time in which social well-being has an impact not only immediately but in patterns throughout their later life (Davidson & McEwen, 2012; Currie et al., 2009).

Outcomes of Social Well-Being

It is clear that social well-being is a vital component of overall life satisfaction and mental health. However, ongoing research is needed to continue to clarify the complex relationship between social well-being and outcomes in terms of pathways, outcomes, and interventions. Interestingly, a review of the effectiveness of interventions designed to reduce social isolation in older adults (Findlay, 2003) identified that the most effective interventions were conducted in groups and contained an educational or supportive dimension. Interventions considered effective included social activation, bereavement support, therapeutic groups, and family-involved groups. Within this review, one study found that peer-led groups significantly increased the social support levels of participants, while professionally-led groups did not

(Toseland, Rossiter, Peak & Smith, 1990). As a whole, group interventions were consistently found to be effective in reducing loneliness in the sample. This was contrasted with the finding that the majority of individual interventions did not significantly reduce the experience of isolation and loneliness. After examining a variety of forms of individual intervention including home visits, individual psychoeducation and telephone calls, individual interventions were nearly unanimously shown to be ineffective strategies to reduce isolation. This suggests that the perception of belonging to a group and having peers with whom one can socialize represents a response to isolation that is not matched by individual relationships, and thus to study social well-being both individual and group connectedness must be assessed.

While the literature, as mentioned, does consistently support the link between social support and positive outcomes, Kawachi and Berkman (2001) noted several caveats in a review of relevant literature. For instance, they noted that when elderly adults receive social support from children (Lee, 1985), this may exacerbate feelings of dependence. It was noted that not all social support facilitates personal growth, as some operates in the context of dependence and reinforces or deepens this dependence. This was reflected in the similar finding that women in a lower SES community often demonstrate higher rates of mental health difficulties associated with higher levels of familial social support (Dressler & Badger, 1985). This interpretation of this was that social support incurring reciprocal obligations as expected of highly family-connected women may increase stress and difficulty. Although these findings do not negate the body of literature suggesting the positive benefits of social support in general, it is apparent that in certain specific contexts social support may have negative outcomes. Thus, social support does not necessarily lead to positive outcomes merely as a function of interpersonal engagement. Social support must facilitate growth or serve as a buffer against stress and emotional difficulty.

Merely the presence of others, whether individually or as a group, without positive meaning does not appear to lead directly or necessarily to positive outcomes.

Studies such as these strongly support the conclusion that the qualities and characteristics of one's social interactions lead to outcomes in mental and physical health. Given the enormous consequences of social isolation and the importance of developing and implementing interventions to reduce isolation, a first step would clearly include identifying dominant predictors of social isolation. Presently, much of the literature regarding predictors of isolation have tended towards demographics, noting for instance that lower educational attainment, poorer health, lower community engagement, status as single, and lower income are all associated with higher levels of social isolation in older adults in particular (Adams, Kaufman & Dressler, 1989), with various population subsets demonstrating other demographic predictors. However, non-demographic predictors, such as attachment style, have also been shown to consistently relate to social isolation.

Attachment Style and Social Well-Being

Attachment style is a critical variable in predicting, explaining, and addressing poor social well-being. Attachment style was first explored in terms of infant behavior toward caregivers (Bowlby 1969, 1973). This early style of relating is theorized to develop into a model of how individuals themselves and others, in turn becoming the core framework to facilitate an individual's navigation of relationships with others (Bowlby, 1980). Although Bowlby (1980) did not generally integrate an exploration or discussion of culture, more recent research has integrated various aspects of cultural identity in relation to attachment style in samples around the world (Yum & Li, 2007; Gungor & Bornstein, 2010). In Bowlby's (1980) original work, infant attachment was first classified into secure (representing the normative and ideal

attachment style of healthily-attached infants); anxious-resistant, in which infants appeared

ambivalent and less able to be comforted/consoled; and avoidant, in which infants physically

seemed to avoid their caregivers (Ainsworth & Waters, 1978). Disorganized attachment style

was added soon after, recognizing that some infants did not demonstrate behavior that fit neatly

within an existing category (Main & Solomon, 1986). Although adult attachment was initially

designed to parallel the three attachment styles developed for infants (George, Kaplan & Main,

1985), a four-group classification was soon proposed (Bartholomew, 1990) consisting of fearful-

avoidant, dismissive-avoidant, secure and preoccupied (anxious).

The notion that attachment style would heavily influence interpersonal interaction is

supported by a literature review of the factors predicting social withdraw (Rubin, Coplan, &

Bowker, 2009). Specifically, withdrawn children are lonely, rejected, and insecure when

interacting with peers (2009). It was further noted that the familial attachment style of

interpersonally withdrawn peers is distinct from the attachment styles of non-withdrawn

students. Specifically, whereas most children develop a secure parent-child relationship that

encourages normative emotional and interpersonal growth in the context of secure and

supportive relationships, children with an insecure-anxious attachment style see the world as

dangerous and threatening. Consistent with expectations and the qualities associated with each

adult attachment style (Feeney & Noller, 1990), young adults with secure attachment style report

positive relationships; individuals with anxious attachment styles report low avoidance and a

desire for commitment; and individuals with avoidant attachment express mistrust of others.

Attachment style appears to correlate to variables related to social well-being, if not

social well-being directly, as literature has generally not explored the relationship between

attachment style and social well-being explicitly. In the only study identified to clearly explore

attachment style and social well-being with the latter term specifically used, it was noted that

attachment anxiety leads to negative outcomes in social well-being young adults, though this

relationship was moderated by mindfulness, with mindfulness reducing the negative outcomes of

attachment anxiety (Davis, Morris & Drake, 2016). In other studies, variables that would seem

generally related to social well-being, though not social well-being itself, have been found to

relate to attachment style. For instance, avoidant young individuals are less trusting of others

(Feeney & Noller, 1990), and both anxious and avoidant attachment relate to sexual

dissatisfaction (Shechtman & Campbell, 2008), lower self-disclosure (Keelan, Dion, & Dion,

1998; Wei, Russell & Zakalil, 2005) and decreased social intimacy (Bauminger, Finzi-Dottan,

Chason & Har-Even, 2008). While these are not social well-being directly, in the absence of

literature specifically using the term "social well-being" it is considered that various dimensions

of social interactions such as disclosure and intimacy do approximate or likely suggest a possible

relationship between attachment style and social well-being when studied.

In similar domains potentially related to social well-being as well, attachment style has

been found to predict various outcomes. For instance, insecure attachment style predicted

experiences of peer victimization among Greek adolescents (Kokkinos, 2013). While not social

well-being as such, it seems likely that individuals victimized by peers would evaluate their

social interactions in a negative light. Further, one set of studies identified that social acceptance

and interpersonal success increased the positive affect of even highly dismissive young adults

(Carvallo & Gabriel, 2006), suggesting that social well-being is a universal need even among

those who with an anxious, dismissive or avoidant attachment style. In Turkish young adults as

well, attachment style has been found to strongly predict loneliness and social skills (Deniz,

Hamarta & Ari, 2005), both of which would influence the evaluation of one's interpersonal

relationships.

The relationship between attachment style and social well-being has also been explored

in relation to several aspects of cultural identity. For instance it was found that while

relationships between attachment style and humor in Lebanese young adults demonstrated

relationships as expected and consistent with those of Canadians, significant differences were

found between the samples such as in the types of humor used (Kazarian & Martin, 2004),

underscoring the need to understand cultural differences in relation to communication and other

aspects of social interaction. Significant differences in the relationship of attachment style to

social support and well-being have also been found in relation to age, such that for a sample of

older adults in Greece, perceived social support mediated the relationship between avoidant

attachment and mental health, which was not found in young adults (Kafetsios & Sideridis,

2006). A discussion of differences within attachment, romantic relationships and well-being is

also found in a study of young adults from Portugal, Mozambique and the United States

(Galinha, Oishi, Pereira, Wirtz & Esteves, 2013), with a number of significant differences found

between these samples. Each of these studies supports the conclusion that while a given finding

may be supported in a given culture, significant differences in the qualities and meaning of

attachment, social well-being and the relationship between the two as a result of cultural

differences.

In regards to attachment style and online behavior, both avoidant (Shin, Kim & Jang,

2011) and anxious (Oldmeadow, Quinn & Kowert, 2013) attachment demonstrate increased

online technology use, in samples of Korean and diverse American adults respectively. As would

be expected and closely matching findings of in-person interaction, avoidant attachment was

related to decreased social media use (Oldmeadow, Quinn & Kowert, 2013). Given the

significant role attachment style appears to play in relation to social interaction and possibly to

the resulting degree of social well-being, this represents an area that warrants extensive future

investigation.

Intimacy and Social Well-Being

The inclusion of intimacy as an integral aspect of social well-being is growing in Western

conceptualizations of social well-being (Williams, 2001). Although it was identified and

discussed as an aspect of social interaction some time ago, intimacy continues to lack the

recognition of other, more overt dimensions of social well-being and functioning. At present,

intimacy does not enjoy the clarity of understanding in conceptualization or assessment that

might be found with other social domains. Sullivan (1953) first introduced the concept of

intimacy as an integral aspect of healthy psychosocial and social interaction. Considered to be

based largely on Sullivan's own experience of social isolation and deep, meaningful friendship as

a small child, Sullivan conceptualized intimacy as a dual pattern of behavior that integrates two

equal individuals in relationship and which develops first in children prior to the development of

sexual awareness. This was considered to be an integral human need and aspect of well-being.

Sullivan believed that during the age of roughly eight until pubescence children often find

intimacy through a single friend, until they mature into adolescence and struggle to balance this

need for intimacy with new needs related to sexuality and the desire for security. They then

slowly learn to integrate these needs into adult relationships rather than as the harsh and

competing needs of early adolescents. Although Sullivan's (1953) descriptions generally

neglected the impact of culture in shaping the meaning and importance of intimacy, a great deal

of literature since then has worked to amend this (Triandis, 1994; Zarbatany, McDougall, &

Hymel, 2000).

Although some historical theoretical models of intimacy exist, in the literature intimacy is

largely studied in an atheoretical manner. The difficulty resulting from this is that as scales were

developed without theory to measure intimacy, the question may remain as to how fully they

may reflect the variable in question. The first main scale to measure intimacy, the Jourard Self-

Disclosure Questionnaire (Jourard, 1964) was developed with minimal theory to assess a variety

of topics about which one may self-disclose to others, with topics ranging from communism to

personal illness. Though originally written in French and normed in a French population, it was

adapted for use in a number of countries around the world. However, this scale was found to

demonstrate highly inconsistent relationships with other disclosure scales, also based on a variety

of topics and situations in which one may choose to disclose, finding even negative relationships

with disclosure on other topics in a sample of young adults (Doster & Strickland, 1971). Using

scale development techniques, progressive models of the scale attempted to reduce the areas of

disclosure that constitute intimate disclosure, also in a sample of young adults (Miller, Berg &

Archer, 1983). It is noted that these continued with little theory as to the topics of potential

disclosure, emphasizing utility and data-analytic methods instead. The current dominant iteration

of this model (Schouten, Valkenburg & Peter, 2007) is based on these previous scales and

consists of a seven-item scale measuring disclosure in the areas of personal feelings, worries,

secrets, love, sex, shame, and guilt. While it is noted that Sternberg and Barnes (1988) did

expand upon the concept of intimacy as a component of love, this model integrates intimacy as

an emotional experience rather than isolating intimacy as an aspect of communication, and thus

presents limited utility to the present study.

Despite what variance may remain in operationally defining and measuring intimacy, it is an integral aspect of social connectedness and well-being in children, adolescents, and adults. One study of the comparative importance of friendship intimacy in pre-adolescence (10-13) and adolescence (13-16) defined intimacy as a broad feature of relationships that includes both the depth and breadth of self-disclosure as well as the experience of feeling understood and validated in response (Buhrmester, 1990). It was found that self-rated intimacy was found to strongly relate to degree of adjustment and interpersonal competence. Intimacy in adults has also been shown to relate strongly to social and general well-being. For instance during times of crisis, intimacy was generally found to positively relate to satisfaction with the social support received from the friends and family of respondents in a sample of Israeli women (Hobfoll, Nadler & Leiberman, 1986).

Although social intimacy is a deeply understudied quality in general, some limited and emerging research has explored the role of intimacy in relation to cultural identity to predict outcomes. In one cultural examination of the meaning and role of intimacy (Dion & Dion, 1993), the differences between individualistic and collectivist cultures as a dynamic that influences the importance of intimacy in relationships were explored and supported from a range of countries around the world. Similarly, a cross-national study of social intimacy in men found an interaction between age and social intimacy, suggesting that this aspect of cultural identity should also be taken into account in studies, such that for instance young adults in some cultures may also place higher value on social intimacy than older adults. A sample of young adults also supported the presence of gender differences in social intimacy, with women demonstrating higher levels of social intimacy than men in the study (Hook, Gerstein, Detterich & Gridley, 2011).

Consistent with social intimacy as a little-studied quality, a broad sense of social intimacy in an online setting is understudied in relation to social well-being. Despite the relative lack of research on intimacy in comparison to other aspects of social interaction, the emerging literature supports the conclusion that it does predict social well-being, and is potentially a critical aspect of maintaining a high level of social well-being. From its development in childhood throughout adulthood, the presence of intimacy appears to be an important aspect of social interaction, and in turn a quality necessary for social well-being. Possibly as a consequence of limited research exploring social intimacy in general, the research related to young adults is severely limited, with extremely few extant articles identified. Additionally, the fact that social intimacy has largely been developed and studied in adolescents from its first development (Sullivan, 1953) to its current leading model (Schouten, Valkenburg & Peter, 2007) and much of the research between. This is considered to represent a limitation of existing data, and a point of growth for ongoing and future studies to address.

Intimate Disclosure and Social Well-Being

Related to the literature regarding intimacy, intimate self-disclosure is also a strong contributing factor to social well-being (Ryff, 1989). While in early research (Ryff, 1989) the sample used was highly educated, with a high SES and without any identification of race, as with other domains research has somewhat improved upon the lack of diversity as an identified factor since earlier literature. One review of the literature has suggested that intimate disclosure increases the degree to which one is liked by others (Collins & Miller, 1994), a first step toward strong interpersonal relationships, as well as friendship quality (Reis, Sheldon, Gable, Roscoe & Ryan, 2000). As an example, in a study of men who are both Latino and bisexual, it was identified that the ability to engage in disclosure about certain vulnerable topics related to a

number of aspects of social well-being and outcomes in mental health (Zea, Reisen, Poppen, Bianchi & Echeverry, 2005). Longitudinal studies have also found strongly positive relational effects of intimate self-disclosure (Sprecher & Hendrick, 2004). However, existing literature is complicated by the fact that intimate communication, and the response to it, may also be a detriment to satisfying and continued conversation (Legerski, Biggs, Greenhoot & Sampilo, 2014; Rose, 2002). Better understanding the relationship between intimate self-disclosure and well-being may present valuable implications for increasing mental health.

A variety of internet-based forms of interaction have supported these findings regarding intimate disclosure. The degree of self-disclosure of bloggers was found to lead to increased social well-being in a sample of Taiwanese young adults, accounted for primarily by the level of relationship-building intimacy (Ko & Kuo, 2009). For socially anxious young adults, online self-disclosure has been found to be higher than that of in-person disclosure and leads to increased social comfort (Weidman et al., 2012). It has further been found that adolescents often use the internet to facilitate open and intimate self-disclosure in what appears to be an important aspect of self-development and relationship navigation (Jordán-Conde, Mennecke, & Townsend, 2014).

Cultural background has also been found to directly affect the experience of intimate disclosure and resulting social well-being. For instance, for individuals located in Russia and former Soviet-bloc countries, the style of government and resulting cultural patterns were found to significantly shape the content, qualities, and attitudes that characterized self-disclosure, with corresponding effects on personal relationships (Goodwin, Nizharadze, Luu & Emelyanova, 1999). More specifically, for those with less fixed cultural identities, increased disclosure was found to result from communication partners' acceptance of their culture, and that in turn lead to increased personal and social well-being. While this article did not explore aspects of cultural

identity such as gender or age, the explicit and repeated use of the word "culture" to frame the differences between national groups does support this article as contributing to a multicultural understanding of intimate disclosure. Specifically for this article, the relationship between culture, disclosure, and well-being rested not just on the participants own identity but on this identity in the context of the relationship and suggests nuance in the relationship between self-disclosure and well-being.

One factor that affects the relationship between disclosure and well-being is the context of intimate disclosure online. Intimate disclosure is thought to greatly increase during online social interaction (Henderson & Gilding, 2004), which in turn increases overall well-being through the strengthening of relationships (Valkenburg & Peter, 2007a) in what is termed the "Internet-enhanced intimate self-disclosure hypothesis" (Valkenburg & Peter, 2009, p. 2). More specifically, these theorists postulate that when the internet is used to improve existing relationships through increased intimacy, it leads to improved relationships and increased social well-being. Consequently, how one uses the internet (i.e., intimate self-disclosure) to build upon or instead of in-person relationships appears to be a large factor in the role of social well-being.

Regarding an additional predictor of intimate disclosure, attachment style has also been found to relate in the expected directions both online and offline. For instance, anxious individuals disclose more than avoidant individuals (Shechtman & Rybko, 2004) and both do so less than secure individuals (Keelan, Dion, & Dion, 1998; Wei, Russell & Zakalil, 2005). Both have also been shown to relate to lower levels of interpersonal intimacy (Bauminger, Finzi-Dottan, Chason & Har-Even, 2008), further suggesting a potential link to intimate self-disclosure. Differences in online vs. offline communication has also been found to vary as a function of attachment style as it regards disclosure (Buote, Wood & Pratt, 2009), online social

interaction (Oldmeadow, Quinn & Kowert, 2013), texting (Morey, Gentzler, Creasy, Oberhauser & Westerman, 2013) and partner monitoring (Fox & Warber, 2014). This suggests that attachment style may be a predictor of online and offline intimate disclosure as well.

Online Social Interaction and Social Well-being

Virtually unknown until the late 1990s, social media has irrevocably changed the nature and dynamics of interpersonal interaction and communication. More than two-thirds of all Americans are estimated to use social media. Ninety-seven percent of American adults report that they text at least weekly (Smith, 2015), 85% of American adults use email (Zickuhr, 2013) and roughly four-fifths of Americans use social media sites (Greenwood, Perrin & Duggan, 2016). "Online communication" as used in literature has generally focused on chat rooms and instant messaging (Lee, 2009; Valkenburg & Peter, 2007b; Henderson & Gilding, 2004). However, other methods such as emailing and gaming (Van den Eijnden, Meerkerk, Vermulst, Spijkerman & Engels, 2008) and even text messaging (Subrahmanyam & Greenfield, 2008) have at other times been included. While a distinction has at times been made (Pagani, Hofacker & Goldsmith, 2011; Verduyn et al., 2015), this has not always been the case (Lee, 2009), and as with other inconsistencies the literature has not yet adopted standard terms and approaches to measurement. The focus of the present study is on active online communication, including social media use, rather than passive electronic behavior such as watching videos. While a mild relationship between online social interaction and well-being has been identified in a sample of young adults (Wang, Jackson, Gaskin & Wang, 2014), the behavior of problematic internet use also leads to numerous poor outcomes (Caplan, 2010).

Despite the evolving approach to the measurement of online communication and electronic behavior, this is clearly an area of critical interest to interpersonal relationships and

social well-being researchers. Given the degree to which social media usage has become a dominant aspect of the lives of many in recent years, research is clearly needed to determine how this aspect of social interaction relates to in-person interpersonal interaction, and how the use of each affects social well-being and mental health. A prevailing question is if social interaction contributes to, or takes away from, a general perception of social wellbeing. Within this question, several studies have identified that it is the types of experience, such as if interactions are positive (Valkenburg, Peter & Schouten, 2006), meaningful (Shapira, Barak & Gal, 2007), or to enhance relationships (Bessiere et al., 2008) that online social interaction improves aspects social well-being. Supporting this, the reverse has been found when internet use is not positive and interactive (Burke, Marlow & Lento, 2010).

It is possible that a high amount of online communication leads to lower in-person social interaction. It may be that online communication takes time and energy that would otherwise have been spent in in-person social interaction, thus decreasing in-person social interaction (Displacement Hypothesis; Lee, 2009). However, it is also possible that individuals with a very high degree of online social interaction may have already been interpersonally isolated, and thus turned to online interaction as an outlet instead to compensate (Social Compensation Hypothesis; Valkenburg & Peter, 2007a). An additional possibility is that online communication may demonstrate an additive effect, such that online interaction may bolster those connections also maintained in person (Rich Get Richer Hypothesis; Kraut et al., 2002). Functionally then, potential models are that 1) individuals low in in-person social interaction are high in compensatory online interaction, with the latter not reducing the former; 2) individuals high in one domain are lower in the other as a result of limited time and emotional resources; and or 3)

online communication enhances existing friendships, potentially for some more than others (Lee, 2009).

A recent study examined social media usage in adolescents to determine the relationship between in-person and online interaction, using a large, nationally-representative dataset designed to closely parallel various aspects of cultural identity in the American population (Lee, 2009). In this study, four main hypotheses were tested. These included: 1) Displacement hypothesis, in which online activity displaces time that would have been spent on in-person interaction; 2) Increase hypothesis, in which online usage increases and strengthens total social relationships; 3) Rich-Get-Richer hypothesis, in which those with a rich and satisfying social life benefit the most from online interaction; and 4) Social Compensation hypothesis, in which the internet is most beneficial for those who are anxious or without satisfactory social relationships. It is important to note that this study was only examining actual time spent in both domains, rather than the variables otherwise discussed in the present study such as intimacy or attachment-related predictors. That said, it is possible that some related variables may follow these models, for instance that those with a great deal of in-person disclosure would be best positioned to continue this intimate and close style of conversation online (Rich-Get-Richer).

It is also possible that within behavior as studied in the article these hypotheses could be combined rather than necessarily being mutually exclusive. For instance, it is possible that while most individuals find their friendships improved as a result of adding online interaction (Increase Hypothesis; Lee, 2009), those with the greatest number of in-person relationships have the most opportunities for online social interaction (Rich-Get-Richer Hypothesis). It is further possible that while those with fewer friends find online social interaction to be the most valuable (Social Compensation Hypothesis), that online communication takes some time away from in-person

engagement (Displacement Hypothesis) because of limited time to spend with others. To test

these hypotheses, Lee (2009) used a sample of roughly 3,000 participants ages 0 to 12, and their

parents, and examined data at two points five years apart, including data on various aspects of

interpersonal interaction both in-person and online.

Lee's (2009) findings from this longitudinal study indicated that the Rich-Get-Richer was

generally supported, but also that adolescents displace family time, but not friend time, with

online social interaction. Regarding the Rich-Get-Richer hypothesis, it was found that the

presence of social relationships earlier in the study predicted higher levels of online social

interaction later in the study, which then related to later cohesive friendships over time. It was

also found that adolescents who engaged in more frequent online communication were more

likely to feel connected to school as a function of their improved relationships. Specifically, it

appears that adolescents with more developed relationships continue to develop these

relationships in online communication, which facilitates increased engagement in school and

with peers. However, Lee's (2009) findings do not address the difficulty in differentiating the

Increase hypothesis from the Rich-Get-Richer hypothesis. While it was found that there was a

positive relationship between existing friendships and online communication, this appears to

reflect the fact that more social adolescents have more avenues for online communication.

Clearly, more investigation is needed to differentiate these hypotheses both in groupings and in

outcomes.

Lee (2009) also found support for the displacement hypothesis. Specifically, Lee (2009)

found that one hour of online social interaction appears to result in a decrease of 24 minutes of

time with parents, with a lesser displacement as a result of computer recreation. Computer use

for study and game-playing did not significantly displace time with parents. When examining

friendships, only computer use for study and recreation decreased time spent interacting with friends, while time spent with communication and in games did not. Additionally the use of computers for study reduced time spent with parents but not peers, while time spent studying reduced time with friends but not parents. Computer use for recreation reduced time for both, and computer games did not reduce time with either, although this finding is limited as neither of these categories were coded for online or interactive behavior. This addresses one possibility that time online with friends and time with friends and family may be complementary, as adolescents may be able to sustain both, by suggesting that while some increase in overall communication time is possible, it is not possible to fully maximize time spent with parents, time online, and time with friends. The fact that only communication and recreation displaced family time also suggests that to some degree needs are being met by friends, rather than simply a function of limited time. This is supported by the findings that other computer uses did not reduce time with parents, and that no displacement was observed by computer communication and time with friends.

Although Lee's (2009) sample was drawn from the United States, similar findings have been found elsewhere. A study of the impact of online social interaction (Kim, 2007) found that internet use among South Korean adults led to deepening of relationships in terms of both trust and socializing, rather than displacement as was hypothesized. However, among adolescents in Norway significant displacement was in fact found (Endestad, Heim, Kaare, Torgersen & Brandtzaeg, 2011), suggesting the possibility of cultural differences in terms of the prioritization of online social interaction in relation to in person interaction. Among Taiwanese young adults (Lee & Kuo, 2002), online activity decreased time with friends but not family, further supporting

the possibility that the culture in which the activity takes place interacts to determine outcomes of internet use.

One study of young adults found support for multiple hypotheses in regards to the relationship between in person and online communication, again observing that the attitudes and behaviors within online social interaction meaningfully lead to the outcomes (Tufekci, 2010). This article also noted that African Americans in the sample were more likely to meet friends online, suggesting the value of online interaction to broaden the social networks of otherwise disenfranchised groups. Similarly, a study of young adults found that different hypotheses were substantiated for different subgroups (Zywica & Danowski, 2008). Specifically, while more popular users found online social interaction to grow their network (Rich-get-Richer), less popular young adults in the sample used it to grow their networks (Increase hypothesis).

One longitudinal study attempted to explore whether instant messaging leads to a higher or lower level of ability to initiate offline friendship for Dutch adolescents (Koutamanis, Vossen, Peter & Valkenburg, 2013). This article advanced a new hypothesis, termed the internet-induced social skills hypothesis. This hypothesis posits that online social interaction allows adolescents the opportunity to rehearse social skills, facilitating interpersonal skills and the ability to initiate peer friendships. To explain the hypothesized positive relationship between frequency of instant messaging and ability to initiate offline friendship, the two potential mediators of diversity of online friends and self-disclosure online (considered to be intimacy) were measured. Intimacy was measured with five items assessing forms of self-disclosure. The use of instant messaging overall did directly increase adolescents' ability to initiate friendship offline. It was also found that the initiation of offline friendship predicted online disclosure, not vice versa. This article

would suggest a complex relationship, then, in which online social interaction facilitates offline

friendship initiation, which in turn enhances the willingness or ability to self-disclose online.

While instant messaging as previously discussed is certainly ubiquitous, other forms of

online connectedness exist that are also widespread. As one example, it is estimated that 68% of

all Americans have a Facebook account, and 79% of those who use the internet (Greenwood,

Perrin & Duggan, 2016). For this reason, a large amount of available literature has focused on

this platform. In a study combining original data collection and an extensive review of literature

on the topic, researchers examined whether Facebook use increased or decreased the strength of

in-person social ties in an international English-speaking samples (Burke & Kraut, 2014). The

study found that Facebook use increased the closeness of friendships, more so even than in-

person or telephone exchange. Interestingly, passively reading writing composed by others on

Facebook was also shown to demonstrate this effect, with no significant difference between

passive and active communication. The study delineated composed pieces from one-click actions

such as "likes," clarifying that this effect was shown only for the consumption of composed

pieces. However, the study did not examine whether time spent on in-person friendships is

displaced. It also did not examine the possibility that socially-adept individuals with healthy

social networks are those most likely to engage in Facebook communication. Additionally, the

restriction of the study to Facebook specifically, rather than across domains in terms of online

social interaction as is measured in the present study, is a limitation. While this study was based

on a sample across age ranges than young adults specifically, it raises the point that online social

interaction has the potential to deepen existing friendships, and introduces awareness of

additional dimensions such as the way this interaction occurs. While no significant difference

was found between active and passive in terms of friendship closeness, it is possible that such

aspects may affect the relationship between social interaction and other outcomes such as social well-being.

In a review of the literature related to intimacy in online social interaction (Lomanowska & Guitton, 2016), it was noted that although numerous factors such as the type of relationship, activity, and various other factors may impact the degree of intimacy, a lack of research exploring the intimacy of online communication exists. However, several interesting points were raised concerning the difference avenues of potential intimacy. The first is that, although relationships first initiated online may be transferred to in-person relationships, intimacy may differ in qualities or functions between online and in-person relationships. The second is that numerous paradoxes exist regarding online communication; namely, while disclosure and trust may be seriously elevated, the potential for deception and risk is equally so. Additionally, while online interaction increases our ability to connect with others, the perceived obligation may often rise with it. Finally, it was noted that self-disclosure, social support, and physical contact all appear to be core aspects of intimate relationships and mediating factors in the relationship between intimacy and outcomes. Regarding physical contact in particular, the implications of this are wide-ranging. It is possible that physical contact is less important for those who value online social interaction as more important. It is also possible that physical contact represents an unmet need and limitation of online communication as compared to in-person interaction. Broadening physical contact to physical presence, it is presently unclear what consequences, if any, the lack of physical presence and affects the quality or meaning of online social interaction.

Attachment Style and Online Social Interaction

Despite the clear applicability of attachment style theory to social interaction, the limited amount of existing research exploring the relationship between adult attachment style and social

media use has almost exclusively explored Facebook alone in relation to attachment style. This

research has typically found relationships consistent with in-person relationships, such as that

secure individuals experience the greatest online connectedness; avoidant attachment style

relates to decreased Facebook use; and anxious attachment style predicts higher and more

preoccupied Facebook use (Yaakobi & Goldenberg, 2014). In terms of the interaction between

social media and in-person relationships, it has been found that in young adults a relationship

exists between disorganized and anxious attachment style and increased use of social media to

avoid in-person relationships (Nitzburg & Farber, 2013), although anxious attachment does

predict individuals perceiving greater intimacy from these online interactions. Missing from the

literature is a clear finding of technology use to social well-being.

In the absence of an established link between various forms of technology use and social

well-being, outcomes that may be similar to or a dimension of social well-being are examined

instead. Two studies in this area explored Facebook use in relation to two dimensions of social

capital (Lee, Kim & Ahn, 2013; Lin, 2015): bonding social capital, in which emotional and

material support are provided and received; and bridging social capital, in which weak social

relationships are improved. In the first study, conducted in a sample of young adults (Lee, Kim

& Ahn, 2013), anxious and avoidant attachment were explored. In the first study avoidant

attachment led to lower levels of both forms of social capital, and social capital negatively

related to both avoidant and anxious attachment. In the second article which studied young adults

specifically (Lin, 2015), it was found that as expected both secure and anxious-ambivalent

attachment style positively predicted both forms of social capital, while avoidant attachment

style negatively predicted social bonding. As stated, a singular examination of Facebook usage

rather than an examination of broader social interaction, as used in the present study, represents a

limitation in the generalizability of the finding in this study. While a limitation of each of these studies is a lack of data related to aspects of cultural identity other than age, future research may build upon this by better exploring the relationship between Facebook and social capital as informed by cultural identity.

What has generally not been explored is the impact of attachment style on broader social media use or the resulting effects in social well-being. While one previous article has identified that dismissive and preoccupied attachment styles predict problematic internet use in young adults in Turkey (Odacı & Çıkrıkçı, 2014), this article simply examined problematic internet use without delineating which forms of online behavior may relate to which attachment styles. More clearly understanding the specific forms of online social interaction as they relate to attachment style, problematic internet use, and outcomes in well-being would present implications for both clinical and empirical application.

One asset of the literature in this specific area is the presence of a great deal of international research. For instance, a number of the previously-discussed studies were conducted in non-American locations such as Taiwan (Lin, 2015), South Korea (Lee, 2013) and Turkey (Odacı & Çıkrıkçı, 2014), each of which in samples of young adults. While nationality may only be one aspect of culture, the presence of young adult samples around the world used to explore central variables may eventually contribute to an increased understanding of certain cultural variables in relation to online social interaction. Other recent studies have included international samples (Marshall, Benjanyan, Castro & Lee, 2013). However, limitations also exist, such as that even in studies of young adults that have assessed other aspects of culture these factors in relation to the central variables are often not discussed (Kalpidou, Costin & Morris, 2011). The literature exploring cultural aspects outside of nationality and ethnicity as it

informs the relationship between attachment style and online social interaction appears to be

starkly limited at present.

Outcomes of Online Social Interaction

As noted in the previously-discussed review, online social interaction presents both

benefits and risks to users, in social well-being and general mental health. A number of levels of

nuance have come to explain the seemingly contradictory findings in the relationship of online

usage to mental health, such as that while some technology use facilitates interpersonal

interaction (communicative), some is strictly passive and does not (noncommunicative).The fact

that significant differentiations have been established between communicative and non-

communicative online activity (Lee, 2009), for instance, is a critical point when examining

previous literature regarding social media behavior. However, there are numerous limitations to

Lee's article consistent with shortcomings in existing literature. While the differentiation

between communicative and non-communicative computer use is valuable, Lee (2009) separated

direct communication from academic, game, and recreational categories. The shortcoming in this

categorization is that academic computer use may be interactive as games are very often shared

online with peers (both known personally and otherwise), and such "recreation" as computer

programming often occurs in a team-based context, limiting the ability to draw inferences from

the dichotomization as was utilized in that study.

Online Social Interaction and Social Outcomes. Because of the diversity of activities

that constitute online social interaction, there is an opportunity to study a wide array of

behaviors, although this conversely limits the depth of understanding for any given activity. For

instance, one correlational study examined potential relationships between playing a particular

online multiplayer game (World of Warcraft) and the potential outcomes of social competence

and loneliness among late adolescents, in a sample with no other demographic or cultural

variables identified (Visser, Antheunis & Schouten, 2013). While no direct relationships were

observed in these variables at a statistically significant level, it was observed that individuals

who play this game do show a higher variety of communication partners/peers than those who do

not play this game. This, in turn, is related to an increase of social competence and a decrease in

loneliness. While this study did not explore longitudinal change or directionality, it does advance

previous studies that conceptualized game-playing as an isolative task by contributing to a

greater understanding of the possible role of game playing in online interaction.

A similar study (Van der Eijnden, Vermulst, van Rooij, Scholte, & van de Mheen, 2014)

explored the relationship between in-person and online interaction as they relate to the

experience of victimization in Dutch adolescents. For this study, victimization was measured in

terms of bullying and various forms of offensive, hurtful behavior. This longitudinal study

demonstrated that both loneliness and social anxiety predict online victimization, but only

loneliness predicted in-person victimization. Online and in-person victimization were further

differentiated by outcomes. Specifically, online victimization did not appear to lead to loneliness

or social anxiety, but in-personal victimization did lead to social anxiety. In both cases,

individuals were first lonely (and socially anxious in the case of online victimization), then

victimized later over the course of the study, and withdrew interpersonally following the

victimization. This study helps to differentiate the predictors and outcomes of online vs in-person

interaction, by demonstrating that online victimization is more likely to follow non-online

loneliness and anxiety, but that online victimization does not necessarily lead to significant in-

person isolation. Additionally, the model of non-online isolation is presented as loneliness being

the original position, which makes individuals more vulnerable to victimization, which in turn

makes it more likely that the adolescent will begin to isolate. It is possible that feelings of

loneliness may be exacerbated by a lack of social skills, or by peers recognizing the lack of

social status in the individual, ultimately increasing distress and exacerbating peer isolation. One

implication of this is that the consequences of in-person victimization are more severe than that

of online victimization, in terms of outcomes. Another interesting implication is that whereas

socially anxious individuals do not appear more likely to be victimized in-person, the fact that

they are online suggests again that those who benefit most from online engagement may be those

with supportive social networks.

As the relationship between online interaction and social/emotional health is clearly

complex, additional points of research remain to be clarified. As previously mentioned, literature

has generally explored several possibilities: 1) Online interaction displaces in-person

communication (Van den Eijnden, Meerkerk, Vermulst, Spijkerman & Engels, 2008); 2)

Individuals low in in-person engagement use online interaction as a form of compensation

(Valkenburg & Peter, 2007a); 3) Those best prepared with an existing interpersonal network

benefit most from online interaction (rich-get-richer; Kraut et al., 2002); and 4) online interaction

generally increases social networks across the distribution (Lee, 2009). Also as mentioned, these

hypotheses are not necessarily mutually exclusive. For instance, there may be those who use

technology in an overwhelmingly non-communicative capacity, and are broadly disengaged from

any form interpersonal relationships, which may suggest both displacement and compensation.

One dimension that may complicate a clear understanding of the outcomes of online

social interaction is the fact that much of the research conducted in this area has been in Dutch

samples (Van den Eijnden, Meerkerk, Vermulst, Spijkerman & Engels, 2008; Valkenburg &

Peter, 2007a; Sonck, Nikken, de Haan, 2013; Cranney, 2015). While no identified studies have

compared Dutch samples to American samples, differences in young adults as they relate to

culture, and in particular ethnicity, have been previously established (Arnett, 2003). Gender

differences have also emerged among young adults in relation to the social impact of online

social interaction, such that females in one sample were more likely to use online social

interaction to maintain existing relationships than males, who were more likely to use online

social interaction to initiate friendships (Muscanell & Guadagno, 2011). Interactions between

cultural variables are also possible, such as were identified in a study that explored differences

related to gender and age among Taiwanese adolescents, finding a number of meaningful

differences related to the meaning of internet use which varied based on both age and gender

(Chih-Hung, Ju-Yu, Cheng-Chung, Sue-Huei, & Cheng-Fang, 2005).

Problematic Internet Use

Within this framework of possibilities, few studies have explored those for whom online

behavior ceases to become complementary to interpersonal behavior. This may include those for

whom online connectedness is preferential, or nearly exclusive as their social outlet. For these

individuals it is possible that as interpersonal relationships decline, online behavior steadily

increases, with the important distinction being the preference of online interaction to in-person

communication (Caplan, 2006). Additionally, while many who engage in digital activity are

doing so as a means of communication (Valkenburg & Peter, 2009), many others are engaging in

functionally isolative behavior (Caplan, 2006), with a wide range of possibilities within this. As

the research appears to generally support a model that technology facilitates the strengthening of

existing social networks (Desjarlais & Willoughby, 2010), a more complex and holistic model

that incorporates the impact of technology on those who are otherwise socially disenfranchised

has yet to emerge.

Clarity is clearly lacking as to what characterizes problematic or maladaptive internet use, what predicts this behavior, what outcomes may exist, and how this behavior may relate to social well-being. To address this lack, researchers have increasingly acknowledged the existence of compulsive internet use, and sought to understand the relationship of this to other variables that would facilitate a broader understanding. While it is acknowledged that the proportion of internet use that is problematic may be limited, research appears not to be adequately accounting for this meaningful subset. For this reason additional research into individuals whose technology use is problematic is an important dimension to address to develop a cohesive model of online social interaction in a digital age.

For this research to identify such factors, a clear operationalization of problematic internet use must first be established. Intuitively, the behavior of actually engaging in online communication for a usually large amount of time may be a primary or contributing dimension of what constitutes problematic internet use. To this end, some studies have used the standard of two hours of daily social media usage to operationalize problematic behavior, or at least meet the criteria for "frequent" use of online media (Sampasa-Kanvinga & Lewis, 2015). This duration-based criterion has some support, for instance that adolescents who used social media for at least two hours demonstrated a larger degree of unmet mental health needs than adolescents who do not.

However, as technology has become functionally inescapable and inextricably intertwined into work, school, and personal relationships, a strict time-based criteria no longer seems suitable. Continuing this point, there are multiple aspects of compulsive or preferential internet use that may be examined. Though it has been noted that two hours a day or more of online social interaction has evidenced problematic results (Sampasa-Kanyinga, et al., 2015),

additional dimensions exist such as the preference of online interaction to in-person interaction.

For instance, it may be the case that it is not the amount of time spent specifically that relates to

negative outcomes, but that time online reflects a preference for online interaction (Caplan,

2003).

This hypothesis was tested in one cross-sectional study which sought to examine a

hypothetical model that poor psychological health predicts compulsive internet use, which in

turn predicts poor mental health outcomes (Caplan, 2003). The contribution of this article is in

operationalizing compulsive internet use as a preference for internet use to in-person

communication, rather than an arbitrary amount of time (i.e., two hours). The limitation of the

preference approach as used in the Caplan (2003) article it may be difficult to differentiate

predictors from outcomes, as it is possible that poor mental health leads to individuals preferring

internet use to in-person communication. However, this article advances the literature by

operationally defining compulsive internet as preferential online interaction, which may be

studied alongside time spent. In a later study, Caplan (2010) developed the model of problematic

internet use also used in the present study, which includes: 1) preference for internet use; 2)

using the internet for mood regulation; 3) cognitive preoccupation with the internet; 4) difficulty

abstaining from internet use; and 5) negative outcomes as a result of internet use.

Problematic Internet Use and Social Well-Being. Though generally understudied in

relation to social well-being specifically, problematic internet use has been found to relate to

aspects of what Caplan (2003) termed "psychosocial well-being" including higher levels of

loneliness as well as shyness and decreased self-esteem (Caplan, 2002) each of which found in

samples of young adults. Regarding loneliness specifically, Caplan (2006) later suggested that

social anxiety was a confounding variable, such that socially anxious individuals are both more

lonely and more likely to engage in problematic internet use, and without this mediating

relationship the relationship may not clearly exist. However, it has also been found (Kim,

LaRose, & Peng, 2009) that problematic internet use, in addition to being a product of loneliness,

in can exacerbate loneliness for some young adults.

Additional variables related to social well-being have also been examined in relation to

problematic internet use. One study examined the consequences of both preference and duration

of internet use, using both self-report logs of online behavior and perceptions in adolescents to

examine potential outcomes related to social well-being such as friendship, social anxiety, and

loneliness (Gross, Juvonen & Gable, 2002). In contrast to previous research, time spent online

was not shown to relate significantly to measures of well-being. However, it was shown that

those who describe their instant messaging partners as particularly close showed a strong

correlation to loneliness, suggesting that those with a higher degree of loneliness have a higher

closeness towards instant messaging partners. The same was found in the relationship of social

anxiety to instant messaging closeness. Significant relationships between closeness and either

dispositional or daily wellbeing were not found. While the study was not longitudinal and thus

causality cannot be inferred, the finding of instant messaging closeness in relation to loneliness

and social anxiety supports the possibility that it is the meaning ascribed to online interaction,

not the duration of time spent online, that is the core predictor of mental health outcomes.

Similar to research exploring attachment style in relation to social interaction, the

literature detailing problematic internet use also benefits from the presence of studies around the

world. In one study exploring the differences between problematic internet use as they relate to

culture (Chen & Nath, 2016), it was found that while problematic internet use was common

across the cultures studied, differences such as those related to severity, operational definitions,

specific negative outcomes, and the factors that constitute problematic internet use vary based on cultural differences. A study of problematic internet use among Turkish young adults also found a gender discrepancy, with males demonstrating higher levels of this behavior (Odacı & Çıkrıkçı, 2014). Parental education has also been found to increase problematic internet use among Korean adolescents (Heo, Oh, Subramanian, Kim & Kawachi, 2014), suggesting an SES interaction that influences problematic internet use.

Related to the concept of problematic internet use is that of attitudes toward technology (Rosen, Whaling, Carrier, Cheever & Rokkum, 2013). This new and extremely-little researched set of variables is considered to include both positive and negative attitudes, measured separately, to add another dimension to more commonly studied technological behavior. Per the only scale that currently assesses it, negative attitudes include that technology is a waste of time, makes life more complicated, and isolates others (Rosen, Whaling, Carrier, Cheever & Rokkum, 2013). Positive attitudes toward technology have been found to relate to anxiety and dependence on technology in young adults (Matos et al., 2016), although this finding has not yet been clearly expanded to negative attitudes in previous literature. Negative attitudes are presently studied as positive attitudes have been previously explored. Additionally, the above-discussed hypotheses (Lee, 2009) have demonstrated that both socially-isolated and well-connected individuals may have positive attitudes toward technology, if for separate reasons such as to satisfy an unmet social need or expand upon existing relationships. However, while positive aspects of technology may vary, negative attitudes better capture disenfranchisement from technology.

Young Adults

Within the specific areas presently discussed, such as social well-being, attachment style, intimate disclosure, and online social interaction, research has commonly separated young adults

from older adults when conducting research. For instance when examining the relationship

between online social interaction and social well-being, studies have typically examined young

adults in isolation (Pempek, Yermolayeva & Calvert, 2009; Manago, Taylor & Greenfield, 2012;

Ellison, Steinfield & Lampe, 2007). The same can be said for attachment style in relation to

social well-being (DiTommaso, Brannen-McNulty, Ross & Burgess, 2003; Caplan, 2006;

Morey, Gentzler, Creasy, Oberhauser & Westerman, 2013). Finally, intimate disclosure in

particular is consistently related strongly to specific age ranges such as young adults (Wei,

Russell, Zakalik, 2005) as distinct from older adults (Bonnesen & Hummert, 2002) and as a

function of increasing age across time (Sprecher & Hendrick, 2004). To better explore and

understand young adults, including the unique characteristics and behaviors they demonstrate in

relation to online social interaction, the present study will limit the sample to individuals aged

18-25 in the United States as well.

As part of recognizing relevant factors that may influence both background literature and

potential future findings, it is important to acknowledge that young adults demonstrate

meaningful differences when compared to adults outside of this age range. These differences are

a primary reason that the research described above has so consistently studied young adults in

isolation. Also termed emerging adults (Arnett, 2000) and identified as identified as

developmentally distinct from adults older than 25, young adults demonstrate differences across

numerous culturally-relevant and developmentally-appropriate dimensions. In cognition,

personality, and the way in which individuals construe meaning throughout their life (McAdams,

2001), young adults are at a point that would typically connote subjective and empirical

differences as compared to others. These differences also affect aspects of individual identity

such as values, interests, and behaviors such as those related to vocation throughout the lifespan

(Kanfer & Ackerman, 2004). Finally, as "digital natives" (Prensky, 2001) who have a more familiar relationship with technology than older adults, the findings of a technology-based study would likely have limitations in generalizability to older adults.

The developmental differences discussed offer potential for research and clinical implications unique to an emerging adult population. In terms of life trajectories and environmental context, if young adults are experiencing formative years that will significantly impact the remainer of their lives, developing specific clinical intervention recommendations for this age group may be particularly meaningful. It has been identified that both young adult health behaviors (Gibbons & Gerrard, 1995) and help-seeking behaviors (Rickwood, Deane & Wilson, 2007) may show differences to that of other age ranges, supporting the conclusion that this is a particularly unique time in the individuals' lives. Developing a foundation of empirical knowledge based in this age range to support research-driven practice and clinical understanding is particularly relevant.

Limitations of Existing Research

One important limitation of existing research is the divide between theory and applied research. Virtually all of the theoretical models discussed, including those from such historical figures as Durkheim (1897), advancing towards the modern day (Seeman, 1959) to more contemporary theorists of social and emotional well-being (Ryff, 1989; Keyes, 1998) have all discussed the proposed framework of general adult well-being in a broad and theoretical sense. Despite this wealth of theoretical and empirical basis, the previous 20 years of literature has made the abrupt transition to studying social media in very narrow forms such as those discussed above including a specific online game (Visser, Antheunis & Schouten, 2013), instant messaging (Henderson & Gilding, 2004) or text messaging (Subrahmanyam & Greenfield, 2008). However,

recent scholarship has been largely atheoretical, failing to apply a theoretical model to the studies

examining online social interaction. Relatedly, literature has explored very specific outcome

measures such as physical health (Findlay, 2003), mortality (Friedmann et al., 2006), depressive

symptoms (Cacioppo, Hawkley & Thisted, 2010), and suicide (Hall-Lande, Eisenberg,

Christenson & Neumark-Sztainer, 2007; Rapagnani, 2002; Felthous, 1997) rather than a broader

sense of social well-being which may be relevant to the broader population.

The existing framework of social well-being in terms of predictors, outcomes, and

qualities are clearly in need of examination in the context of the broad spectrum of online social

interaction. In addition to the previous limitation regarding lack of theory in much contemporary

literature, it is noted that the generation that would have been in adolescence over the course of

the 2000s would now be roughly in young adulthood. It is thus unclear how young adults of the

present day may upend or support those findings derived from either previous generations of

adults, or ongoing samples of adolescents. As such, a primary goal of the present study is to

explore young adults specifically in the context of theoretical frameworks of well-being, as well

as with predictor variables (such as adult attachment style) and outcomes measures normed

strictly in adults. A contribution to the literature is that the present study combines and extends

both adult theory and social media behavior explored predominantly in adolescents in a sample

of young adults who engage in online communication/ social media use.

Even within what literature exists, several limitations exist that compromise the ability to

form a full understanding of the dynamics of social interaction. First, it is believed that

measurements of technology use have erroneously classified use into certain activities

conceptualized as distinct from interaction such as playing video games, when these activities

themselves may be interactive as many individuals play these games while communicating with

others through the game (Lee, 2009). Second, while compulsive internet use is thought to be

predicted by distinct factors from that of normative use (Sampasa-Kanvinga, et al., 2015), full

identification of predictors has been elusive. Third, research on outcomes of the use of

technology has been inconsistent (Best, Manktelow & Taylor, 2014), compromised by the

limitations presented by lack of delineating various usages of technology. Fourth, various models

of social well-being exist, and while well-validated models such as that of Keyes (1998) have

been identified and developed, even this has generally not been examined in relation to online

social interaction.

      To address the first-mentioned limitation of existing research, in the absence of a model

of computer usage that properly delineates communicative vs non-communicative usage, the

intention of the current study was to gather additional information as to what degree certain

behaviors, such as game-playing in particular, may be interactive. To address the second

limitation of lack of clarity regarding what constitutes compulsive or problematic internet use,

multiple scales or aspects of this characteristic were examined. To address the highly fragmented

and specific nature of many existing studies, electronic behavior across the span of available

mediums were examined. Finally, Keyes' (1998) social well-being model was examined in

relation to online and in-person social behavior as a robust and well-substantiated model that was

not identified to have previously been explicitly examined in terms of online behavior.

Study Purpose

      Individuals may choose to engage others socially in a range of environments and methods

of communication. While in-person behaviors such as work, school, and private meetings have

been well-studied, online interaction such as by Facebook/social media, email, texting, and

collaborative video games have not. Clearly, ongoing research is needed to clarify the role of

online social interaction in the lives of young adults, its relationship with in-person

connectedness, and the outcome in social well-being it may demonstrate. The overarching

present research questions, then, address the relationship between online and in-person social

interaction to overall social well-being, and the predictors of varying levels of these types of

interaction.

As the literature has traditionally examined young adults in isolation due to numerous

differences they demonstrate in comparison to other age groups across domains of behavior, the

present study will limit participant ages to explore young adults (ages 18-25). One goal of the

present study is to identify the needs and circumstances of young adults specifically, as the

structure of mandatory schooling and family life may diminish the ability to identify connections

between the breadth and quality of interpersonal relationships and related outcome measures

related to mental health. It may be the case that adolescents and adults exhibit fundamentally

different approaches towards online or in-person communication, with different predictors or

correlates, and as research has predominantly measured adolescents, the present study aims to

build on this knowledge by extending the model of adult interpersonal behavior.

More specifically, the present study first examined whether and to what degree

attachment style (as characterized by degree of avoidant and anxious styles) predict problematic

internet use, online and in-person disclosure, negative attitudes toward technology, and social

intimacy. These aspects in turn were examined as predictors of social well-being. Consequently,

the purpose of the present study was to explore the role of: 1) The degree of anxious and

avoidant attachment styles in predicting (a) social intimacy; (b) in-person intimate disclosure; (c)

online intimate disclosure; (d) negative attitudes toward technology and (e) problematic internet ;

and 2) the impact of social intimacy, in-person social connectedness, problematic internet use,

negative attitudes toward technology, online self-disclosure and in-person self-disclosure in predicting social well-being. For the purpose of hypotheses relating to effect size, R^2 values of .02 are considered small, .15 medium, and .35 large (Cohen, 1988).

To better answer these, the questions have been operationally defined and divided into the following specific questions and hypotheses:

1. It was hypothesized that anxious and avoidant attachment style will predict social intimacy, levels of both in-person and online intimate disclosure, a negative attitude toward technology, and problematic internet use:

1a: It was hypothesized that anxious and avoidant attachment styles will predict social intimacy as measured by the Miller Social Intimacy Scale (MSIS; Miller & Lefcourt, 1982), with avoidant attachment negatively predicting intimacy with a medium effect size as well as contributing a greater degree of variance than anxious attachment, which would positively predict intimacy with a small effect size.

1b: It was hypothesized that anxious and avoidant attachment styles will predict in-person intimate self-disclosure as measured by the Intimate Self-Disclosure Scale (Schouten, Valkenburg & Peter, 2007) with avoidant attachment predicting lower levels of disclosure with a medium effect size but contributing a greater degree of variance than anxious attachment, which would positively predict disclosure with a small effect size.

1c: It was hypothesized that anxious and avoidant attachment styles will positively predict online intimate self-disclosure as measured by the Intimate Self-Disclosure Scale (Schouten, Valkenburg & Peter, 2007) with avoidant attachment contributing a greater degree of variance than anxious attachment, and both demonstrating a small effect size.

1d. It was hypothesized that anxious and avoidant attachment styles will predict negative

attitudes toward technology as measured by the Media and Technology Usage and Attitudes

Scale (MTUAS; Rosen, Whaling, Carrier, Cheever & Rokkum, 2013), with avoidant

attachment positively predicting this and contributing a greater degree of variance than

anxious attachment, which would negatively predict this, but both demonstrating a small

effect size.

1e. It was hypothesized that anxious and avoidant attachment styles will predict problematic

internet use as measured by the total scale score of the Generalized Problematic Internet Use

2 (GPIUS2; Caplan, 2010), with avoidant attachment contributing a greater degree of

variance than anxious attachment and both demonstrating a positive direction and small

effect size.

2. It was hypothesized that: 1) level of social intimacy (as measured by the MSIS; Miller &

Lefcourt, 1982; positively and small effect size); 2) in-person social connectedness (as

measured by the SNI number of connections; Cohen, Doyle, Skoner, Rabin & Gwaltney,

1997; positively and small effect size); 3) problematic internet use (as measured by the

GPIUS2 total scale score; Caplan, 2010; positively and small effect size); 4) negative attitude

toward technology (as measured by the MTUAS; Rosen, Whaling, Carrier, Cheever &

Rokkum, 2013; negatively and small effect size); 5) online intimate self-disclosure (as

measured by the Intimate Self-Disclosure Scale; Schouten, Valkenburg & Peter, 2007;

positively and small effect size); and 6) in-person intimate self-disclosure (as measured by

the Intimate Self-Disclosure Scale; Schouten, Valkenburg & Peter, 2007; positively and

small effect size) will collectively predict social well-being with greatest variance accounted

for in the order presently listed, though each individual variable demonstrating a small effect

size and the combined variables representing a moderate effect size.

CHAPTER III

METHODOLOGY

This chapter outlines the design and materials utilized in the present study. The

participants, including recruiting and data collection strategies, demographics, and social media

use are first described. Each scale is then presented with information including scale name and

abbreviation, definitions, sample items, anchor points and meanings of the score range, which

scales are presently used, and information on validity and reliability are provided including

internal consistency of the scale as used in the present study based on this sample. Following this

the procedures, including data analytic strategy, are discussed.

Participants

Participants were collected online using Amazon Mechanical Turk. The present sample

was restricted to those that are currently young adults, which for the purpose of this study was

defined as those individuals aged 18-25. Participants were limited to residents within the United

States, as there is not sufficient literature of breadth of participant diversity to fully understand

and contextualize international differences in technology use.

Demographics. See Appendix A for demographics inventory. The present sample

consisted of 314 participants. Thirty-eight percent of participants ($n = 120$) identified as male,

60% ($n = 189$) identified as female, and 2% ($n = 5$) identified as other/ not listed. Average age

was 23.0 (18-25, $SD = 1.8$). Sixty-seven percent of participants identified as Caucasian ($n = 209$), 14% as African American ($n = 45$), 11% as Asian/ Pacific Islander ($n = 33$), 5% as Latinx

($n = 16$), 2% as Native American ($n = 6$) and 2% as other ($n = 5$). Seventy-one percent of

participants identified as heterosexual (*n* = 224), 17% (*n* = 53) identified as bisexual, 4% (*n* = 12)

identified as gay or lesbian, and 4% (*n* = 13) identified as queer. The median household income

was $31,000-$40,000. Thirty-nine percent (*n* = 121) of participants identified as Christian

(Protestant or Catholic), 28% (*n* = 88) identified as agnostic, 22% (*n* = 68) identified as atheist,

and 14% (*n* = 44) identified as other/not listed. Thirty-eight percent (*n* = 119) reported living

with a romantic partner, 33% (*n* = 103) with a roommate or friend, 31% (*n* = 98) by themselves,

and 12% (*n* = 39) with a child. When asked what region of the country they live in, 37% (*n* =

116) identified the south, 26% (*n* = 83) in the northeast, 20% (*n* = 62) in the Midwest, and 17%

(*n* = 52) in western states. Although the modal income was between 0-$19,000, the mean and

median were both $31,000-$40,000. As the study was restricted only to young adults, estimated

combined parental income was requested as well, with a mode of $91,000 or greater, and a mean

and median between $61,000-$70,000. See Table 1 for descriptive statistics.

Nearly ninety percent (89.8%, *n* = 282) of participants reported having a Facebook or

other social media account. Participants estimated that they know 32% of their online friends in

person and 43% of their in-person friends online, suggesting these may be largely independent

networks. When asked how often participants play online games with individuals they have not

met, the most common response was never (38.5%, *n* = 121), but with a mean response of three

to four times a month when looking at the total distribution.

Table 1

Descriptive Statistics (N = 314)

Variables	n	%	M	SD
1. Gender			23.0	1.8
Male	120	38		
Female	189	60		

Variables	n	%	M	SD
Other/Not Listed	5	2		
2. Ethnicity				
Caucasian	209	67		
African American	45	14		
Asian/Pacific Islander	33	11		
Hispanic	16	5		
Native American	6	2		
Other/ Not Listed	5	2		
3. Sexual Orientation				
Heterosexual	224	71		
Bisexual	53	17		
Gay/Lesbian	12	4		
Queer	13	4		
4. Religious Affiliation				
Christian	121	39		
Agnostic	88	28		
Atheist	68	22		
Other/ Not Listed	44	14		
5. Region				
South	116	37		
Northeast	83	26		
Midwest	62	20		
Western	52	17		

Measures

Variables assessed included demographics, attachment style, social intimacy, intimate self-disclosure, negative attitudes toward technology, problematic internet use, interpersonal engagement, and social well-being. Demographics were assessed by asking age, occupation, gender, ethnicity, and living arrangement. To assess careless responding three attention check items were used which included: 1) I do not read every editorial in the newspaper every day; 2)

My table manners are not quite as good at home as when I am out in company; 3) Once in a while I put off tomorrow what I ought to do today.

        Attachment Style. Attachment style was assessed using the Attachment Style Questionnaire (ASQ; Feeney, Noller and Hanrahan, 1994; see Appendix B). The ASQ assesses broad adult attachment styles in relationship to others. In the present study the ASQ was used to assess anxious and avoidant attachment style, both of which are sums of two subscales, respectively. This overall 40-item scale requests that participants rate their degree of agreement or disagreement on a six-point Likert-type scale ranging from 1 (totally disagree) to 6 (totally agree). Higher scores indicate higher levels of attachment anxiety and avoidance, while low levels indicate the absence of these without necessarily implying secure attachment. A sample item is "I am easier to get to know than most people" (Feeney et al., p. 1).The first subscale in the inventory is that of confidence, which is designed to measure a secure attachment style. This consists of eight items and assesses comfort with oneself and others. The next subscale is discomfort with closeness (10 items), and it assesses difficulties respondents may experience in forming close, intimate and trusting relationships with others. This is similar to the avoidant attachment style. The third subscale (eight items) is need for approval, and it reflects a tendency to conform to others' expectations and values, as these individuals struggle with feelings of inadequacy and need for acceptance. It is similar to the preoccupied and fearful-avoidant attachment styles. The fourth subscale (eight items) is that of preoccupation with relationships. This subscale moves past the third, and assesses individuals who are highly anxious and dependent on others. It is similar to preoccupied/anxious attachment style. The fifth subscale (seven items) is that of relationships as secondary, a clear parallel to the dismissive-avoidant attachment style, and identifies those generally uninterested in close personal attachments.

The two variables used in the present study are those of the degree of attachment anxiety and attachment avoidance. Anxious Attachment is calculated by the mean of the items for both need for approval and preoccupation with relationships, while Avoidant Attachment was calculated as the mean of discomfort with relationships and viewing relationships as secondary. While high scores on each indicate a high level of attachment anxiety or avoidance, low levels of either do not suggest secure attachment. Rather, low levels represent a lack of anxiety or lack of avoidance in attachments.

The ASQ was normed with undergraduate college students, in which Cronbach's alpha for this scale was good, ranging from .76 to .84 (Feeney et al., 1994). It was further identified that ten-week test-retest reliability ranged from .67 to .78 (Feeney et al., 1994). It demonstrated construct and convergent validity in undergraduate samples by demonstrating strong correlations with other self-report attachment style measures (Feeney et al., 1994). Although originally normed in an undergraduate sample, the AASQ is used in a range of ages from adolescents to adulthood (Alexander, Feeney, Hohaus & Noller, 2001), was adapted into numerous languages for international use (Monacis, de Palo, Griffiths & Sinatra, 2017), was used in online samples for groups as diverse as new preterm mothers (Reem, Wendy, Fay, Sabrina, & Pam 2014) and BDSM practitioners (Wismeijer & van Assen, 2013). Only the anxious and avoidant attachment subscales were used in the present study, in which the Cronbach's alpha for Anxious Attachment Scale was calculated as α = .85 and Avoidant Attachment Scale as α = .78.

Social Intimacy. Social intimacy was assessed using the Miller Social Intimacy Scale (MSIS; Miller & Lefcourt, 1982; see Appendix C), which examined intimacy as an experienced quality of closeness. It was normed in three samples, two of which were in young adults. This 17-item unidimensional scale was initially designed to assess feelings of intimacy in romantic

relationships, but presently modified to apply to one's combined group of friends in-person or online. It was modified by adding the words "in person or online" following the word "friends." Items assess aspects such as affection, disclosure, closeness, emotions, conflict, support, and others. It was originally normed in a three-part sample of married and unmarried students and marriage therapy clients. Item responses are on a 10-point scale from 1 "Very Rarely/ Not much" to 10 "Almost Always/ A Great Deal." Higher scores indicate a higher level of social intimacy, while lower scores indicate a lack of perceived intimacy with others. A sample item is "When you have leisure time, how often do you choose to spend it with them?" (Miller et al., 1982, p. 3).

Cronbach's alpha for this scale with college students is excellent at .91 (Miller et al., 1982). Two month test-retest reliability was found to be excellent (r = .96). Convergent validity was demonstrated through a strong positive relationship between the MSIS and separate scores for trust and intimacy as well as low scores for loneliness (Miller et al., 1982). Construct validity was demonstrated through higher scores for marital relationships than friendships, and for marriages perceived as more supportive than distressed marriages. It is used in numerous countries (Chan & Lo, 2014) and in purely online samples (Stulhofer, Jelovica & Ruzic, 2008). Cronbach's alpha in the present study was α = .90.

Intimate Self-Disclosure. To measure intimate self-disclosure, a unnamed seven-item scale was used (Schouten, Valkenburg & Peter, 2007; see Appendix D). The scale was developed on earlier measures which essentially listed a number of personal topics, and then asked the degree of disclosure in those areas (Schouten et al., 2007, p. 2). As such, it is an atheoretical scale without a conceptual definition of intimacy, operationalized as disclosure in personal topics (Schouten, Valkenburg & Peter, 2007a). The scale assesses self-disclosure in the

areas of: 1) personal feelings; 2) worries; 3) secrets; 4) love; 5) sex; 6) shameful moments; and

7) guilty moments. It is scored using a five-point scale ranging from 1 ("I tell them nothing about

this") to 5 ("I tell them everything about this"). The scale was administered twice, with clear

instructions to answer this only in regards to one's online and then in-person relationships:

"please respond to this as it applies to friendships online/ in-person." It is scored as a

unidimensional scale with higher scores indicating a higher degree of intimate self-disclosure.

This scale was employed to assess self-disclosure in both in-person and online communication

settings. Cronbach's alpha in late adolescents was .87-.89 (Koutamanis, Vossen, Peter &

Valkenburg, 2013). The scale was normed on a sample of 1,340 urban adolescents in the

Netherlands, where researchers demonstrated convergent validity from self-consciousness and

anxiety (Schouten, Valkenburg & Peter, 2007) and internal consistency of $\alpha = .93$. The norming

of the sample in the Netherlands might be a limitation as it is possible that topics considered

intimate may vary between the Netherlands and the present American sample. No other measures

of validity or reliability were explored for the scale. The scale is used in numerous countries

(Upton-Davis, 2012) as well as in purely online samples (Valkenburg & Peter, 2007a). In the

present study, Cronbach's alpha for online disclosure was $\alpha = .92$, while for in-person it was $\alpha = .90$.

.90.

      Negative Attitudes toward Technology. To measure the degree of negative attitudes

toward technology, the Media and Technology Usage and Attitudes Scale (MTUAS; Rosen,

Whaling, Carrier, Cheever & Rokkum, 2013; see Appendix E) was used. This 60-item scale

includes 15 subscales related to usage of various forms of technology and four subscales relating

to attitudes toward technology. The only scale used in the present study is that of Negative

Attitudes toward Technology, consists of three items and assesses the belief that technology

makes life more complicated, isolates people, and is a waste of time. Items are scored from 5

"strongly agree" to 1 "strongly disagree", in which a high score would indicate a general

negative attitude toward technology. Cronbach's alpha for this subscale when introduced was .80

(Rosen et al., 2013). Data for norming purposes was dually drawn from university and

community samples, with demographic variables closer to what would be expected of

community samples than a college sample (Rosen, Whaling, Carrier, Cheever & Rokkum, 2013).

Although the scale is used with a range of ages (Rosen et al., 2013) and internationally (Jeong,

Kim, Yum & Hwang, 2016), it is used overwhelmingly in undergraduate samples without

identified studies in which it was used for online data collection thus far. Validity was

demonstrated through activity logs demonstrating high constancy between MTUAS-reported

behavior and behavior reported in similar scales (Rosen et al., 2013). Additionally, anxiety asked

about inability to use technology specifically was found to relate highly with MTUAS-specific

anxiety/dependence scales. Finally, high convergence was demonstrated between the MTUAS

and related internet addiction scale (Young, 1998). Reliability was not reported outside of

internal consistency (Rosen et al., 2013), which was good (.80). For the purpose of the present

study, the variable used is that of negative attitudes toward technology. Cronbach's alpha for this

scale was $\alpha = .61$.

   Problematic Internet Use. To identify problematic internet use, the Generalized

Problematic Internet Use Scale 2 (GPIUS-2; Caplan, 2010; see Appendix F) was used. This 15-

item scale assesses five dimensions of problematic internet use, which is technology use that is

preferential to in-person communication, used to regulate negative emotions, is mentally

preoccupying, compulsive, and leads to negative outcomes (Caplan, 2010). Each dimension is

represented by a subscale that has three associated items. The first subscale measures preference

for online social interaction, which assesses comfort and preference for online communication over in-person. The second subscale is mood regulation, which assesses using the internet to feel less isolated, less down, and feel better when upset. The third subscale is cognitive preoccupation, which assesses excessive thoughts, feeling lost, and obsession with being online when not doing so. The fourth subscale is compulsive internet use, which assesses difficulties controlling internet use. The fifth subscale is negative outcome, which includes difficulties in life, social outings, and other problems as a result of internet use. A total score can be calculated across all five subscales, and Caplan (2010) reported an alpha for the total scale score as .91.

The GPIUS-2 is based off a previous scale, the GPIUS (Caplan, 2003), and incorporates changes suggested by the literature to better identify and standardize potential difficulties resulting from internet use. A sample item is "I have used the Internet to talk with others when I was feeling isolated" (Caplan, 2010, p. 5). Items are scored from a range of 1 "Strongly disagree" to 5 "Strongly agree." Higher scores indicate a higher level of problematic internet use. It was dually normed on a sample of both undergraduates and adult community volunteers. Construct validity was demonstrated through a statistically rigorous two-step SEM procedure to demonstrate the hypothesized factor structure of the model, which has been established as one measure of construct validity (Anderson & Gerbing, 1988). No other scales were used to demonstrate validity. Reliability was assessed through Cronbach's alpha, which was .91. It is used internationally in samples such as Iranian universities where it continued to demonstrate strong psychometric properties (Alavi, Jannatifard, Maracy & Rezapour, 2009) as well as in a variety of online (Cole and Hooley, 2013) and in-person settings around the world (Fioravanti, Primi & Casale, 2013). In the present study, only the total scale score was used. Cronbach's alpha was identified as $\alpha = .90$ for the total scale.

Interpersonal Engagement. The Social Network Index (SNI; Cohen, Doyle, Skoner, Rabin & Gwaltney, 1997; see Appendix G) was used to achieve a functional/operational measure of interpersonal engagement measured as the number of networks one has, the number of individuals in those networks, and the diversity of individuals between networks. This scale was designed to measure engagement in 12 domains including marriage, children, friends, work, community, school and others. Response sets varied based on the item, and include continuous, categorical, and open-ended items. It consists of three subscales: 1) diversity and range of individuals in one's networks; 2) number of individuals in one's networks; and 3) number of networks. A sample item is "How many other relatives (other than your spouse, parents & children) do you feel close to?" (Cohen et al., 1997, p. 1). Higher scores indicate a higher number of relationships. Because these three subscales are descriptive totals of number of relationships, alpha levels were not identified and validity was not demonstrated in the article introducing the scale (Cohen, Doyle, Skoner, Rabin & Gwaltney, 1997). The scale was normed on a predominantly white community sample who responded to a newspaper advertisement, and has not previously been identified as used for online data collection. The scale demonstrated predictive validity through susceptibility to illness and behavioral health outcomes, as well as with positive affect, self-esteem, and personal control. Strong relationships were also identified in relation to five behavioral health measures which were not identified (Cohen, 1991). Reliability in the current study was not identified, as the scale only identifies the number of relationships one has this and thus would be considered similar to a demographics scale rather than a traditional psychological variable measure. The number of individuals in one's network is considered the primary subscale of interest in this inventory as the diversity and number of

networks provide secondary detail to the size of one's network. As such, the number of individuals in a network was the variable used in this study.

   Social Well-Being. To assess social well-being, Keyes' (1998) five-dimension Social Well-Being Scale (SWBS; see Appendix H) was used to measure "the appraisal of one's circumstances and functioning in society" (Keyes, 1998, p. 2). The first subscale consists of five items and is that of social coherence, which measures an individual's perception of their degree of understand of the world. The second subscale is that of social actualization, which measures the individual's engagement in moving with society towards a positive future. The third subscale is social integration, which reflects an individual's class-conscious involvement and behavior. The fourth subscale is social contribution, which is a self-rating of one's meaningful contribution to society. The fifth subscale is social acceptance, the attitude of the individual towards society. Although it is calculated as a total scale score, internal consistency of the total scale was not reported in the original article (Keyes, 1998). A sample item is "You don't feel you belong to anything you'd call a community" (Keyes, 1998, p. 7). It is scored on a seven-point Likert-type scale ranging from 1 "strongly disagree" to 7 "strongly agree," with a higher scale score indicating a higher level of social well-being. In the article introducing the scale (Keyes, 1998), Cronbach's alpha levels ranged from .57 to .81. Convergent validity was demonstrated through related measures of political attitudes (General Social Survey; Davis & Smith, 1994); generativity (Loyola Generativity Scale; McAdams & de St. Aubin, 1992); and perceived social constraints (Lachman & Weaver, 1998). Predictive validity was measured through follow-up phone interviews that measured outcomes such as optimism and physical health (Keyes, 1998). As a leading standard in measuring social well-being (Keyes, Shmotkin & Ryff, 2002), the SWBS is used in samples with a great deal of demographic diversity, including Chilean sexual

minorities (Barrientos, Cardenas, Gomez & Guzman, 2016) and broader online samples (Hill, Sumner & Burrow, 2013). The total scale score is used in the present study. The total scale Cronbach's alpha was.90.

Procedures

The study was first approved by the university institutional review board (IRB; Appendix I). Participants were recruited online using Amazon mTurk by posting the survey and requirements on the mTurk project listing page. No additional advertisement was used. Prior to beginning the surveys participants completed a consent form on mTurk using Qualtrics, which randomized the order of instruments as presented to participants. The study was expected to take roughly 45 minutes to complete. Participants were compensated $4 for their participation.

Analyses

Prior to data analyses, individual responses were examined. Eleven participants who demonstrated a pattern of careless responding, as demonstrated by responding to 75% or greater of the items with a single response (typically a neutral response) were removed, consistent with previous recommendations regarding post-survey visual ad-hoc data deletion (Godinho, Kushnir & Cunningham, 2016). As mTurk does not provide the responses of individuals who do not complete the study, no participants were removed for failure to complete the study. To protect against careless responding individuals, only Master-qualified responders were used, who have demonstrated a 90% or above approval rate in their mTurk participation. Prior to the conduction of data analyses the normality of data was examined as reported in the Results section. No individuals were removed as a result of the attention check items. For each analysis, listwise data deletion was used to ensure completion of responses within the scales used in a given analysis.

Sample sizes of a given analysis, taking into account those deleted for that analysis through listwise deletion, are reported in each table.

First, participant demographics were analyzed. Next, variable sums and means were computed to achieve index estimates. Internal consistency was calculated for each subscale or total scale used in the present study. A series of six total hierarchical regressions were conducted. The first five were conducted to examine the amount of variance anxious and avoidant attachment contributed to: 1) social intimacy; 2) in-person intimate self-disclosure; 3) online intimate self-disclosure; 4) negative attitudes toward technology; and 5) problematic internet use. In each it was hypothesized, based on previously-discussed findings showing that attachment avoidance demonstrated stronger and more consistent relationships to online behavior than attachment anxiety, that degree of avoidant attachment would account for a greater proportion of variance than anxious attachment. The sixth hierarchical regression examined the individual and combine predictive powers of : 1) social intimacy; 2) in-person social connectedness; 3) problematic internet use; 4) negative attitude toward technology; 5) online intimate self-disclosure; and 6) in-person intimate self-disclosure on the outcome variable of social well-being.

CHAPTER IV
RESULTS

The purpose of this chapter is to review the results of the analysis to better explore the relationship of attachment style to problematic internet use, negative attitudes toward technology, general social intimacy, and online and in-person intimate self-disclosure, as well as the impact of these factors on social well-being. To do so, preliminary analyses were first conducted to examine the normality of the data. Following this, Pearson product-moment correlation coefficients between variables were examined. Finally, a series of regression analyses explored the role of anxious and avoidant attachment style in predicting the variables named, and these variables in predicting social well-being.

Preliminary Analysis

Prior to conducting the analyses, statistical assumptions were examined. While the independent variables of the first five hypotheses, anxious and avoidant attachment style, were moderately-to-highly correlated (r = .50), collinearity statistics were within accepted limits: Tolerance (.750) was above the guideline of .40, and VIF (1.334) was below 10, suggesting multicollinearity did not compromise the ability to conduct the analyses and that the data demonstrated acceptable normalcy (Allison, 2012).

The relationship between demographic variables and the independent (anxious and avoidant attachment) and dependent (social intimacy, in-person intimate self-disclosure, online intimate self-disclosure, negative attitudes toward technology, problematic internet use, and social well-being) variables were examined. No statistically-significant relationship existed between ethnicity or age and any other variable. Gender demonstrated a significant differences on two variables, with females showing statistically higher means onboth network number (F(2, 311) = 3.45, p < .05) and levels of social intimacy, F(1, 311) = 8.40, p < .05.

To examine the relationships between variables of interest, Pearson product-moment correlation coefficients were examined. Anxious and avoidant attachment, the two predictor variables in five of the six hypotheses, demonstrated a strong correlation with each other ($r = .50$, $p < .001$). Particularly notable correlations were also identified between anxious ($r = -.43$, $p < .01$) and avoidant ($r = -.45$, $p < .01$) attachment in relation to social well-being. Anxious ($r = .37$, $p < .01$) and avoidant ($r = .33$, $p < .01$) attachment both demonstrated a moderate relationship with problematic internet use. The relationship between avoidant attachment and social intimacy ($r = -.31$, $p < .01$) was also moderately negative. See Table 2.

Table 2

Correlations and Descriptive Statistics (N = 314)

Variables	1	2	3	4	5	6	7	8	M	SD
1. Anxiety	–								25.87	6.36
2. Avoidance	.50**	–							29.82	5.64
3. Social Well-Being	-.43**	-.45**	–						4.33	0.80
4. Prob. Internet Use	.37**	.33**	-.26**	–					3.73	1.16
5. Neg. Att. Tech	.16**	.21**	-.26**	-.01	–				2.97	0.93
6. Social Intimacy	-.04	-.31**	.28**	-.06	-.03	–			6.36	1.40
7. Online Disclosure	.02	-.03	-.13*	.18**	.02	.12*	–		3.03	3.08
8. In-Person Disclosure	.00	-.21**	.19**	-.09	.01	.39**	.24**	–	2.58	0.98
9. Network Number	-.20**	-.16**	.18**	-.17**	.05	.14**	.05	.13*	16.20	16.20

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

Main Analyses

To address each of the six hypotheses, hierarchical regression analyses were run using a stepwise method.

Hypothesis One A. The first hypothesis was that degree of anxious and avoidant attachment style would predict levels of intimacy (as measured by Miller Social Intimacy Scale, MSIS, Miller et al., 1982), with avoidant attachment accounting for a greater amount of the variance and a medium effect size, but anxious attachment demonstrating a small effect size. In the first stage avoidant attachment style significantly contributed to the analysis, $F(1, 312) = 32.18$, p < .0001, and contributed 9% of the variance in social intimacy. In the second step anxious attachment accounted for an additional 2% of variance, $F(2, 311) = 19.37$, p < .0001, R^2 = .11. This hypothesis was partially supported as avoidant attachment did contribute greater variance to social intimacy than anxious attachment, which demonstrated a small effect size. However the results differed from the hypothesis as anxious attachment demonstrated a small rather than medium effect size. See Table 3.

Table 3

Summary of Hierarchical Regression Analysis for Variables Predicting Social Intimacy (N = 313)

	Model 1			Model 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Avoidance	-0.08	0.01	-.31**	-0.09	0.02	-.38**
Anxiety				0.03	0.01	.15*
R^2		.09			.11	
F for change in R^2		32.18**			6.03*	

Hypothesis One B. The second hypothesis was that anxious and avoidant attachment

styles would predict in-person intimate self-disclosure, with avoidant attachment contributing a

greater degree of variance (medium effect size) than anxious attachment (small effect size). In

the first stage avoidant attachment style significantly contributed to the model, $F(1, 312) = 14.53$,

p < .0001, and accounted for 4.4% of the variance in in-person intimate disclosure. In the second

step anxious attachment accounted for an additional 1.5% of variance, $F(2, 311) = 9.74$, p <

.0001, $R^2 = .06$. As hypothesized, both avoidant and anxious attachment demonstrated a

significant contribution to in-person intimate self-disclosure. However, contrary to what was

hypothesized, avoidant attachment demonstrated a small rather than medium effect size , and (as

hypothesized) anxious attachment demonstrated a small effect size. See Table 4.

Table 4

Summary of Hierarchical Regression Analysis for Variables Predicting In-Person Disclosure (N = 313)

Variable	Model 1			Model 2		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Avoidance	-0.04	0.01	-.21**	-0.05	0.01	-.28**
Anxiety				0.02	0.01	.14*
R^2		.04			.06	
F for change in R^2		14.53**			4.77*	

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

Hypothesis One C. The third hypothesis was that anxious and avoidant attachment styles would predict online intimate self-disclosure, with avoidant attachment contributing a greater degree of variance than anxious attachment and both demonstrating a small effect size. Neither anxious nor avoidant attachment style significantly contributed to online intimate self-disclosure. This hypothesis was not considered to be supported. See Table 5.

Table 5

Summary of Forward Regression Analysis for Variables Predicting Online Self-Disclosure (N = 313)

Variable	Model 1		
	B	*SE B*	*β*
Anxiety	0.02	0.03	.05
Avoidance	-0.03	0.04	-.06
R^2		.01	
F for change in R^2		0.45	

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

Hypothesis One D. The fourth hypotheses was that degree of anxious and avoidant attachment style would predict negative attitudes toward technology, with avoidant attachment accounting for a greater amount of the variance and both demonstrating a small effect size. The regression indicated that a two-stage model best predicted the dependent variable. Only avoidant attachment style significantly contributed to the model, $F(1, 312) = 14.37$, p < .0001, accounting for 4% of the variance in negative attitudes toward tehcnology, while anxious attachment style did not. While the hypothesis was partially supported as avoidant attachment demonstrated a

stronger relationship and small effect size, anxious did not predict negative attitudes as

hypothesized. See Table 6.

Table 6

Summary of Hierarchical Regression Analysis for Variables Predicting Negative Attitudes toward Technology (N = 313)

	Model 1		
Variable	*B*	*SE B*	*β*
Avoidance	0.04	0.01	.21**
R^2		.04	
F for change in R^2		14.37**	

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

Hypothesis One E. The fifth hypothesis was that degree of anxious and avoidant

attachment style would predict global problematic internet use with avoidant attachment

contributing a greater degree of variance than anxious attachment and both demonstrating a

small effect size. In the first stage anxious attachment style significantly contributed to the

model, $F(1, 312) = 50.65$, p < .0001, accounting for 14% of the variance in problematic internet

use. In the second step avoidant attachment accounted for an additional 2.7% of variance, $F(2,$

$311) = 31.21$, p < .0001, $R^2 = .17$. This hypothesis was considered to be generally supported,

although anxious rather than avoidant attachment demonstrated the larger relationship. See Table

7.

Table 7

Summary of Hierarchical Regression Analysis for Variables Predicting Problematic Internet Use

(N = 313)

	Model 1			Model 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Anxiety	0.07	0.01	.37**	0.05	0.01	.28**
Avoidance				0.04	0.01	.19**
R^2		.14			.17	
F for change in R^2		50.65**			10.26**	

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

Hypothesis Two. The sixth step in the hypothesis (second main hypothesis) was that 1) level of social intimacy (as measured by the Miller Social Intimacy Scale); 2) in-person social connectedness (as measured by the Social Network Index number of connections); 3) problematic internet use (as measured by the Global Problematic Internet Use Scale 2 total scale score); 4) negative attitude toward technology (as measured by the Media and Technology Usage and Attitudes Scale); 5) online intimate self-disclosure (as measured by the Intimate Self-Disclosure Scale); and 6) in-person intimate self-disclosure would collectively predict social well-being with greatest variance accounted for in the order presently listed with each demonstrating a small effect size. See Table 7.

In the first stage social intimacy significantly contributed to the model, $F(1, 312) = 27.23$, $p < .0001$, and accounted for 8% of the variance in social well-being. In the second step negative attitudes toward technology accounted for an additional 6.5% of variance, $F(2, 311) = 26.30$, $p < .0001$, $R^2 = .15$. In the third stage problematic internet use accounted for an additional 5.8% of

variance, $F(3, 310) = 26.30$, $p < .0001$, $R^2 = .20$. In the fourth step social network size accounted

for an additional 1.4% of variance, $F(4, 309) = 21.40$, $p < .0001$, $R^2 = .22$. In the fifth step online

intimate self-disclosure accounted for an additional 1.5% of variance, $F(5, 308) = 18.62$, $p <$

.0001, $R^2 = .23$. It is noted in the final model the standardized beta coefficients for negative

attitudes toward technology ($b = -.26$), problematic internet use ($b = -.20$) and online intimate

self-disclosure ($b = -.13$) were all negative, suggesting that lower levels of these variables

predicted higher levels of social well-being. This hypothesis was largely supported, although the

order in which variables would predict social well-being was not supported and in-person

intimate disclosure did not predict social well-being. No additional analyses were completed

following this. See Table 8.

Table 8

Summary of Hierarchical Regression Analysis for Variables Predicting Social Well-Being (N = 313)

Variable	Model 1			Model 2			Model 3			Model 4			Model 5		
	B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE(B)*	*β*	*B*	*SE(B)*	*β*
Social Intimacy	0.16	0.03	.28**	0.16	0.03	.28**	0.15	0.03	.26**	0.14	0.03	.25**	0.15	0.03	.26**
Negative Att.				-0.22	0.05	-.25**	-0.22	0.04	-.26**	-0.23	0.04	-.26**	-0.22	0.04	-.26**
Problematic Int.							-0.17	0.04	-.24**	-0.15	0.04	-.22**	-0.14	0.04	-.20**
Network Num.										0.01	0.00	.12*	0.01	0.00	.13*
Onl. Self-Disc													-0.03	0.01	-.13*
R^2		.08			.15			.20			.22			.23	
F for change in R^2		27.23**			23.41**			22.65**			5.54*			6.10*	

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

CHAPTER V

DISCUSSION

The present study explored the role of attachment style in predicting problematic internet use, negative attitudes toward technology, social intimacy, and disclosure both in-person and online in a sample of young adults. Following this, the study explored the role of these variables, as well as social network size, in predicting social well-being. It was found that both anxious and avoidant attachment positively predicted problematic internet use, neither predicted online intimate disclosure, and only avoidant attachment predicted negative attitudes toward technology. While avoidant attachment negatively predicted social intimacy and in-person disclosure, anxious attachment positively predicted both of these. Social well-being was positively predicted by social intimacy and network number and negatively predicted by negative attitudes toward technology, problematic internet use, and online self-disclosure.

The finding that anxious attachment positively predicted social intimacy while avoidant attachment negatively predicted social intimacy among young adults was consistent with the first hypothesis, although both demonstrated a small effect size. This is generally consistent with previous literature as well as the theoretical conceptualizations of the two attachment styles, in which anxious individuals would seek increased intimacy while avoidant individuals would, by definition, seek decreased intimacy with others. Consistent with this, anxiously-attached individuals express a strong desire for relationship commitment while avoidant individuals demonstrated distrust of others in a sample of young adults (Feeney & Noller, 1990). Both anxious and avoidant attachment lead to lower rates of sexual satisfaction across the adult lifespan (Butzer & Campbell, 2008). Although the present findings theoretically support prior research and demonstrate consistency with conceptualizations of the attachment styles, few

identified previous studies have explored the relationships between attachment style and social intimacy specifically. Thus, the present finding builds upon previous literature by supporting a predictive link between attachment style and social intimacy in the expected directions. Additionally, the present findings explicate the role of attachment style in social intimacy among young adults, which is somewhat understudied as it regards social intimacy specifically, as well as dated in the articles in which it has been explored (e.g. You & Malley-Morrison, 2000) which may limit the ability to generalize the findings to the current population.

The second finding, that avoidant and anxious attachment would predict in-person intimate self-disclosure among young adults, was consistent with the second hypothesis, with both demonstrating a small effect size. While avoidant attachment negatively predicted in-person disclosure, anxious attachment positively predicted it, consistent with expectations. Previous literature has identified that anxious individuals disclose more than avoidant individuals in a sample of adults receiving group counseling (Shechtman & Rybko, 2004), although both appear to do so less than securely attached individuals among undergraduates (Keelan, Dion, & Dion, 1998). Consistent with this, decreased comfort with self-disclosure was found to be associated with both anxious and avoidant attachment style as compared to secure attachment among undergraduates (Wei, Russell & Zakalil, 2005), in contrast to the present study which found a positive relationship between anxious attachment and in-person self-disclosure. As the present study did not examine secure attachment, the relatively higher rates of disclosure as a function of anxious attachment rather than avoidant attachment is consistent with previous literature, some of which has also explored these tendencies among young adults.

Despite the intuitive link between attachment style and disclosure, relatively little research has been conducted on the relationship between attachment style and disclosure, and even less on intimate disclosure. Both avoidant and anxious attachments were previously found to negatively relate to intimacy in general (Bauminger, Finzi-Dottan, Chason & Har-Even, 2008). However, that study (Bauminger et al., 2008) showed that anxious attachment relates to higher levels of in-depth conversation than avoidant attachment. This is consistent with the present finding of a positive relationship between intimate self-disclosure and anxious attachment but a negative relationship between avoidant attachment and self-disclosure.

The third hypothesis was that anxious and avoidant attachment would predict online intimate self-disclosure in a sample of young adults. This hypothesis was not supported by either correlational or regression methods, and no relationship between attachment style as presently measured and online intimate self-disclosure was identified. As the present study did not compare online to offline communication, the finding that anxious and avoidant attachment did not lead to higher rates of online self-disclosure would be consistent with this.

In previous literature, while anxious individuals are greater users of Facebook, avoidant individuals are less so (Oldmeadow, Quinn & Kowert, 2013). Similar findings have been found in the context of romantic relationships, in which it was identified that avoidantly-attached individuals show decreased texting (Morey, Gentzler, Creasy, Oberhauser & Westerman, 2013) while anxiously-attached individuals show increased partner surveillance through digital means (Fox & Warber, 2014). The present finding may add to this by suggesting that intimate self-disclosure specifically is not perfectly consistent with other online interaction. For instance, while anxious and avoidant individuals may demonstrate levels of overall technology usage

consistent with these traits, this does not necessarily translate into intimate disclosure

specifically. The findings may suggest that avoidant and anxious attachment may have no impact

on online intimate self-disclosure as presently measured. It is possible that there is a lack of a

theoretical link between attachment style and intimate self-disclosure, as demonstrated by this

data.

As the previous research in this area, which has often been conducted in samples of

young adults, has consistently found a relationship, it is unclear why no relationship was

identified between either avoidant or anxious attachment in relation to online intimate self-

disclosure. It is possible that this is a reflection of the actual level of disclosure on specific

topics, which is understudied in previous literature, rather than estimates of time spent online

conversing with others. As previous related literature has explored communication generally

rather than intimate disclosure, it is possible that intimate disclosure does not show the same

relationships as overall communication.

The finding that disclosure does not relate to attachment style has several possible

interpretations. For instance, it is possible that despite the hypothesized link between attachment

style and online disclosure, in fact each attachment style shows roughly equivalent uses of

intimate disclosure, suggesting that attachment styles do not impact online disclosure in the same

manner as offline disclosure. For example, offline disclosure may be dependent on the give and

take of an intimate conversation. Legerski, Biggs, Greenhoot and Sampilo (2014) found that the

way a conversation partner responds to offline disclosure has a meaningful impact on continued

conversation, with supportive responses encouraging continued disclosure and dismissive

responses discouraging it. In this light, it is possible that the variables in question are confounded by the online environment.

The fourth finding was that both avoidant attachment and anxious attachment positively relate to negative attitudes toward technology, but only avoidant attachment negatively predicts this (with a small effect size) in a sample of young adults. This supports the second hypothesis as it relates to avoidant attachment. Negative attitudes toward technology were specifically studied to address a disenfranchisement from technology usage. As presently measured, negative attitudes toward technology include the ideas that technology wastes time, makes life more complicated, and leads to social isolation. The finding of no relationship between negative attitudes toward technology and anxious attachment may simply suggest the lack of a relationship between anxious attachment and attitudes toward technology. This is contrasted with literature which explores behavior related to technology. This finding does not preclude implications related to how technology is used, but simply attitudes towards technology. Kim and colleagues (2009) indicated that also in a study of anxious individuals, expected differences between types of internet use were not found, further highlighting that anxiety may have less of a relationship to internet use than expected, consistent with the present observations.

Regarding the finding that avoidant attachment did positively relate to negative attitudes toward technology, previous findings that those with avoidant attachment demonstrate decreased Facebook usage (Oldmeadow, Quinn & Kowert, 2013) may support the conclusion that for avoidant individuals, technology use does represent an unnecessary complication and waste of time. The relationship between attachment style and attitudes toward technology is a previously-understudied interaction between variables, leading to limited existing literature to draw upon for

theoretical and empirical expectations. It is also possible that the limited range of sample ages

also limited the range of responding, and is a function of the relationship of young adults to

technology.

The results of the fifth hypothesis, that both anxious and avoidant attachment style

positively relate to and predict problematic internet use with a small effect size, supported the

hypothesis. However, it was found that anxious rather than avoidant attachment demonstrated the

larger relationship which is inconsistent with this hypothesis. This finding contributes to

literature by providing additional scope of information when examining the relationship between

avoidant attachment in particular and internet usage. Previous research is nuanced, for instance

identifying both that avoidant attachment is negatively related to Facebook usage across a

diverse adult sample (Oldmeadow, Quinn & Kowert, 2013) but positively related to internet use

overall in adults in the community (Shin, Kim & Jang, 2011). This is consistent with

interpersonally avoidant behavior, as avoidant individuals may use internet activity to avoid

interpersonal relationships, and would not actively bolster these relationships online. When

operationally defining problematic internet use as excessive computer use with negative

outcomes arising as a function of preference for online social interaction over in-person

interaction (Caplan, 2003), some question would arise as to whether avoidant attachment would

continue to relate to problematic internet use as this would also entail online social interaction.

The present finding supports the conclusion that avoidant attachment does continue to

relate to problematic internet use among young adults, suggesting the possibility that further

nuance exists in the relationship between avoidant attachment and technology use. It is possible,

for instance, that avoidant attachment leads to technology in ways other than those presently

assessed, or that while avoidant individuals do use technology less than non-avoidant

individuals, they still use these forms of interaction more so than in-person interaction, which is

identified as problematic internet use. As the literature has only very minimally explored

avoidant attachment in relation to problematic online internet usage while much more commonly

exploring attachment anxiety, the present finding contributes to the depth and nuance of the

emerging understanding of the role of avoidant attachment in on-line usage, and extends

previous research by identifying this in young adults specifically. The finding that anxious

attachment predicts technology usage supports a commonly found conclusion (Shin, Kim &

Jang, 2011; Caplan, 2006; Schimmenti, Passanisi, Gervasi, Manzella & Fama, 2014; Lee &

Stapinski, 2012; Nitzburg & Farber, 2013).

The sixth main finding of the present study was that among these young adults, social

well-being is predicted by social intimacy, fewer negative attitudes toward technology, less

problematic internet use, larger network size, and less online disclosure, with each demonstrating

small effect size and contributions to the variance within social well-being ranging from eight to

two percent. The finding that social well-being is most strongly predicted by social intimacy,

though representing less than 10% of the shared variance, is consistent with expectations.

Although intimacy is theorized to be a peripheral aspect experienced in conjunction with

psychological well-being (Ryff, 1989), previous literature is underdeveloped in examining social

well-being in relation to social intimacy. Looking just beyond the idea of social well-being, more

intimate disclosure was found to modestly relate to aspects of friendship quality (Reis, Sheldon,

Gable, Roscoe & Ryan, 2000). The present finding marks a contribution to the literature by

extending a theoretical link between intimacy and social well-being to the empirical finding that

intimacy is the strongest predictor of social well-being in the present model in a sample of young

adults.

The second component of the finding was that negative attitudes toward technology

negatively predicted social well-being with a small effect size. Although identifiable previous

literature exploring the relationship of attitudes toward technology to social well-being is

extremely limited, literature on the broader relationship between technology and well-being is

highly mixed. For instance, while one longitudinal study found that internet communication

leads to reduced home communication and social networks and increased loneliness and

depression (Kraut et al., 1998), other studies have specified that it is not time spent online but

rather the closeness online one achieves that positively predicts negative outcomes such as

loneliness in adolescents (Gross, Juvonen & Gable, 2002; Subrahmanyam & Lin, 2007).

Although technology use has also been argued to be particularly valued by individuals with

poorer psychological well-being (Ellison, Steinfield & Lampe, 2007), the choice to replace in-

person communication with online may lead to long-term detrimental outcomes (Weidman et al.,

2012).

What is increasingly identified is that technology use and social media have the potential

to be helpful, positive, and socially stimulating if experiences are positive (Valkenburg, Peter &

Schouten, 2006), used for meaningful personal growth (Shapira, Barak & Gal, 2007) or to

enhance existing relationships (Bessiere et al., 2008), but harmful when used in place of in-

person relationships (Valkenburg & Peter, 2007b). Thus, one argument made is that when the

internet is used to increase vulnerable communication to others it is generally positive

(Valkenburg & Peter, 2009). Consistent with this, one study found that directed online

communication increases social capital, but passively consuming greater amount of online

content decreases capital (Burke, Marlow & Lento, 2010). The present finding that negative

attitudes toward technology negatively predict social well-being, then, appears consistent with

previous related literature (Valkenburg & Peter, 2007b) that those who do not use technology to

enhance existing relationships may have slightly less developed relationships than those who do,

although it is unclear to what extent the restriction of the sample to young adults may have

affected the present finding.

The third component of the main finding was that problematic internet use negatively

predicts social well-being with a small effect size among this sample of young adults. In one

meta-analysis of internet use generally, only a very slight negative relationship between internet

use and well-being emerged (Huang, 2010), consistent with the present study. The more

nebulous concept of problematic internet use, operationally defined in the present study as the

preference for internet use which leads to negative outcomes (Caplan, 2010) is well-substantiated

as leading to poor outcomes generally. It appears that poor psychosocial health predicts

problematic internet use in particular, which in turn predicts worse psychosocial health (Caplan,

2002; Caplan, 2003; Caplan, 2006; Kim, LaRose & Peng, 2009; Caplan & High, 2002). The

present finding supports previous literature, supporting the relationship between problematic

internet use and poorer social well-being. As previous research has also explored these findings

consistently among young adults (Caplan, 2006), the present finding provides further support of

the outcomes of problematic internet use among this sample, although the possibility exists that

older adults may demonstrate differences.

The fourth component of the main finding was that among young adults, network size positively predicts social well-being, with a small effect size. This is consistent with theory and literature, suggesting that a higher degree of social support, presently measured as the size of one's social network, is a vital aspect of social health as has been substantiated by numerous meta-analyses and reviews (Helliwell & Putnam, 2004; Pinquart & Sorensen, 2000), although this research identified a stronger relationship than that of the present study. While some nuance exists as to how and, in some particular circumstances, whether this relationship is borne out (Kawachi & Berkman, 2001), a general finding of the relationship between social network size and social well-being appears generally well-substantiated. While the present finding was identified among young adults, it appears to be consistently found across the adult lifespan (Helliwell & Putnam, 2004).

The fifth component of the main finding was that online disclosure negatively predicts social well-being among young adults with a small effect size. Strongly related to the second component discussed above, the hypothesis that using the internet to enhance the intimacy of existing relationships is healthy (Valkenburg & Peter, 2009) while using them in lieu of relationships is unhealthy (Weidman et al., 2012) adds potential context to this finding. Specifically, it is possible that while online disclosure when used very intentionally and to deepen relationships is positive for the relationship, that online disclosure when measured broadly across applications and contexts does not, in general, help relationships. Previous research has generally demonstrated a moderate effect size (Valkenburg & Peter, 2009), although the present small effect size may represent the other technology-related variables also capturing variance in social well-being. It is important to note that a more nuanced picture is increasingly

emerging that some online disclosure is helpful but excessive, preferential, or otherwise highly

dominant online disclosure into online relationships or that otherwise does not transfer to

improve existing relationships is detrimental to one's social and emotional well-being (Caplan,

2006). This finding is also related to the fourth component previously discussed, that while

internet communication offers many benefits, when it becomes problematic or ruminative it

leads to negative outcomes, as is seen in the present study. While a curvilinear relationship

between online disclosure and social well-being was not examined, that is a possibility suggested

by the present finding.

In terms of the comparative contribution of each factor, some differences were found

between the hypotheses and the findings, for instance the order in which variables contributed to

social well-being. While social intimacy (largest), problematic internet use (third) and online

intimate self-disclosure (fifth) predicted social well-being in the order hypothesized, negative

attitudes toward technology had a stronger relationship than predicted relative to others (second)

than hypothesized (fourth), and conversely in-person network size demonstrated a small

relationship (fourth) than hypothesized (second). Due to the lack of existing literature with nearly

all of these variables in relation to social well-being, a clearly-substantiated hypothesis regarding

the order is difficult to achieve. However the findings suggest that, while each variable

individually demonstrated only a small relationship with social well-being, attitudes toward

technology had a slightly larger impact on social well-being relative to in-person support than

was expected. Consistent with this was the finding that of the hypothesized variables only in-

person intimate disclosure did not significantly predict social well-being, a finding which was

not predicted from previous literature identifying a relationship of the importance of social

support (Burke, Marlow & Lento, 2010). When examining the results together, the combined

contribution represented less than a quarter of total variance, well within the range of medium

total effect size (Cohen, 1988) but relatively small for the number of variables examined in

relation to the outcome variable of social well-being.

Limitations

The present study is identified as having several limitations. The low levels of internal

consistency for some scales and subscales may limit the ability to draw inferences from data, as

the scales may not have been reliably measuring the central variable in question. Additionally,

the small percentage of Latinx and Native American individuals in this sample would limit the

ability to generalize the present findings to those populations. Additionally, the sampling of only

individuals from mTurk presents opportunities and limitations. As the study pertained almost

entirely to online behavior, it is possible that recruiting a solely online sample complicated the

results, with the participants being more inclined to use online media than a college or offline

community sample. However, as the participants are believed to often use mTurk to supplement

income or contribute to scholarly activity, this does not necessitate social media usage or online

communication for recreation. The attitudes of participants toward online behavior are likely not

representative of a community sample and thus the findings may be limited in their ability to be

generalized to other populations, as it regards attitudes toward technology in particular.

Related to this, it is possible that the present study may be skewed as a result of

necessarily not including those without the access to the internet. Termed the "digital divide"

(Norris, 2001) and discussed largely in the earlier days of mainstream internet use, the presence

of individuals without the ability or motivation to use the internet would suggest that the present

study is not measuring the attitudes and behaviors of these individuals. Regarding the proportion

of the population that would meet this description, it has been found that 98% of individuals

between the ages of 18-29 have regular access to and use the internet. Of the remaining 2%, less

than 20% report that financial limitations are the reason they are not able to use the internet.

While the proportion of young adults who for economic reasons cannot regularly access the

internet (0.4%) is comparatively small, these adults were not included the study, which is a

limitation of the present's study's methodology. Similarly, as the present sample was limited to

individuals aged 18-25, the findings are necessarily limited in application to this subset of the

population.

A further limitation is the cross-sectional and correlational nature of the design. Ideally, a

longitudinal study over a period of several years would have been conducted, to better

understand the relationship between online behavior and potential later, resulting levels of social

well-being. However, with the nature of online data collection this would not have been feasible

in the context of the present study. As a result of the correlational design, it is not possible to

fully understand the relationship between variables or suggest causal relationships. This is

considered a limitation to the present approach that may be addressed in future investigations.

Additionally, the present study did not distinguish internet use generally from social media

specifically, which represents a limitation of the present study. Further, time spent was not

assessed, which may have provided additional information. Given the quickly-changing nature of

online technology use, it is also possible that preferences and the present surveys may not have

assessed the behaviors more popular at the present time. Finally, the self-report nature of the data

presents a limitation to fully understanding the behavior and attitudes of participants.

Implications for Practice

The present study demonstrated that attachment style has a strong relationship to many variables related to online and in-person behavior among young adults specifically. This may present certain clinical implications, for instance that therapists may benefit from formally or informally assessing attachment style to better address areas of concern. Regarding the findings that anxious attachment positively predicts social intimacy and in-person disclosure but avoidant attachment negatively predicts both of these, attending to a client's interpersonal patterns and demonstrated levels of interpersonal comfort may be a necessary step before directly addressing interpersonal behaviors as such. It is possible based on the present findings that those behaviors may be expressions of the internal models and interpersonal outlooks of attachment styles.

The finding that young adults with anxious and avoidant attachment have both more negative attitudes toward technology and higher rates of problematic internet use, while very modest in degree, may have clinical implications. For instance, it may suggest the possibility of reframing technology use in a socially-positive way, such as by deepening existing relationships rather than passively consuming media in isolation, consistent with literature regarding the benefits of using technology to increase intimacy in relationships (Valkenburg & Peter, 2009). The finding that social well-being is predicted by social intimacy and network size but negatively by online disclosure, negative attitudes toward technology and problematic internet use provide information for clinicians treating clients struggling with a lack of social connectedness and low perceived social well-being. Working toward increased intimacy and expanding their network while remaining aware of the effects of online disclosure may be valuable in helping young adult clients develop stronger social well-being.

The present findings may also suggest that psychoeducation may be useful and warranted for young adults engaging in behaviors such as those presently examined. While recognizing that the impact of the variables in the study showed only a modest relationship with social well-being, the possibility exists that increased awareness may continue to be helpful for youth. The relationship between social intimacy and in-person connectedness is intuitive, but may build upon and reinforce existing literature oriented toward youth (Currie et al., 2009). More valuable may be the novel findings that negative attitudes toward technology may prevent a full use of technology to work toward increased social well-being. While the present relationship was modest, it may allow the opening of a discussion as to if, how, or why a youth is or isn't using technology, and may guide a discussion of healthy and communicative use of technology. The finding that intimate disclosure online modestly supported social well-being but problematic internet use negatively predicted social well-being may build into these psychoeducational interventions, providing further depth and clarity as to what technology uses may be somewhat helpful for youth working to increase their social well-being.

Further extending these findings across cultural settings, the present findings that technology use has the ability to contribute, though modestly, to positive outcomes, may have potential implications for various individuals of various identities and groups. For instance it is possible that minority youth or those that identify in a way that may not be fully accepted in their environment such as gender-queer individuals may be able to utilize technology in a way that deepens existing relationships. Similarly, the presence of involvement with a teacher is a strong protective factor for sexual minority youth (Duong & Bradshaw, 2014), further highlighting the

importance of fostering and facilitating connection and support. It is possible that marginalized

groups may use online interaction to seek out positive and supportive interactions.

Implications for Research

Expanding upon the present findings to include other dimensions of attachment style and

a greater breadth and depth within the area of online interaction may be valuable, as the present

study demonstrates a clear relationship across variables. Additionally, while a data-reductive

approach such as categorizing individuals according to which attachment style best describes

them would limit the depth and richness of data as presently collected, if used in combination

with continuous variables this may contribute to the development of a heuristic with value in the

future, such as exploring the possibility of between-groups discrepancy. Additional

classifications such as profiles of combinations of continuous variables, such as those high in

both avoidant and anxious attachment or high in avoidant attachment but low in anxious

attachment, may represent a meaningful future step toward better understanding the relationship

between attachment style and the variables presently in question.

Future research may build upon the present findings by replicating or expanding the

study in a longitudinal design. In this approach, studying the changes to social and other forms of

well-being in relation to changes in in-person and digital communication over time would

provide additional data from which causal inferences may be drawn. Additionally, collecting a

broader sample ranging from youth to older adults and both online and in-person would add

depth and allow the findings to be better generalized to the wider population. Qualitative studies

examining the meaning of technology use, including intimate or communicative technology in

particular, may allow a greater depth of understanding of the role of this behavior in the lives of

young adults. As the present study examined technology use broadly, differentiating this by

specific types of internet use such as social media, gaming, and media consumption would

provide an additional dimension of understanding of the relationship of technology to attachment

style and outcomes. Within this, understanding the impact of types of interpersonal exchanges

such as those that are considered positive or negative by the individuals engaging in these

exchanges would be helpful and allow a further understanding of the impact of technology use.

Conclusion

Despite the ubiquity of technology in society and its use and impact in interpersonal

communication, a number of predictors of technology use, and the combined outcomes of

technology-facilitated and in-person social support, remain to be explored. To address numerous

gaps in existing literature, the present study examined degree of anxious and avoidant attachment

in predicting social intimacy, in-person intimate disclosure, online intimate disclosure, negative

attitudes toward technology, and problematic internet use. In the majority of cases, previous

literature is lacking in regards to many these variable-specific relationships. It was found that

with the exception of online intimate self-disclosure, attachment style did modestly predict each

other outcome variable. The implications of this include greater awareness of the impact of

attachment style on technology use and interpersonal behavior, with the possibility of future

research or clinical interventions to increase awareness of the impact of this relationship. The

main finding of the present study was that social intimacy (positively), negative attitudes toward

technology (negatively), problematic internet use (negatively), social network size (positively),

and online intimate self-disclosure (negatively) each modestly contributed to the main outcome

variable of social well-being. With this knowledge, clinicians may provide psychoeducation and

interventions to facilitate a more informed and socially-satisfying use of technology, as well as increase awareness of the negative effects of problematic internet use. Additional research may build upon present research by continuing to identify additional dimensions of social behavior and technology use, including both predictors and outcomes.

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Appendix A

Demographics Form

1. Age: ___

2. Gender: ____

3. What is your ethnicity (check all that apply):

   Hispanic/   Latino Native American

   Asian/ Pacific Islander   African American

   Caucasian   Other: _____

4. How would you describe your sexual orientation? (Check all that apply)

   Heterosexual   Lesbian

   Bisexual   Gay

   Queer

5. Occupation: _____

6. Living Situation (Select all that apply):

   By   myself With a child without a romantic partner

   With a   parent With a romantic partner (no children)

   With a roommate/friend   With a romantic partner and children

7. What is your annual household income?
   $0 - $9,000 $10,000 - $19,000 $20,000 - $30,000
   $31,000 - $40,000 $41,000 - $50,000 $51,000 - $60,000
   $61,000 - $70,000 $71,000 - $80,000 $81,000 - $90,000
   $91,000 or more

8. What is your parents' estimated combined annual household income?
   $0 - $9,000 $10,000 - $19,000 $20,000 - $30,000
   $31,000 - $40,000 $41,000 - $50,000 $51,000 - $60,000
   $61,000 - $70,000 $71,000 - $80,000 $81,000 - $90,000

$91,000 or more

9. Religious affiliation:

Christian (Protestant)	Buddhist	Hindu
Christian (Catholic)	Muslim	Atheist
Agnostic	Other (please specify): _____	

Region you are from:
A. West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming)
B. Northeast (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Vermont, Rhode Island)
C. Midwest (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin)
D. South (Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Tennessee, Texas, South Carolina, Virginia, West Virginia)

How much time a day would you estimate you spend using technology (text, IM, email, browsing, etc.) a day:

0-30 minutes	2-3 hours	5-6 hours	9-10 hours
30-60 minutes	3-4 hours	6-7 hours	10-11 hours
1-2 hours	4-5 hours	7-8 hours	11-12 hours
More than 12 hours			

Appendix B

Attachment Style Questionnaire

Below are some statements that describe people. Indicate how much you disagree or agree with each of the following statements.

1 = Totally Disagree; 2 = Strongly Disagree; 3 = Slightly Disagree; 4 = Slightly Agree
5 = Strongly Agree; 6 = Totally Agree

1. Overall, I am a worthwhile person.	1	2	3	4	5	6
2. I am easier to get to know than most people.	1	2	3	4	5	6
3. I feel confident that other people will be there for me when I need them.	1	2	3	4	5	6
4. I prefer to depend on myself rather than other people.	1	2	3	4	5	6
5. I prefer to keep to myself.	1	2	3	4	5	6
6. To ask for help is to admit that you're a failure.	1	2	3	4	5	6
7. People's worth should be judged by what they achieve.	1	2	3	4	5	6
8. Achieving things is more important than getting on with others.	1	2	3	4	5	6
9. Doing your best is more important than getting on with others.	1	2	3	4	5	6
10. If you've got a job to do, you should do it no matter who gets hurt.	1	2	3	4	5	6
11. It's important to me that others like me.	1	2	3	4	5	6
12. It's important to me to avoid doing things that others won't like.	1	2	3	4	5	6
13. I find it hard to make a decision unless I know what other people think.	1	2	3	4	5	6
14. My relationships with others are generally superficial.	1	2	3	4	5	6

15. Sometimes I think I am no good at all.   1   2   3   4   5   6

16. I find it hard to trust other people.   1   2   3   4   5   6

17. I find it difficult to depend on others.   1   2   3   4   5   6

18. I find that others are reluctant to get as close as I   1   2   3   4   5   6
would like.

19. I find it relatively easy to get close to other people.   1   2   3   4   5   6

20. I find it easy to trust others.   1   2   3   4   5   6

21. I feel comfortable depending on other people.   1   2   3   4   5   6

22. I worry that others won't care about me as much as I   1   2   3   4   5   6
care about them.

23. I worry about people getting too close.   1   2   3   4   5   6

24. I worry that I won't measure up to other people.   1   2   3   4   5   6

25. I have mixed feelings about being close to others.   1   2   3   4   5   6

26. While I want to get close to others, I feel uneasy   1   2   3   4   5   6
about it.

27. I wonder why people would want to get involved   1   2   3   4   5   6
with me.

28. It's very important to me to have a close relationship.   1   2   3   4   5   6

29. I worry a lot about my relationships.   1   2   3   4   5   6

30. I wonder how I would cope without someone to   1   2   3   4   5   6
love me.

31. I feel confident about relating to others.   1   2   3   4   5   6

32. I often feel left out or alone.   1   2   3   4   5   6

33. I often worry that I do not really fit in with other   1   2   3   4   5   6
people.

34. Often people have their own problems, so I don't bother them with mine.   1   2   3   4   5   6

35. When I talk over my problems with others, I generally feel ashamed or foolish.   1   2   3   4   5   6

36. I am too busy with other activities to put much time into relationships.   1   2   3   4   5   6

37. If something is bothering me, others are generally aware and concerned.   1   2   3   4   5   6

38. I am confident that other people will like and respect me.   1   2   3   4   5   6

39. I get frustrated when others are not available when I need them.   1   2   3   4   5   6

40. Other people often disappoint me.   1   2   3   4   5   6

Appendix C

Miller Social Intimacy Scale

Please respond to the following as it relates to your friends (in person/ online)

	Very Rarely		Some of the time			Almost Always		

1. When you have leisure time, how often do you choose to spend it with them?	1	2	3	4	5	6	7	8	9	10		
2. How often do you keep very personal information to yourself and do not share it with them?	1	2	3	4	5	6	7	8	9	10		
3. How often do you show them affection?	1	2	3	4	5	6	7	8	9	10		
4. How often do you confide very personal information to them?	1	2	3	4	5	6	7	8	9	10		
5. How often are you able to understand their feelings?	1	2	3	4	5	6	7	8	9	10		
6. How often do you feel close to them?	1	2	3	4	5	6	7	8	9	10		

	Not Much			A Little			A Great Deal		

7. How much do you like to spend time alone with them?	1	2	3	4	5	6	7	8	9	10
8. How much do you feel like being encouraging and supportive to them when they are unhappy?	1	2	3	4	5	6	7	8	9	10
9. How close do you feel to them most of the time?	1	2	3	4	5	6	7	8	9	10
10. How important is it to you to listen to their very personal disclosures?	1	2	3	4	5	6	7	8	9	10
11. How satisfying are your relationships with them?	1	2	3	4	5	6	7	8	9	10

12. How affectionate do you feel towards them?   1   2   3   4   5   6   7   8   9   10

13. How important is it to you that they understand your feelings?   1   2   3   4   5   6   7   8   9   10

14. How much damage is caused by a typical disagreement in your relationships with them?   1   2   3   4   5   6   7   8   9   10

15. How important is it to you that they be encouraging and supportive to you when you are unhappy?   1   2   3   4   5   6   7   8   9   10

16. How important is it to you that they show you affection?   1   2   3   4   5   6   7   8   9   10

17. How important are your relationships with them in your life?   1   2   3   4   5   6   7   8   9   10

Appendix D

Intimate Self-Disclosure (Schouten, Valkenburg & Peter, 2007)

When you are using the internet/ talking with other in-person, how much do you usually tell your close friends about…

1 = I tell nothing about this; 2 = I tell little about this; 3 = I tell neither little nor much about this
      4 = I tell much about this; 5 = I tell everything about this

1. My personal feelings	1	2	3	4	5
2. The things I am worried about	1	2	3	4	5
3. My secrets	1	2	3	4	5
4. Being in love	1	2	3	4	5
5. Sex	1	2	3	4	5
6. Moments in my life I am ashamed of	1	2	3	4	5
7. Moments in my life I feel guilty about	1	2	3	4	5

Appendix E

Media and Technology Usage and Attitudes Scale

This scale includes 44 items which comprise 11 subscales: Smartphone Usage (9 items), General Social Media Usage (9 items), Internet Searching (4 items), E-Mailing (4 items), Media Sharing (4 items), Text Messaging (4 items), Video Gaming (3 items), Online Friendships (2 items), Online Friendships (2 items), Facebook Friendships (2 items), Phone Calling (2 items) and TV Viewing (2 items)

10-point frequency scale for items 1–40 (with scoring in parentheses):
> Never (1)
> Once a month (2)
> Several times a month (3)
> Once a week (4)
> Several times a week (5)
> Once a day (6)
> Several times a day (7)
> Once an hour (8)
> Several times an hour (9)
> All the time (10)

Please indicate how often you do each of the following e-mail activities on any device (mobile phone, laptop, desktop, etc.)
1. (E-mailing subscale) Send, receive and read e-mails (not including spam or junk mail).
2. (E-mailing subscale) Check your personal e-mail.
3. (E-mailing subscale) Check your work or school e-mail.
4. (E-mailing subscale) Send or receive files via e-mail.

Please indicate how often you do each of the following activities on your mobile phone.
5. (Text messaging subscale) Send and receive text messages on a mobile phone.
6. (Phone calling subscale) Make and receive mobile phone calls.
7. (Text messaging subscale) Check for text messages on a mobile phone.
8. (Phone calling subscale) Check for voice calls on a mobile phone.
9. (Smartphone usage subscale) Read e-mail on a mobile phone.
10. (Smartphone usage subscale) Get directions or use GPS on a mobile phone.
11. (Smartphone usage subscale) Browse the web on a mobile phone.
12. (Smartphone usage subscale) Listen to music on a mobile phone.
13. (Smartphone usage subscale) Take pictures using a mobile phone.
14. (Smartphone usage subscale) Check the news on a mobile phone.
15. (Smartphone usage subscale) Record video on a mobile phone.
16. (Smartphone usage subscale) Use apps (for any purpose) on a mobile phone.
17. (Smartphone usage subscale) Search for information with a mobile phone.
18. (Text messaging subscale) Use your mobile phone during class or work time.

How often do you do each of the following activities?
   19. (TV viewing subscale) Watch TV shows, movies, etc. on a TV set.
   20. (TV viewing subscale) Watch video clips on a TV set.
   21. (Media sharing subscale) Watch TV shows, movies, etc. on a computer.
   22. (Media sharing subscale) Watch video clips on a computer.
   23. (Media sharing subscale) Download media files from other people on a computer.
   24. (Media sharing subscale) Share your own media files on a computer.
   25. (Internet searching subscale) Search the Internet for news on any device.
   26. (Internet searching subscale) Search the Internet for information on any device.
   27. (Internet Searching Subscale) Search the Internet for videos on any device.
   28. (Internet searching subscale) Search the Internet for images or photos on any device.
   29. (Video gaming subscale) Play games on a computer, video game console or smartphone
       BY YOURSELF.
   30. (Video Gaming Subscale) Play games on a computer, video game console or smartphone
       WITH OTHER PEOPLE IN THE SAME ROOM.
   31. (Video gaming subscale) Play games on a computer, video game console or smartphone
       WITH OTHER PEOPLE ONLINE.
Do you have a Facebook account? If the answer is "yes," continue with item 32; if "no", skip to
the *Attitudes subscales* below.
NOTE: The word "social media" may be substituted for Facebook in the question stem above
and in items 32–34.

How often do you do each of the following activities on social networking sites such as
Facebook?
32. (General social media usage subscale) Check your Facebook page or other social networks.
33. (General social media usage subscale) Check your social media page from your smartphone.
34. (General social media usage subscale) Check social media at work or school.
35. (General social media usage subscale) Post status updates.
36. (General social media usage subscale) Post photos.
37. (General social media usage subscale) Browse profiles and photos.
38. (General social media usage subscale) Read postings.
39. (General social media usage subscale) Comment on postings, status updates, photos, etc.
40. (General social media usage subscale) Click "Like" to a posting, photo, etc.

Please answer the following questions about your Facebook and other online friends. NOTE: In
items 41 and 42 the words "social media" (or any specific social media site) may be substituted
for Facebook.

9-point scale for items 37–40 (with scoring in parentheses:
       0 (1)
       1–50 (2)
       51–100 (3)
       101–175 (4)

176–250 (5)
251–375 (6)
376–500 (7)
501–750 (8)
751 or more (9)

41. Facebook friendships subscale) How many friends do you have on Facebook/ social media?
42. (Facebook friendships subscale) How many of your Facebook/ social media friends do you know in person?
43. (Online friendships subscale) How many people have you met online that you have never met in person?
44. (Online friendships subscale) How many people do you regularly interact with online that you have never met in person?

These subscales includes 16 items, which comprise four subscales: Positive Attitudes Toward Technology (6 items), Anxiety About Being Without Technology or Dependence on Technology (3 items), Negative Attitudes Toward Technology (3 items) and Preference for Task Switching (4 items)

5-point Likert scale for all items (with scoring in parentheses)

Strongly agree (5)
Agree (4)
Neither agree nor disagree (3)
Disagree (2)
Strongly disagree (1)

1. (Positive attitudes) I feel it is important to be able to find any information whenever I want online.
2. (Positive attitudes) I feel it is important to be able to access the Internet any time I want.
3. (Positive attitudes) I think it is important to keep up with the latest trends in technology.
4. (Anxiety/dependence) I get anxious when I don't have my cell phone.
5. (Anxiety/dependence) I get anxious when I don't have the Internet available to me.
6. (Anxiety/dependence) I am dependent on my technology.
7. (Positive attitudes) I am dependent on my technology.I am dependent on my technology.
8. (Positive attitudes) With technology anything is possible.
9. (Positive attitudes) I feel that I get more accomplished because of technology.
10. (Negative attitudes) New technology makes people waste too much time.
11. (Negative attitudes) New technology makes life more complicated.
12. (Negative attitudes) New technology makes people more isolated.
13. (Preference for task switching) I prefer to work on several projects in a day, rather than completing one project and then switching to another.
14. (Preference for task switching) When doing a number of assignments, I like to switch back and forth between them rather than do one at a time.

15. *(Preference for task switching) I like to finish one task completely before focusing on anything else.
16. (Preference for task switching) When I have a task to complete, I like to break it up by switching to other tasks intermittently.

Appendix F

The Generalized Problematic Internet Use Scale 2 (GPIUS2)

Please rate the extent to which you agree or disagree with the following statements. Select one

1 = Strongly   disagree   2 = Somewhat disagree   3   = Neither agree nor disagree
        4 = Somewhat   agree   5 = Strongly agree

1. I prefer online social interaction over face-to-face communication.	1	2	3	4	5
2. Online social interaction is more comfortable for me than face-to-face interaction.	1	2	3	4	5
3. I prefer communicating with people online rather than face-to-face.	1	2	3	4	5
4. I have used the internet to talk to others when I was feeling isolated.	1	2	3	4	5
5. I have used the internet to make myself feel better when I was down.	1	2	3	4	5
6. I have used the internet to make myself feel better when I've felt upset	1	2	3	4	5
7. When I haven't been going online for some time, I become preoccupied with the thought of going online	1	2	3	4	5
8. I would feel lost if I was unable to go online.	1	2	3	4	5
9. I think obsessively about going online when I am offline.	1	2	3	4	5
10. I have difficulty controlling the amount of time I spend online.	1	2	3	4	5
11. I find it difficult to control my internet use.	1	2	3	4	5
12. When offline, I have a hard time trying to resist the urge to go online.	1	2	3	4	5
13. My internet use has made it difficult for me to manage my life.	1	2	3	4	5
14. I have missed social engagements or activities because of my internet use	1	2	3	4	5
15. I have missed significant amounts of sleep or stayed up all night because of my internet use	1	2	3	4	5
16. My internet use has created problems for me in my life	1	2	3	4	5

Appendix G

Social Network Index

Instructions: This questionnaire is concerned with how many people you see or talk to on a regular basis including family, friends, workmates, neighbors, etc. Please read and answer each question carefully. Answer follow-up questions where appropriate.

1. Which of the following best describes your marital status?
 ____ (1) currently married & living together, or living with someone in marital-like relationship
 ____ (2) never married & never lived with someone in a marital-like relationship   ____
(3) separated
 ____ (4) divorced or formerly lived with someone in a marital-like relationship   ____
(5) widowed

2. How many children do you have? (If you don't have any children, check '0' and skip to
    question 3.)
____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more
      2a. How many of your children do you see or talk to on the phone
at least once every 2 weeks?
____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

3. Are either of your parents living? (If neither is living, check '0' and skip to question 4.)
____ (0) neither   ____ (1) mother only   ____ (2) father only   ____ (3) both
      3a. Do you see or talk on the phone to either of your parents at least once every 2 weeks?
____ (0) neither   ____ (1) mother only   ____ (2) father only   ____ (3) both

4. Are either of your in-laws (or partner's parents) living? (If you have none, check the
    appropriate space and skip to question 5.)
____ (0) neither   ____ (1) mother   ____ (2) father   ____ (3) both   ____ (4) not
                          only   only   applicable

      4a. Do you see or talk on the phone to either of your partner's parents
at least once every 2 weeks?
    _____ (0) neither   _____ (1) mother only   _____ (2) father only   ____ (3) both

5. How many other relatives (other than your spouse, parents & children) do you feel close to?
    (If '0', check that space and skip to question 6.)
____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

      5a. How many of these relatives do you see or talk to on the phone
at least once every 2 weeks?
      ____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

6. How many close friends do you have? (meaning people that you feel at ease with, can talk to about private matters, and can call on for help)
____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

    6a. How many of these friends do you see or talk to at least once every 2 weeks?
    ____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

7. Do you belong to a church, temple, or other religious group? (If not, check 'no' and skip to question 8.)
    _____ no   _____ yes

    7a. How many members of your church or religious group do you talk to at least once every 2 weeks? (This includes at group meetings and services.)
____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

8. Do you attend any classes (school, university, technical training, or adult education) on a regular basis? (If not, check 'no' and skip to question 9.)
    _____ no   _____ yes

    8a. How many fellow students or teachers do you talk to at least once every 2 weeks? (This includes at class meetings.)
    ____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

9. Are you currently employed either full or part-time? (If not, check 'no' and skip to question 10.)
____ (0) no   _____ (1) yes, self-employed   _____ (2) yes, employed by others

    9a. How many people do you supervise?
    ____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

    9b. How many people at work (other than those you supervise) do you talk to at least once every 2 weeks?
    ____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

10. How many of your neighbors do you visit or talk to at least once every 2 weeks?
_____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

11. Are you currently involved in regular volunteer work? (If not, check 'no' and skip to question 12.)
    _____ no   _____ yes

    11a. How many people involved in this volunteer work do you talk to about volunteering-related issues at least once every 2 weeks?
    ____0   ____1   ____2   ____3   ____4   ____5   ____6   ____7 or more

12. Do you belong to any groups in which you talk to one or more members of the group about group-related issues at least once every 2 weeks? Examples include social clubs, recreational groups, trade unions, commercial groups, professional organizations, groups concerned with children like the PTA or Boy Scouts, groups concerned with community service, etc. (If you don't belong to any such groups, check 'no' and skip the section below.)

_____ no   _____ yes

Consider those groups in which you talk to a fellow group member at least once every 2 weeks. Please provide the following information for each such group: the name or type of group and the total number of members in that group that you talk to at least once every 2 weeks.

 Total number of group members

        Group that you talk to at least once every 2 weeks

1.

2.

3.

4.

5.

6.

Appendix H

Social Well-Being

Below are statements of your feelings about yourself and your life. Select the number that best matches your agreement or disagreement with each statement. Use the following scale, which ranges from 1 (strongly disagree) to 7 (strongly agree). There are no right or wrong answers

1	2	3	4	5	6	7
Strongly disagree			Neither agree nor disagree			Strongly agree

1. You don't feel you belong to anything you'd call a community.
2. The world is too complex for you.
3. Your behavior has some impact on other people in your community.
4. You think you have something valuable to give to the world.
5. You believe that society has stopped making progress.
6. You think that other people are unreliable.
7. Society isn't improving for people like you.
8. You believe that people are kind.
9. Scientists are the only people who can understand how the world works.
10. You cannot make sense of what's going on in the world.
11. You feel that you're an important part of your community.
12. Most cultures are so strange that you cannot understand them.
13. If you had something to say, you believe people in your community would listen to you.
14. You believe that people are self-centered.
15. You don't think that social institutions like law and government make your life better.
16. You think it's worthwhile to understand the world you live in.
17. You see society as continually evolving.
18. You think our society is a productive place for people to live in.
19. You feel that people are not trustworthy.
20. You feel close to other people in your community.
21. You see your community as a source of comfort.
22. You think that people live only for themselves.
23. Your daily activities do not produce anything worthwhile for your community.
24. For you there's no such thing as social progress.
25. You don't have the time or energy to give anything to your community.
26. You believe that people are more and more dishonest these days.
27. You think that your work provides an important product for society.
28. If you had something to say, you don't think your community would take you seriously.
29. You think the world is becoming a better place for everyone.

30. You think that people care about other people's problems.
31. You feel that you have nothing important to contribute to society.
32. You believe other people in society value you as a person.

Appendix I

Consent Form

UNIVERSITY OF NORTH DAKOTA
Institutional Review Board
Informed Consent Statement

Title of Project: Examination of Digital and Personal Communication and
Relationships

Principal Investigator: Michael Prazak, 8127605347, Michael.prazak@und.edu

Advisor: Tamba-Kuii Bailey, 701.777.2443 tambakuii.bailey@UND.edu

Purpose of the Study:
The purpose of this research study is to understand the relationships between inperson and online communication, as well as factors relevant to both and outcomes of comparative levels of engagement. By better understanding the various elements of relationships such as disclosure, intimacy, trust, time spent, activities, and one's attitudes toward relationships and the various components of them, we will better understand the impact of various forms of engagement.

Procedures to be followed:
Participants will first be provided with a brief description of the study and the opportunity to consent to participation. If they agree, they will be able to

Risks:
There are no risks in participating in this research beyond those experienced in everyday life. While some of the questions may cause brief discomfort, no questions are anticipated as being particularly sensitive or uncomfortable and would not be expected to cause more discomfort than a typical conversation about your relationships and emotions.

Benefits:
Participants may be able to contribute to a better understanding of personal relationships. This would mark a contribution to scientific literature and understanding, and be of potential value to therapists and other clinical professionals in the future. No other individual benefit is anticipated to be derived by participants at this time.

Duration:
It is expected to take roughly 25 minutes to complete this study

Statement of Confidentiality:
All survey responses that we receive will be treated confidentially and stored on a secure server. However, given that the surveys can be completed from any computer (e.g., personal, work,

school), we are unable to guarantee the security of the computer on which you choose to enter your responses. As a participant in our study, we want you to be aware that certain "key logging" software programs exist that can be used to track or capture data that you enter and/or websites that you visit.

Right to Ask Questions:
The researchers conducting this study are Michael Prazak, Tamba-Kuii Bailey, and Kara Wettersten. You may ask any questions you have now. If you later have questions, concerns, or complaints about the research please contact Michael Prazak at (812) 760-5247. His adviser may be reached at (701) 777-2443

If you have questions regarding your rights as a research subject, you may contact The University of North Dakota Institutional Review Board at (701) 777-4279. You may also call this number with problems, complaints, or concerns about the research. Please call this number if you cannot reach research staff, or you wish to talk with someone who is an informed individual who is independent of the research team.

General information about being a research subject can be found on the Institutional Review Board website "Information for Research Participants" http://und.edu/research/resources/human-subjects/research-participants.cfm

Compensation:
You will receive $3.00 for your compensation in this study.

Voluntary Participation:
You do not have to participate in this research. You can stop your participation at any time. You may refuse to participate or choose to discontinue participation at any time without losing any benefits to which you are otherwise entitled.

You do not have to answer any questions you do not want to answer.

You must be 18 years of age older to consent to participate in this research study.

Completion of this survey implies that you have read the information in this form and consent to participate in the research.

Please keep this form for your records or future reference.