RELATIONSHIPS BETWEEN INTERNET USE, TYPE OF SOCIAL SUPPORT, AND EMOTIONAL DISTRESS

A Thesis

Presented to the

Faculty of

California State University, Fullerton

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

in

Clinical Psychology

By

Tiffany Ann Machia

Thesis Committee Approval:

Christine D. Scher, Department of Psychology, Chair
Yuko Okado, Department of Psychology
Kristin Beals, Department of Psychology

Spring, 2018

ABSTRACT

Since the advent of the Internet, researchers have sought to determine whether the Internet may advance users' well-being or if Internet use is associated with a variety of negative outcomes, including emotional distress. Additionally, although social support literature tends to indicate that social support is associated with increased emotional well-being, the research on the impact of social support on the relationship between Internet use and depression has yielded inconclusive results. Existing literature also neglects the role that offline social support and the different types of social support (emotional, companionship, informational, and tangible) have on this relationship. The current study sought to explore the relationships between Internet use, types of offline social support, and depression. A sample of 164 undergraduate students at California State University, Fullerton completed a series of measures of their Internet use patterns, perceived offline social support, and depression. Results of a linear regression indicated that Internet use did not significantly predict levels of depression. Hierarchical multiple regression analyses indicated that all types of social support (emotional, companionship, informational, and tangible) did not moderate an Internet use-depression relationship. However, all types of offline social support were found to be significant predictors of depression. Specifically, increases in the various types of social support were positively associated with depression. Findings of this study are in direct opposition with prior research. Possible explanations for this discrepancy are discussed.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

The Internet is becoming a staple medium in today's society. In a study by Yau, Derevensky, and Potenza (2016), 97% of adolescents surveyed reported using the Internet. In 2015, Moberg and Anestis (2015) found that among American adults over the age of 18, 85% regularly engaged in Internet use. The rate of Internet use increased to 90% when the researchers restricted the age range of the sample to adults between the ages of 18 and 50 years old (Moberg & Anestis, 2015).

Initially, the advent of the Internet was seen as a benefit for consumers. Identified as a social technology (LaRose, Eastin, & Gregg, 2001), it was believed that the Internet was capable of manifesting and fostering social relationships. However, in 1998, Kraut et al. published a groundbreaking study, known as the Internet Paradox Study. Findings of the Internet Paradox Study suggested that the Internet may be associated with decreased psychological well-being, including depression, loneliness, stress, and social isolation (Andrade, 2003; Kim, LaRose, & Peng, 2009; Kraut et al., 1998; LaRose et al., 2001; Shaw & Gant, 2002). Furthermore, the results indicated that the more time adults engaged in Internet use, the less social support—and more social isolation—they experienced (Andrade, 2003; LaRose et al., 2001; Shaw & Gant, 2002).

Since the Internet Paradox Study, numerous researchers have sought to further examine the relationship between Internet use and psychological outcomes. Internet use

has been linked with disorders such as obsessive-compulsive disorder (Hinic, Mihajlovic, & Dukic-Dejanovic, 2010) and intermittent explosive disorder (Derbyshire et al., 2013), as well as compulsive buying, compulsive sexual behavior, decreased exercise, and increased stress (Derbyshire et al., 2013). A positive correlation between Internet use and depression has also received significant attention (Casale & Fioravanti, 2011; Chen & Lee, 2013; Derbyshire et al., 2013; Gorden, Juang, & Syed, 2007; Hinic et al., 2010; Huang, 2010; Selfhout, Branje, Delsing, Bogt, & Meeus, 2009; Weiser, 2001). For example, Bessière, Kiesler, Kraut, and Boneva (2008) found that frequent Internet use, regardless of function, resulted in slightly increased levels of depression. Weiser (2001) found that over the course of two years, individuals who used the Internet the most reported higher levels of depression, loneliness, and social isolation. One factor that may be contributing to this trend in the relationship between Internet use and depression is social support.

Social Support

Social support is defined as "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb, 1976, p. 300). Andrade (2003) proposed that the amount of help that one receives from others might also be a sign that the individual is cared for and appreciated. Four types of social support have been identified: emotional support, informational support, social companionship, and tangible support (Cobb, 1976). Emotional support suggests that the individual is accepted and valued for who they are regardless of any imperfections (Cohen & Wills, 1985; Wan, Jaccard, & Ramey, 1996). Informational support involves providing an individual with problem-solving assistance (Cohen & Wills, 1985),

including receiving advice and guidance (Wan et al, 1996). Social companionship involves having interpersonal relationships and engaging in social activities (Cohen & Wills, 1985). Wan et al. (1996) suggested that social companionship may also provide individuals with distraction from troubles they may be having, as well as a way to help individuals improve their affect. Tangible support involves providing an individual with concrete items such as money or resources, as well as any services or labor that may be required (Cohen & Wills, 1985; Wan et al., 1996). The various sources of social support in an individual's life combine to form that person's social network (Andrade, 2003).

Two theories have been proposed to explain the relationship between social support and psychological well-being. According to Cobb (1976), social support may act as a barrier between stressful events and the development of health problems. Known as the stress-buffering hypothesis, this model suggests that social support buffers the negative effects of stress on an individual, such as feelings of hopelessness and helplessness, decreased positive affect, lower self-esteem, and poorer psychological well-being overall (Brookings & Bolton, 1988; Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Cohen & Wills, 1985; Lakey & Cohen, 2000; Rueger, Malecki, Pyun, Aycock, & Coyle, 2016). By receiving support from other people (e.g., being offered advice, comfort, or encouragement) or believing that this resource is available, the presence of social support can buffer the deleterious effects of stressful events (Lakey & Cohen, 2000).

An alternative model, known as the main effects model, postulates that it is the presence of perceived supportive individuals that increases one's sense of well-being (Rueger et al., 2016). Contrary to the stress-buffering hypothesis, the main effects model

assumes that social support will lead to positive outcomes for the individual regardless of whether the person is under conditions of stress (Cohen & Wills, 1985). According to Cohen and Wills (1985), this model operates by providing "positive affect, a sense of predictability and stability in one's life situation, and a recognition of self-worth" (Cohen & Wills, 1985, p. 311).

Regardless of the model utilized to explain the relationship between social support and emotional distress, evidence suggests that individuals with larger social networks, and therefore greater access to or perception of social support, tend to report higher levels of happiness and psychological well-being. In the absence of such social resources, individuals are at a greater risk for developing depression (Baumeister & Leary, 1995; Bessière et al., 2008).

The Role of the Internet

As previously noted, social support may influence the link between Internet use and depression. One theoretical explanation for this relationship suggests that Internet use may benefit the individual by increasing their social network size, such as by aiding the user in fostering, building, and maintaining online interpersonal relationships, some of which occasionally grow and develop into offline relationships (Bessière, Pressman, Kiesler, & Kraut, 2010; Selfhout et al., 2009; Weiser, 2001). For example, Bessière et al. (2008) noted that stigmatized individuals may utilize the Internet to develop, strengthen, and expand their social networks. In this manner, the Internet provides a platform to develop interpersonal relationships when identifying with and openly expressing themselves to others offline proves challenging (Bessière et al., 2008). Additionally, Parks and Roberts (1998) found that 93.6% of their study participants reported forming

friendships and romantic relationships with individuals they met on social platforms, some of which led to offline interactions. Another study found that over the course of five online chat sessions, participants reported increases in perceived social support and decreases in depression (Shaw & Gant, 2002). Similarly, LaRose et al. (2001) reported that individuals can gain social support online through functions such as email, which, in turn, reduces symptoms of depression. Some authors suggest that the Internet might even be preferable to face-to-face interactions for some individuals, such as those who are lonely or shy (Casale & Fioravanti, 2011; Chen & Lee, 2013; Özcan & Buzlu, 2007).

An alternative theory suggests that the time one allocates to using the Internet takes away from time one has to engage in other activities. When individuals spend time using the Internet, less time remains to be afforded to offline social interactions, which can result in loneliness, depression, and social isolation. Furthermore, online interactions, which may be superficial in nature, may diminish existing real-world relationships (Bessière et al., 2008; Bessière et al., 2010; Casale & Fioravanti, 2011; Huang, 2010; Shaw & Gant, 2002; Weiser, 2001).

Offline Social Support and Internet Use

As previously mentioned, social support gained from Internet use may influence the link between Internet use and depression. However, little research examines how offline social support impacts this relationship. The limited theories and research that do exist offer conflicting findings. One theory proposes that individuals may use the Internet to supplement existing offline relationships, which may assist the individual with maintaining and strengthening these sources of social support (Bessière et al., 2010; Gordon et al., 2007; Huang, 2010; LaRose et al., 2001). In doing so, these Internet users

experience positive psychological benefits with their Internet usage, including decreased depression (Bessière et al., 2010). In support of this theory, Bessière et al. (2010) found that individuals who reported using the Internet to communicate with known associates (e.g., family, friends) over an 18-month period reported lower levels of depressive symptoms at follow-up.

An alternative theory identifies a trend for individuals who report feelings of loneliness and isolation to spend more time online than their counterparts (Caplan, 2003; Casale & Fioravanti, 2011; Ceyhan & Ceyhan, 2008; Kim et al., 2009; Mazzoni, Baiocco, Cannata, & Dimas, 2016). These users may attempt to develop interpersonal relationships on this platform to compensate for the lack of social support and inclusion they perceive offline. However, as their Internet usage increases, these individuals tend to experience negative psychological outcomes, including depression (Davis, 2001; Özcan & Buzlu, 2007). For example, Caplan (2003) suggested that "lonely and depressed individuals may develop a preference for online social interactions, which, in turn, leads to negative outcomes associated with their Internet use" (Caplan, 2003, p. 625). Kim et al. (2009) found support for this model, noting that individuals who reported higher levels of loneliness also displayed a preference for online social interaction. Alternatively, Mazzoni et al. (2016) found that individuals with higher levels of offline social support spent healthier amounts of time online than those with lower offline social support. However, the link between offline social support and the authors' positive psychological outcome variable—life satisfaction—was not significant in this study (Mazzoni et al., 2016).

Current Study

As discussed, there is a discrepancy regarding the role that social support plays on the relationship between Internet use and depression. Studies to date have primarily explored the role that online social support has on the relationship between Internet use and depression, failing to acknowledge for the most part the role of offline social support. While research has suggested that social support gained from Internet use has the potential to decrease depression, these results have been inconclusive. Furthermore, despite the theoretical support for the positive influence of offline social support on psychological well-being, a need remains for an examination into how offline support influences the link between Internet use and depression. Existing research also tends to ignore the influence that particular types of social support (emotional, companionship, informational, tangible) have on this relationship.

The current study is an initial exploration of relationships between Internet use, type of offline social support (emotional, companionship, informational, and tangible), and depression. Because previous researched has linked Internet use to depression, the current study will explore how offline social support moderates this relationship. The following are hypothesized:

1) Increased hours of Internet use will be related to increased levels of symptoms of depression.

2) Type of offline social support being reported will moderate this relationship, with the relationship between Internet use and depressive symptoms weakening as the amount of each type of offline social support increases.

It is expected that the relationship between Internet use and depression will be weakened when high levels of offline social support are present given that previous research has indicated that social support is associated with decreased rates of depression. As previous

research has not established the impact of each type of offline social support on this relationship, the potential moderating effects of this variable will be explored.

CHAPTER 2

METHOD

Participants

Undergraduate psychology students at California State University, Fullerton were recruited for participation in the current study in exchange for partial course credit (*N* = 164). Participants included 122 females, 41 males, and 1 transgender individual between 18 and 53 years (*M* = 20.48 years; *SD* = 3.40). The current sample was predominantly Hispanic or Latino (*n* = 59; 36.0%), non-Hispanic White (*n* = 50; 30.5%), and Asian or Asian American (*n* = 34; 20.7%). The remaining participants identified as biracial or multi-racial (*n* = 13; 7.9%), Black or African American (*n* = 4; 2.4%), Native Hawaiian or Pacific Islander (*n* = 3; 1.8%), or American Indian or Alaska Native (*n* = 1; 0.6%).

Measures

Internet Use Survey

The Internet Use Survey (IUS) was utilized to measure participants' Internet use patterns. Permission to use this measure was obtained from the first author of the instrument. Developed by Rotunda, Kass, Sutton, and Leon (2003), the IUS is a self-report measure used to gauge the frequency and function of an individual's Internet use, as well as indicators of their online experiences and personal psychological characteristics (Rotunda et al., 2003).

The IUS is composed of three subscales: 1) participant demographics and usage information, including frequency and function; 2) impairments and negative consequences linked with use; and 3) psychological characteristics (Rotunda et al., 2003). The latter two sections explore respondents' harmful experiences encountered as a result of their Internet use. Some items included in these sections are drawn from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 1994) diagnostic criteria for some disorders (e.g., schizoid personality disorder, pathological gambling; Rotunda et al., 2003). For the purpose of the current study, only the first section of the IUS was utilized.

In the first section of the IUS, respondents provide demographic information, including employment, marital status, ethnicity, and education level. Next, respondents report daily Internet usage in hours and years of usage using scales ranging from "none" to "over 17" and "less than 1 year" to "10+ years," respectively. Respondents then answer a series of questions regarding the function of their Internet use (e.g., the type of websites they access, such as leisure, chat rooms, news sites, e-mail, gaming, shopping) using a 5-point frequency scale ranging from "never" to "very often." For example, participants are asked to report: "How often do you use the Internet for leisure purposes: during the daytime (weekdays)." In this study, Internet use was calculated using the self-report estimates related to total hours spent on the Internet per day (Rotunda et al., 2003). Reports of "over 17" hours of Internet use per day were input as "18" in the current study, leading to a possible range of 0-18 hours of daily Internet usage. The psychometric properties of this subscale are not reported by Rotunda et al. (2003).

Interpersonal Support Evaluation List

The Interpersonal Support Evaluation List (ISEL) general population version was utilized in the current study to measure tangible, informational and companionship social support. Developed by Cohen et al. (1985), the ISEL is a 40-item, self-report questionnaire used to assess individuals' perceptions of how accessible social support is to them. The ISEL is composed of four 10-item subscales, each related to a different aspect of social support (Cohen et al., 1985). The tangible, appraisal (assessing informational support), and belonging (assessing companionship support) scales were used in the current study to measure participants' perceptions of social support. Internal consistencies for each subscale are as follows: Tangible support (α = .73 - .81); Appraisal (α = .70 - .82); Belonging (α = .73 - .78; Cohen et al., 1985). Due to the poor internal consistency of the ISEL Self-esteem subscale (which can be used to assess emotional support), an additional measure (the Social Support Appraisals Scale) was used to assess participants' perceived emotional support. When completing the ISEL, respondents indicate whether they agree or disagree that each counterbalanced statement is representative of their thoughts and feelings using a 4-point Likert scale. Response options are as follows: "definitely true"; "probably true"; "probably false"; "definitely false." Responses range from 0 to 3, with higher numbers indicating higher levels of support. Each subscale summed score ranges from 0 to 30 (Liao, Rounds, & Klein, 2005).

Cohen et al. (1985) tested the psychometric properties of the ISEL using data collected from five studies. The ISEL and subscales (tangible, self-esteem, belonging, appraisal) were found to have good test-retest reliability at two-day, six-day, and six-

month intervals. Positive correlations between Time 1 and Time 2 at these increments ranged from $r = .67$ to $r = .87$, $r = .63$ to $r = .70$, and $r = .49$ to $r = .74$, respectively (Cohen et al., 1985). In the current study, the tangible, informational, and companionship social support subscales were each found to have good internal consistency ($\alpha = 0.86$, $\alpha = 0.88$, and $\alpha = 0.87$, respectively).

Social Support Appraisals Scale

The Social Support Appraisals Scale (SS-A) was utilized in the current study to measure participants' emotional support. Developed by Vaux et al. (1986), the SS-A is a brief, 23-item self-report measure used to assess respondents' perceptions of being accepted and esteemed by their family and friends, as well as other individuals (Vaux et al., 1986). Respondents are asked to report how much they agree with each statement using a 4-point Likert scale ranging from 1 to 4. Higher scores are indicative of higher levels of perceived support. The SS-A produces three output scores, all with good internal consistency: SS-A total (all 23 items; $\alpha = .90$); SS-A family score (8 items related to perceptions of family members; $\alpha = .80$ - .81); SS-A friends score (7 items related to perceptions of friends; $\alpha = .84$; Vaux et al., 1986). In this study, SS-A total scores were calculated by summing responses to all items and reported accordingly ($\alpha = .78$).

Using ten samples (five college student, five community), Vaux at el. (1986) also evaluated the validity of the SS-A. The SS-A total score was positively associated with the Perceived Social Support (PSS) family and friend subscales ($r = .44$, $p < .001$ and $r = .46$, $p < .001$, respectively), the Social Support Questionnaire (SSQ) number of perceived supportive individuals ($r = .28$, $p < .05$) and satisfaction with support ($r = .47$,

$p < .01$) subscales, the Provision of Social Relations (PSR) total score ($r = .73$, $p < .001$), and the Revised Kaplan Scale (RKS; a social support measure) total score ($r = .66$, $p < .001$). The SS-A was also compared to the Social Support Behaviors scale. Findings indicated that the SS-A total score was positively associated with the family subscale total score ($r = .35$ to $r = .58$, $p < .01$), the family subscale emotional score ($r = .43$ to $r = .54$, $p < .001$), the friends subscale total score ($r = .46$ to $r = .53$, $p < .001$), and the friends subscale emotional score ($r = .35$ to $r = .53$, $p < .001$). The SS-A total score was also found to be negatively associated with the Center for Epidemiological Studies Depression Scale ($r = -.21$ to $r = -.55$, $p < .05$), the Affect Balance Scale negative feelings subscale ($r = -.21$ to $r = -.42$, $p < .05$), and the UCLA Revised Loneliness Scale ($r = -.40$ to $r = -.71$, $p < .001$; Vaux et al., 1986).

Center for Epidemiologic Studies Depression Scale – Revised

The Center for Epidemiologic Studies Depression Scale – Revised (CESD-R) was utilized in the current study to measure participants' depressive symptomatology. The original version of the scale (Center for Epidemiologic Studies Depression Scale (CES-D)) was developed by Lenore Sawyer Radloff in 1977. Based on DSM-IV criteria, the CESD-R expands on the prior version by being better able to identify dysphoria and major depressive episode symptomatology (Van Dam & Earleywine, 2011). The CESD-R is a brief, 20-item self-report measure that assesses respondents' depressive symptomatology via nine symptom clusters: dysphoria, anhedonia, appetite, sleep, thinking and concentration, guilt, fatigue, agitation, and suicidal ideation (Center for Innovative Public Health Research, n.d.). Respondents are asked to review a list of statements reflecting feelings and behaviors linked with depression and report how often

they have felt each over the course of the past two weeks. Using a 5-point Likert scale, individuals have the option to choose one of the following responses: “not at all or less than one day;” “1-2 days;” “3-4 days;” “5-7 days;” or “nearly everyday for 2 weeks.” Item scores are summed to give an overall depression score ranging from 0 – 60, with scores of 16 or greater indicating likely depression (Eaton, 2001).

Van Dam and Earleywine (2011) determined psychometric properties for the CESD-R using two samples. Taking into consideration only those individuals who fully completed the CESD-R, sample 1 included 6971 individuals who responded to an email request from a listserv for participation and sample 2 was composed of 243 undergraduate students (Van Dam & Earleywine, 2011). The CESD-R was found to have high internal consistency (α = .923 - .928; Van Dam & Earleywine, 2011). Van Dam and Earleywine (2011) found that the CESD-R is positively correlated with the State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA; r = .65 to r = .74), the Schizotypal Personality Questionnaire-Brief (SPQ-B; r = .43 to r = .44), and the Positive and Negative Affect Schedule-Negative Affect (PANAS-NA; r = .58), and negatively correlated with the Positive and Negative Affect Schedule-Positive Affect (PANAS-PA; r = -.26). The CESD-R was found to have excellent internal consistency in the current sample (α = .94).

Procedure

Small groups of participants completed survey measures in a reserved classroom at California State University, Fullerton. Upon arrival, all participants were administered paper-and-pencil informed consent forms and survey packets preassembled in the following order: Internet Use Survey; Interpersonal Support Evaluation List; Social

Support Appraisals Scale; UCLA Loneliness Scale; and Center for Epidemiologic Studies Depression Scale – Revised. Although participants were administered the UCLA Loneliness Scale, data collected from this measure was not used in the current analyses but rather serves as data to be utilized in future studies using this sample. Participants were first asked to review and sign the informed consent. They were then allotted one hour to complete all measures. All measures and procedures were approved by the Institutional Review Board at California State University, Fullerton prior to data collection.

Data Analysis

Regression analyses were used to test hypotheses. In each regression, depression served as the outcome variable. Four hierarchical multiple regression analyses were conducted (one for each type of offline social support) in accord with the recommendations of Baron and Kenny (1986). In each hierarchical analysis, predictors (Internet use and offline support type) were entered on Step 1. On Step 2, the interaction of these centered predictors was entered. Moderation effects were considered significant if the interaction term was significant.

CHAPTER 3

RESULTS

Descriptives

Descriptive statistics of study variables are presented in Table 1. Correlations between all variables are shown in Table 2.

Table 1. Mean Values, Standard Deviations, and Ranges of Variables

Variable	*M*	*SD*	Range
Hours of Daily Internet Use	6.80	4.27	2-18
Tangible Support	7.41	5.32	0-22
Informational Support	7.03	5.66	0-24
Companionship Support	8.04	5.58	0-26
Emotional Support	46.92	6.78	31-65
Depression	15.86	13.19	0-57

Table 2. Inter-correlation of Variables

Variable	1	2	3	4	5	6
1. Hours of Daily Internet Use	—					
2. Tangible Support	-.03	—				
3. Informational Support	-.05	.68**	—			
4. Companionship Support	-.02	.74**	.73**	—		
5. Emotional Support	-.12	.58**	.58**	.59**	—	
6. Depression	-.06	.30**	.36**	.41**	.44**	—

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

Regression Analyses

A linear regression was conducted to determine if increases in hours spent using the Internet is related to increased levels of depressive symptoms. Results indicated that Internet use did not significantly predict levels of depression, F (1, 162) = 0.52, p = .47.

The first hierarchical multiple regression explored whether increases in tangible support weakened the hypothesized relationship between Internet use and depression. Results of this regression are displayed in Table 3. In Step 1, Internet use and tangible support significantly accounted for 9.5% of the variance in depression. However, while tangible support was a significant predictor of depression, Internet use was not. In Step 2, the interaction of these centered predictors was added to the model. There was no statistically significant change in variance in depression.

Table 3. Internet Use and Tangible Support as Correlates of Depression

Variable	R^2 Δ	*b*	*SE b*	*β*	*p*
Step 1	.09***				
Internet Use (Hours)		-0.15	0.23	-.05	.53
Tangible Support		0.75***	0.19	.30***	.00
Step 2	.00				
Internet Use (Hours) x Tangible Support		0.00	0.05	.00	.96

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

The second hierarchical multiple regression explored whether increases in informational support weakened the hypothesized relationship between Internet use and depression. Results of this regression are displayed in Table 4. In Step 1, Internet use and informational support were entered into the model and significantly accounted for 12.8% of the variance in depression. However, while informational support was a significant

predictor of the level of depression, Internet use was not. In Step 2, the interaction of these centered predictors was added to the model. There was no statistically significant change in variance in depression.

Table 4. Internet Use and Informational Support as Correlates of Depression

Variable	R^2 Δ	*b*	*SE b*	*β*	*p*
Step 1	.12***				
Internet Use (Hours)		-0.12	0.23	-.04	.60
Informational Support		0.83***	0.17	.35***	.00
Step 2	.00				
Internet Use (Hours) x Informational Support		0.01	0.05	.02	.82

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

The third hierarchical multiple regression explored whether increases in companionship support weakened the hypothesized relationship between Internet use and depression. Results of this regression are displayed in Table 5. In Step 1, Internet use and companionship support were entered into the model and significantly accounted for 17.2% of the variance in depression. However, while companionship support was a significant predictor of depression, Internet use was not. In Step 2, the interaction of these centered predictors was added to the model. There was no statistically significant change in variance in depression.

Table 5. Internet Use and Companionship Support as Correlates of Depression

Variable	R^2 Δ	*b*	*SE b*	*β*	*p*
Step 1	.17***				
Internet Use (Hours)		-0.16	0.22	-.05	.49
Companionship Support		0.97***	0.17	.41***	.00
Step 2	.00				
Internet Use (Hours) x Companionship Support		-0.03	0.04	-.04	.57

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

The final hierarchical multiple regression explored whether increases in emotional support weakened the hypothesized relationship between Internet use and depression. Results of this regression are displayed in Table 6. In Step 1, Internet use and emotional support were entered into the model and significantly accounted for 19.3% of the variance in depression. However, while emotional support was a significant predictor of depression, Internet use was not. In Step 2, the interaction of these centered predictors was added to the model. There was no statistically significant change in variance in depression.

Table 6. Internet Use and Emotional Support as Correlates of Depression

Variable	R^2 Δ	*b*	*SE b*	*β*	*p*
Step 1	.19***				
Internet Use (Hours)		-0.01	0.22	.00	.97
Emotional Support		0.84***	0.14	.44***	.00
Step 2	.00				
Internet Use (Hours) x Emotional Support		0.03	0.03	.06	.45

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

CHAPTER 4

DISCUSSION

The goal of the current study was to explore relationships between Internet use, type of offline social support being reported (emotional, companionship, informational, and tangible), and depressive symptoms. While a main effect of Internet use on depression, with increased hours of Internet use relating to increased levels of symptoms of depression, was expected, this main effect was not found. One potential explanation aligns with recent research on problematic Internet use, also known as Internet addiction. According to Morahan-Martin and Schumacher (2000), problematic Internet use involves numerous symptoms similar to those related to substance use disorders in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5; American Psychiatric Association, 2013), including craving and withdrawal symptoms (American Psychiatric Association, 2013; Morahan-Martin & Schumacher, 2000). Research findings have also indicated that problematic Internet use is related to adverse mental health conditions, including depression (Bozoglan, Demirer, & Sahin, 2014; Özcan & Buzlu, 2007). In this manner, perhaps it is not the amount of Internet use that is related to depression, but rather the manner in which the Internet is used that contributes to emotional distress. Factors associated with problematic Internet use, including inability to control use, may contribute to negative psychological outcomes associated with use (Tokunaga & Rains, 2016). Perhaps measuring participants' level of problematic Internet use or Internet use

patterns, rather than overall amount of daily use, may better capture any relationships between Internet use and depression.

Another possible explanation is that participants' expectations of study variables and hypotheses may have influenced their response patterns, thus impacting the results. Because study variables were made explicit during the informed consent and data collection process, participants may have predicted the hypotheses and reacted accordingly in their survey responses. For example, results may have been impacted by a phenomenon known as the social desirability response bias, which postulates that participants may be motivated to present themselves in a positive light and in such a manner that their reported behaviors are congruent with expectations and norms within society (Yang, Ming, Wang, & Adams, 2017). The social desirability response bias has been shown to affect study results either by creating relationships that do not exist or masking relationships that may otherwise have been identified (Van de Mortel, 2008). Participants in the current study may have anticipated that higher levels of Internet use were expected to be related to increased depressive symptomatology. Feeling resistant to the proposition that their Internet use patterns were in some way maladaptive or harmful, participants may have underreported the amount of hours they spent on using the Internet each day, depressive symptoms, or both, thereby influencing the results exploring this relationship.

It was also expected that a relationship between Internet usage and depression would be weakened as the amount of each type of offline social support increases. Results of hierarchical regression analyses suggested that offline social support did not moderate the relationship between Internet use and depression. However, each type of

offline social support was significantly related to depression. Specifically, results of the current study indicated that higher levels of offline social support were positively associated with depression. This is in direct opposition to prior research and literature on this relationship, which collectively indicate that higher levels of social support relate to lower levels of depression (e.g., Cobb, 1976; Cohen & Wells, 1985). There are several factors that may have led to this inverse trend in the current study.

The first factor that may have influenced these unexpected results is related to the timing of data collection. All data was collected during the final month of the spring semester, a time when students tend to be experiencing increased levels of stress while studying for final exams, completing final assignments and projects, and preparing to transition into off-campus living arrangements (Eisenberg, Gollust, Golberstein, & Hefner, 2007). In fact, the relationship between increased stress and depression is great enough that authors have avoided collecting depression ratings during periods of elevated stress to avoid inflated results (e.g., Eisenberg, 2007). Since the current study did not take such measures, it is possible that participants reported experiencing higher levels of depression regardless of a social support buffer due to data collection being completed during a particularly stressful time.

Additionally, the current study failed to include a loneliness variable in the analyses. According to Peplau and Perlman (1982), loneliness is the painful perception that one is socially isolated and that existing social relationships are not sufficient to satisfy one's needs for intimacy and attachment. While social support and loneliness are similar, they differ in the sense that one can perceive that they have supportive relationships, but these relationships do not sufficiently satisfy one's needs. As such, an

individual may continue to feel lonely and isolated despite reporting the presence of social relationships, thus experiencing increased levels of depression (Weeks, Michela, Peplau, & Bragg, 1980). Together, the timing of data collection and failure to include a loneliness measure may have influenced the unexpected positive relationship between offline social support and depression. Not only may participants have reported higher than normal depression ratings, but the current study failed to include a mediator that may have influenced the relationship between social support and depression.

The current study lends room for further research to address a number of limitations. As previously noted, perhaps utilizing an alternative method to capture Internet use, such as assessing for problematic Internet use patterns, may better capture any relationships between Internet use and depression. Future research could continue to explore any links between these variables, as well as determine if moderating effects of type of offline social support (tangible, informational, emotional, and companionship) exist in this relationship.

Additionally, the current study utilized a cross-sectional research design to assess all variables at one timepoint. Doing so restricted the ability to determine if Internet use is a predictor of levels of depression over time; instead, this study examined if correlational relationships existed between study variables. An alternative design that may better capture whether Internet use is predictive of levels of depression is a prospective study design. In this manner, study participants' Internet use patterns may be captured at a baseline point. These participants may then be monitored over time to determine if depressive symptomatology develops or increases based on changes in participants' Internet use patterns. Utilizing this research design will better determine if the risk of

developing or worsening depressive symptomatology can be predicted by an individual's Internet use patterns.

Furthermore, recent research has identified depressive symptomatology as an antecedent of problematic Internet use, suggesting that those with higher levels of depression engage in higher levels of Internet use (Chen & Lin, 2016). Future research may also benefit from exploring the reverse of the initially proposed relationship (i.e., the effects of depression on Internet use), with offline social support as a potential moderator.

To conclude, the results of the current study indicated that increases in Internet use is not related to increased depressive symptomatology. Furthermore, hierarchical regression analyses did not result in significant interactions between Internet use and type of offline social support on depression. Of note, however, are significant main effects for each type of offline social support on depression, indicating that increases in tangible support, informational support, companionship support, and emotional support are all related to increased levels of depression independent of Internet use. These findings are the result of an initial exploration into relationships between Internet use, type of offline social support, and depression.

REFERENCES

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Andrade, J. (2003). *The effects of Internet on children's perceived social support.* (Unpublished doctoral dissertation). University of Hartford, Connecticut.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6). 1173-1182.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497-529.

Bessière, K., Pressman, S., Kiesler, S., & Kraut, R. (2010). Effects of Internet use on health and depression: A longitudinal study. *Journal of Medical Internet Research, 12,* 78-91.

Bessière, K., Kiesler, S., & Kraut, R., & Boneva, B. (2008). Effects of Internet use and social resources on changes in depression. *Information, Communication & Society, 11,* 47-70.

Bozoglan, B., Demirer, V., & Shain, I. (2014). Problematic Internet use: Functions of use, cognitive absorption, and depression. *Computers in Human Behavior, 37,* 117-123.

Brookings, J. B., & Bolton, B. (1988). Confirmatory factor analysis of the interpersonal support evaluation list. *American Journal of Community Psychology, 16*(1), 137-147.

Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic internet use and psychosocial well-being. *Communication Research, 30*(6), 625-648.

Casale, S. & Fioravanti. (2011). Psychosocial correlates of Internet use among Italian students. *International Journal of Psychology, 46*, 288-298.

Center for Innovative Public Health Research. (n.d.). CESD-R: Center for Epidemiologic Studies Depression Scale Revised Online Depression Assessment. Retrieved from http://cesd-r.com/cesdr/

Ceyhan, A. & Ceyhan, E. (2008). Loneliness, depression, and computer self-efficacy as predictors of problematic Internet use. *CyberPsychology & Behavior, 11*, 699-701.

Chen, W. & Lee, K. H. (2013). Sharing, liking, commenting, and distressed? The pathway between Facebook interaction and psychological distress. *Cyberpsychology, Behavior, and Social Networking, 16*, 728-734.

Chen, S. K., & Lin, S. (2016). A latent growth curve analysis of initial depression level and changing rate as predictors of problematic Internet use among college students. *Computers in Human Behavior, 54*, 380-387.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*(5), 300-314.

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. M. (1985). Measuring the functional components of social support. *Social support: Theory, research, and applications, 24*, 73-94.

Cohen, S. & Wills, T. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357.

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior, 17*(2), 87-195.

Derbyshire, K., Lust, K., Schreiber, L., Odlaug, B., Christenson, G., Golden, D., & Grant, J. (2013). Problematic Internet use and associated risk in a college sample. *Comprehensive Psychology, 54*, 415-422.

Eaton, W. W. (2001). Center for epidemiologic studies depression scale-revised (CESD-R). In L. VandeCreek & T. L. Jackson (Eds.), *Innovations in clinical practice: a source book vol 19* (pp. 295-297). Sarasota, FL, US: Professional Resource Press/Professional.

Eisenberg, D., Gollust, S., Golberstein, E., Hefner, J. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *American Journal of Orthopsychiatry, 77*(4), 534-542.

Giangrasso, B., & Casale, S. (2014). Psychometric properties of the medical outcome study social support survey with a general population sample of undergraduate students. *Social Indicators Research, 116*(1), 185-197.

Gordon, C., Juang, L., & Syed, M. (2007). Internet use and well-being among college students: Beyond frequency of use. *Journal of College Student Development, 48,* 674-688.

Hinic, D., Mihajlovic, G. & Dukic-Dejanovic, S. (2010). Internet Addiction in relation to cognitive or somatic depression symptoms. *Journal of Cognitive and Behavioral Psychotherapies, 10,* 187-197.

Huang, C. (2010). Internet use and psychological well-being. *Cyberpsychology, Behavior, and Social Networking, 13,* 241-253.

Kim, J., LaRose, R., & Peng, W. (2009). Loneliness as the cause and the effect of problematic Internet use: The relationship between Internet use and psychological well-being. *CyberPsychology & Behavior, 12,* 451-455.

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet paradox revisited. *Journal of Social Issues, 58,* 49-74.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53,* 1017-1031.

Lakey, B., & Cohen, S. (2000). Social support theory and measurement. In Cohen, S., Underwood, L., & Gottlied, B. (Eds.). *Social support measurement and intervention: A guide for health and social scientists* (pp. 29-52). New York: Oxford.

LaRose, R., Eastin, M., & Gregg, J. (2001). Reformulating the Internet paradox: Social cognitive explanations of Internet use and depression. *Journal of Online Behavior, 1.*

Liao, H, Rounds, J., & Klein, A. G. (2005). A test of cramer's (1999) help-seeking model and acculturation effects with asian and asian american college students. *Journal of Counseling Psychology, 52*(3), 400-411.

López, M. L., & Cooper, L. (2011). Social support measures review. *National Center for Latino Child & Family Research*

Mazzoni, E., Baiocco, L., Cannata, D., & Dimas, I. (2016). Is Internet the cherry on top or a crutch? Offline social support as moderator of the outcomes of online social support on problematic Internet use. *Computers in Human Behavior, 56,* 369-374.

Moberg, F. & Anestis, M. (2015). A preliminary examination of the relationship between social networking interactions, Internet use, and thwarted belongingness. *Crisis, 36,* 187-193.

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior, 16,* 13-29.

National Institute of Mental Health. (2015). *Major depression among adults*. Retrieved from https://www.nimh.nih.gov/health/statistics/prevalence/major-depression-among-adults.shtml.

Özcan, N. & Buzlu, S. (2007). Internet use and its relation with the psychosocial situation for a sample of university students. *CyberPsychology & Behavior, 10,* 767-772.

Parks, M. R. & Roberts, L. D. (1998). 'Making MOOsic': The development of personal relationships on line and a comparison to their off-line counterparts. *Journal of Social and Personal Relatinships, 15*(4), 517-537.

Rand Corporation. (n.d.). Social Support Survey Instrument. Retrieved from http://www.rand.org/health/surveys_tools/mos/social-support/survey-instrument.html

Rand Corporation. (n.d.). Social Support Survey Instrument Scoring Instructions. Retrieved from http://www.rand.org/health/surveys_tools/mos/social-support/scoring.html

Rotunda, R. J., Kass, S. J., Sutton, M. A., & Leon, D. T. (2003). Internet use and misuse. *Behavior Modification, 27*(4), 484-504.

Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin, 142*(10), 1017-1067.

Selfhout, M., Branje, S., Delsing, M., Bogt, T., & Meeus, W. (2009). Different types of Internet use, depression, and social anxiety: the role of perceived friendship quality. *Journal of Adolescence, 32,* 819-833.

Shaw, L. & Gant, L. (2002). In defense of the Internet: The relationship between Internet communication and depression, loneliness, self-esteem, and perceived social support. *CyberPsychology & Behavior, 5,* 157-171.

Sherbourne, C. D., & Stewart, A. L. (1991). The MOS social support survey. *Social Science & Medicine, 32*(6), 705-714.

Strategic Communications. (2016). *2016 Fact Sheet*. Retrieved from http://news.fullerton.edu/_resources/multimedia/factsheet.pdf.

Thase, M. E. (2012). Social skills training for depression and comparative efficacy research: A 30-year retrospective. *Behavior Modification, 36*(4), 545-557.

Tokunaga, R. S., & Rains, S. A. (2010). An evaluation of two characterizations of the relationships between problematic Internet use, time spent using the Internet, and psychosocial problems. *Human Communication Research, 36*(4), 512-545.

Tokunaga, R. S., & Rains, S. A. (2016). A review and meta-analysis examining conceptual and operational definitions of problematic Internet use. *Human Communication Research, 42,* 165-199.

Van Dam, N. T., & Earleywine, M. (2011) Validation of the center for epidemiologic studies depression scale – revised (CESD-R): Pragmatic depression assessment in the general population. *Psychiatry Research, 186,* 128-132.

Van de Mortel, T. F. (2008). Faking it: Social desirability response bias in self-report research. *The Australian Journal of Advanced Nursing. 25*(4), 40-48.

Wan, C., Jaccard, J., & Ramey, S. (1996). The relationship between social support and life satisfaction as a function of family structure. *Journal of Marriage and Family, 58,* 502-513.

Weeks, D. G., Michela, J. L., Peplau, L. A., & Bragg, M. E. (1980). Relation between loneliness and depression: A structural equation analysis. *Journal of Personality and Social Psychology, 39*(6), 1238-1244.

Weiser, E. (2001). The functions of Internet use and their social and psychological consequences. *CyberPsychology & Behavior, 4,* 723-743.

Widyanto, L., & Griffiths, M. (2006). 'Internet addiction': A critical review. *International Journal of Mental Health and Addiction, 4*(1), 31-51.

World Health Organization. (2017). *Depression*. Retrieved from http://www.who.int/mediacentre/factsheets/fs369/en.

Yang, J., Ming, X., Wang, Z., & Adams, S. M. (2017). Are sex effects on ethical decision-making fake or real? A meta-analysis on the contaminating role of social desirability response bias. *Psychological Reports, 120*(1), 25-48.

Yau, Y., Derevensky, J., & Potenza, M. (2016). Pathological preoccupation with the Internet. In Y. Kaminer (Ed.), *Youth substance abuse and co-occurring disorders* (pp. 337-349). Arlington, VA: American Psychiatric Association Publishing.

Yu, D. S. F., Lee, D. T. F., & Woo, J. (2004). Psychometric testing of the Chinese version of the medical outcomes study social support survey (MOS-SSS-C). *Research in Nursing & Health, 27,* 135-143.