TRACING RELATIONS BETWEEN ATTACHMENT, SOCIAL MEDIA USE, SELF-ESTEEM, LONELINESS, AND DEPRESSION: A MEDIATION MODEL

by

Meagan Patricia Sabo

A Thesis

Presented to the Department of Psychology in Partial Fulfillment

of the Requirements for the Degree

Masters of Science in Developmental Psychology

Liberty University

2020

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APPROVED BY:

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Dedication

To my family, Mom, Aunt Patty, Grandma, and Uncle Bob

Thank you for your boundless love and unconditional support across and beyond my academic journey. For your patience and grace, and for never judging my excessive number of phone calls to each of you. Thank you all for believing in me when I wasn't able to believe in myself.

I love you always.

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Table of Contents

Dedication 3

Acknowledgements 4

List of Figures and Tables 9

Abbreviations 10

Abstract 11

CHAPTER ONE: INTRODUCTION 12

- Background of Problem 12
- Significance and Purpose 15

CHAPTER TWO: LITERATURE REVIEW 17

- Attachment Beginnings 17
- Attachment Expansions 19
- Social Media 21
  - Social Media and Attachment 24
- Self-Esteem 26
  - Social Media and Self-Esteem 27
  - Attachment, Self-Esteem, Social Media, and Depression 29
- Loneliness 31
  - Attachment and Loneliness 32
  - Social Media and Loneliness 33
- Mental Health Implications 34
- The Potential Adverse Outcomes Amongst University Students 35

CHAPTER THREE: METHODOLOGY 38

IRB Approval 38
Participants & Data Collection 38
Sample One 38
Sample Two 39
Measures 40
Experiences in Close Relationships (ECR) – Relational Structures – Best Friend Attachment 40
Social Media Usage 41
ULS8 - Loneliness 41
Rosenberg Self-Esteem Scale (RSE) 42
Depression, Anxiety, Stress Scale (DASS) - Depression 42
Insecure Best Friend Attachment Hypotheses 43
H1: 43
H2: 43
H3: 44
H4: 44
H5: 44
Procedure 44
CHAPTER FOUR: RESULTS 46
Correlation Analyses 46
Mechanical Turk Dataset 46
University Dataset 48
Mechanical Turk PROCESS Results 49

Best Friend Attachment Avoidance - Mechanical Turk 49
Best Friend Attachment Anxiety - Mechanical Turk 52
University PROCESS Results 55
Best Friend Attachment Avoidance – University 55
Best Friend Attachment Anxiety – University 58
CHAPTER FIVE: DISCUSSION 61
HYPOTHESES DISCUSSION 61
Attachment Style and Participants 61
H1 Hypotheses 62
H2 Hypotheses 64
Social Media and Self-Esteem 64
Social Media and Depression 65
Social Media and Loneliness 65
H3 and H4 Hypotheses 66
Attachment, Self-Esteem, and Depression 66
Attachment, Social Media, and Depression 67
Attachment, Loneliness, and Depression 67
H5 Hypotheses 68
Attachment, Social Media, Loneliness, Self-Esteem, and Depression 68
Participants 68
IMPLICATIONS 69
Implications and the Coronavirus 69
Further Implications and Future Research 71

LIMITATIONS 73
Sequential Uncertainty 73
Participants 74
Survey Measures 75
FUTURE RESEARCH 75
Motivations Research 75
Alternate Contributing Factors 76
Expansions of Study Type and Scope 77
References 79
APPENDIX A: Informed Consent 99
APPENDIX B: Data Collection Instruments 101
Experiences in Close Relationships – Relational Structures Scale (ECR_RS) 101
Rosenberg Self-Esteem Scale (RSE) 101
Depression, Anxiety, Stress Scale (DASS_21) 101
ULS8 Loneliness Scale (ULS-8) 101
Social media 101

List of Figures and Tables

Figure 1. Hayes' Mediation Model 81. ……..……...42

Figure 2. Best friend attachment avoidance mediation model (Mechanical Turk)…..……. 48

Figure 3. Best friend attachment anxiety mediation model (Mechanical Turk) ……...……51

Figure 3. Best friend attachment anxiety mediation model (Mechanical Turk) ……...……51

Figure 4. Best friend attachment avoidance mediation model (University) ……...……...……...54

Figure 5. Best friend attachment anxiety mediation model (University) ……...……...……... 56

Table 1. Pearson's *r*, Means, and Standard Deviations (Mechanical Turk) ……...……...……...45

Table 2. Pearson's *r*, Means, and Standard Deviations (University) ……...……...……...……..46

Table 3. Conditional Process Analysis Results for Best Friend Attachment Avoidance (Mechanical Turk) ……...……...……...……...……...……...……...……...……...……...50

Table 4. Indirect effects of X on Y (Mechanical Turk) ……...……...……...……...……...……50

Table 5. Conditional Process Analysis Results for Best Friend Attachment Anxiety (Mechanical Turk) ……...……...……...……...……...……...……...……...……...……...……...……...……...……...52-53

Table 6. Indirect effects of X on Y (Mechanical Turk) ……...……...……...……...……..... 53

Table 7. Conditional Process Analysis Results for Best Friend Attachment Avoidance (University) ……...……...……...……...……...……...……...……...……...……...……...…… 55

Table 8. Indirect effects of X on Y (University) ……...……...……...……...……...……..... 56

Table 9. Conditional Process Analysis Results for Best Friend Attachment Anxiety (University) ……...……...……...……...……...……...……...……...……...……...……...……...……...……...57-58

Table 10. Indirect effects of X on Y (University) ……...……...……...……...……...……..... 58

Abbreviations

Depression, Anxiety, Stress Scale – DASS

Experiences in Close Relationships – ECR

Mechanical Turk – MTurk

Rosenberg Self-Esteem Scale – RSE

Abstract

An extensive amount of correlational research has well-established the link between insecure attachment style and subsequent adverse interpersonal and psychopathological outcomes. Moreover, the rise of social media has precipitated a shift in the methods by which individuals communicate; consequently, this has resulted in the shifting of preexisting dispositions toward dysfunctional behaviors to a more ubiquitous route of manifestation. Given that attachment literature has indicated notable differences in both underlying mechanisms and resulting outcomes of both avoidant and anxious attachment, examination of this alongside social media use provides valuable insight into potential relationships between the two. Further, research has examined the implications of each of these constructs in relation to self-esteem and loneliness; however, despite the extensive research, there remains a lack of consensus on the positive or negative implications of these interactions. Accordingly, much of the previous literature has neglected to examine the potential psychopathological implications following the combination of each of these constructs.

A series of regression analyses revealed significant indirect effects between attachment style and depression. Results indicated a significant positive relationship between best friend attachment anxiety and social media usage; further examination revealed notable significant mediating roles of both self-esteem and loneliness in the indirect relationship between insecure attachment style and depression. Collectively, these findings not only extend research's understanding of the complex dynamics amongst these variables, but it also advocates the value of further research into attachment style-specific outcomes.

Keywords: attachment style, social media use, self-esteem, loneliness, depression

CHAPTER ONE: INTRODUCTION

Background of Problem

The ubiquitous nature of technology enables broadened access to information across the globe; its unparalleled growth provides space for the building of connections and maintenance of relationships. Moreover, social media usage is at an all-time high. Statistics indicate that, within the past two decades, usage has increased from 5% to 72% of American adults indicating their use of at least one social media platform (Pew Research Center, 2019). Perrin and Kumar (2019) stated that approximately 48% of young adults indicated being online "almost constantly." Consequently, while perpetual access to relationships may come with its benefits, it also comes with the challenges of navigating and establishing healthy boundaries. Further, the continual access to relationships offered by social media and the internet provides an unprecedented number of opportunities for either increased social connection or relational conflict. While the inherent relational opportunities are readily perceived, the subtle blurring of relational boundaries and its accompanying increased risks are infrequently taken into account; this has resulted in the integration of social media in the daily lives of individuals.

Given the strong focus on connection building characteristically embedded into social media use and its platforms, attachment theory provides a valuable framework through which to gain insight into social media usage behavior and its subsequent outcomes. While a large majority of attachment research has concentrated on a population of infants and adolescents, emerging studies have indicated the almost equally critical role of adult attachment relationships in an individual's life (Cicirelli, 1991; Chopik, Edelstein, & Fraley, 2013; Hankin et al., 2005; Hudson et al., 2015; Liu et al., 2009; Spence et al., 2018). As stated above, approximately 48% of individuals between the ages of 18 to 29 have indicated a status as online "almost constantly";

given this knowledge, research which examines the outcomes of adult attachment on social media use and its subsequent outcomes emerges as especially relevant.

Collectively, the bulk of the research which addresses adult attachment has proven limited in its focus. A significant portion of studies has examined the implications of romantic partner attachment (Doyle et al., 2009; Hudson et al., 2015; Laible, 2007; Laible et al., 2000; Lepp et al., 2016; Markiewicz et al., 2006; Wilkinson, 2010); this has occurred much to the detriment of other adult attachment relationships. More specifically, there is a deficit of studies examining the implications of adult best friend attachment relationships. This absence of literature remains despite the existing evidence suggesting the formative role and substantial influence adult attachment has on an individual's mental and physical well-being (Dinero et al., 2008; Doyle et al., 2009; Goodcase et al., 2018; Hudson et al., 2014; Overall et al., 2015; Shaver & Hazan, 1988; Shaver et al., 2005; Wardecker et al., 2016). Collectively, among the identified consequences, research suggests outcomes may be contingent on the particular style of insecure attachment. In fact, studies have identified distinct mediators correlating with particular styles of attachment; for instance, Wei et al. (2005a, 2005b) identified distinct attachment style-specific affect regulation strategies, and Flynn et al. (2018) found distinct behavioral engagement styles to be associated with particular styles of attachment. As can be anticipated, these distinct underlying behavioral and cognitive predispositions result in a number of divergent outcomes; notably, amongst these have been varying levels of social media use and fluctuating levels of both self-esteem and loneliness. For example, while evidence has linked attachment anxiety with increased social media use, the effects of attachment avoidance remain unclear.

An abundance of research has found evidence of a relationship linking insecure attachment to a host of dysfunctional cognitive and behavioral predispositions; for instance,

studies have found evidence corroborating an association between insecure attachment and an increased vulnerability to depression (Davila, 2001; Laible, Carlo, & Raffaelli, 2000; Murphy & Bates, 1997). Further studies have also identified correlations between insecure attachment and an abundance of adverse outcomes, such as increased internalizing symptoms (Wei, Vogel, Ku, & Zakalik, 2005), heightened loneliness (Wei, Russell, & Zakalik, 2005), decreased life satisfaction (Shaver, Schachner, & Mikulincer, 2005), and difficulties with college adjustment and academic success (Lapsley & Edgerton, 2002; Lopez & Gormley, 2002). Additionally, previous and emerging research has noted substantial evidence indicating relationships between problematic internet and social media use and attachment style (Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017; Chen, 2019; Eroglu, 2015; Hart, Nailling, Bizer, & Collins, 2015; Oldmeadow, Quinn, & Kowert, 2013; Schimmenti, Passanisi, Gervasi, Manzella, & Famà, 2014). Indeed, existing and emerging attachment literature has provided a solid foundation of evidence advocating the need for further research on the relationship between insecure adult attachment and potential implicated factors.

The rise of social media use has been met with a diverse range of perspectives regarding the positive or negative implications of social media use on individuals. In light of the notable increases in the engagement of social media within the lives of individuals across the globe, existing research highlights the value of examining attachment style within the context of social media use in an effort to determine any unique predictive factors. Further, while research has identified relationships between social media use and a diverse array of subsequent outcomes, a majority of the research on the implications of social media use on factors such as an individual's levels of self-esteem (Andreassen et al., 2017; Apaolaza et al., 2013, Blomfield Neira & Barber, 2014; Chou & Edge, 2012; Forest & Wood, 2012; Gonzales & Hancock, 2011; Hawi & Samaha,

2017; Kalpidou, Costin, & Morris, 2011; Mehdizaheh, 2010; Orehek & Human, 2016; Roberts et al., 1996; Shaw & Gant, 2004; Steinfield et al., 2008; Twenge, 2019; Twenge & Campbell, 2019; Valkenburg, Peter, & Schouten, 2006; Vogel et al., 2014; Wilcox & Stephen, 2013), psychopathology (Blomfield Neira & Barber, 2014; De Choudhury et al., 2013; Mitra & Rangaswamy, 2019), and loneliness (Kim, LaRose, & Peng, 2009; Lepp, Li, & Barkley, 2016; Moody, 2001; Pittman & Reich, 2016; Synder et al., 2015) has proven inconsistent and contradictory. While certain studies suggest social media usage results in decreased self-esteem and increased loneliness, contrasting studies contend the reverse. Consequently, despite the fact that many studies have indicated the existence of these relationships, few have considered the potential intertwining dynamics amongst each of these factors in combination.

Significance and Purpose

Given that research has provided ample evidence of the critical role that adult attachment relationships have in an emerging adult's psychosocial health, an examination of attachment style in the context of social media usage provides unique insight, as it has become so extensively intertwined into numerous facets of an individual's everyday life. Previous studies have not only indicated that avoidant and anxious attachment styles are individually associated with distinct cognitive and behavioral processes, but they have also found evidence suggesting differing mediating mechanisms between attachment anxiety and attachment avoidance in the development of depression. In response to this, the current study examines the two styles of attachment in separate mediation models. In addition to attachment style, depression, and social media usage, the models include both self-esteem and loneliness as additional mediators to examine their predictive ability when preceded by social media use. While previous studies on self-esteem, loneliness, and social media use have made substantial contributions to current

literature's understanding of attachment and depression, it should be noted that a majority of studies which have examined these constructs have neglected to acknowledge their potential predictive ability when combined. An approach which combines these constructs not only engages a holistic approach toward understanding, but it also enables a more comprehensive investigation of the relationships as they indirectly contribute to the development of depression.

Given the compelling evidence in support of the present mediation model, this study aims to advance research literature in several ways; first, it extends previous studies' models through the combination of attachment style, social media use, self-esteem, loneliness, and depression. The incorporation of multiple constructs as mediators enables the identification of correlational pathways tracing specific insecure attachment styles to depression. Secondly, an understanding of these attachment style-specific predispositions provides insight into potential vulnerability factors for individuals experiencing insecure attachment. This contributes knowledge which may inform the development of future attachment style-specific behavioral or cognitive intervention strategies. Lastly, the use of two datasets enables an examination of the mediation model on two differing populations; a comparison of outcomes between two different populations provides insight into how a sample of university students compares to a broader population of individuals below the age of 30. As beginning university is a time of transition for many young adults, this study may provide insight into helpful information universities can provide their students in an effort to raise awareness of the implications of insecure attachment and social media use on self-esteem, loneliness, and depression.

CHAPTER TWO: LITERATURE REVIEW

Attachment Beginnings

Much of the foundational research on attachment has relied primarily on the early work of John Bowlby; at its earliest conception, Bowlby's work on attachment conceptualizes a dichotomous relational construct, specifically manifesting as either secure or insecure attachment, with insecure consisting of two subtypes: avoidant and anxious (Bowlby, 1969, 1973, 1980). Drawing from multiple theoretical backgrounds, Bowlby constructed his theory of attachment through the integration of concepts from the psychoanalytical, information-processing, and ethological theories (Bretherton, 1992). Subsequently, as attachment style informs an individual's perception of the world around them, this theory provides a simplistic framework through which to understand the relational dynamics between an infant and their caregiver. While secure attachment is comprised of healthy relational boundaries, attachment anxiety is characterized by the perpetual fear of rejection or abandonment by those around them. Attachment anxiety is frequently accompanied by a continual need for affirmation of both relational security and affection from those around them. Conversely, attachment avoidant individuals experience a fear of intimacy and general distrust of others, which results in the systematic pursuit of excessive distance between the self and others through independence-seeking behaviors (Ainsworth et al., 1978; Barnett & Vondra, 1999; Main & Solomon, 1990). Further, Bowlby contends the influential role of these attachment styles in determining an individual's capacity for both emotion and behavior regulation. Extending this via a series of observational studies on infant-mother attachment, Ainsworth and colleagues (1978) describe secure attachment as a safe haven or secure base, providing a space for a child to return to after exploration of their environment (Ainsworth & Bell, 1970; Ainsworth et al., 1974; Ainsworth et

al., 1978). Foundational to the development of subsequent attachment predispositions, parental attachment establishes a base from which a child cultivates subsequent relationships. Consequently, attachment research has identified evidence indicating the persistent nature of these effects. Chopik et al. (2013) articulate this as a "cradle to the grave" process, whereby early patterns of relational attachment will inevitably extend across an individual's lifespan, from infancy to adolescence and on through adulthood (Chopik et al., 2013; Cicirelli, 1991; Hudson et al., 2015).

Attachment theory posits the development of these styles as a result of an infant's relationship with their caregiver; the development of secure attachment being associated with sensitive, consistent, and reliable interactions between the child and caregiver, while insecure attachment is frequently associated with inaccessible and inconsistent interactions between the two (Ainsworth & Bell, 1970; Ainsworth et al., 1974, 1978; Bowlby, 1969, 1973, 1980). The development of each of these attachment styles is accompanied by dispositions toward either healthy or unhealthy behaviors. Predictably, numerous studies have established the critical role of a secure attachment style on an individual's healthy developmental transitions, mentally, emotionally, and relationally (Kobak & Sceery, 1988; Laible, 2007; Laible et al., 2000; Marganska et al., 2013; Mikulincer & Shaver, 2010; Murphy & Bates, 1997; Nichols et al., 2019; Ross & Fuertes, 2010; Saferstein et al., 2005; Spence et al., 2018; Wei et al., 2005). In fact, an examination of late adolescents determined secure attachment as a critical component in the development of both appropriate social behaviors and emotional competence (Laible, 2007). Upon further elaboration of his initial theory, which posited the existence of organism-specific innate behaviors which manifest in an infant’s innate predisposition to seek out and maintain proximity to their caregivers (Bowlby, 1973), Bowlby developed the notion of internal working

models, which he speculated maps out their actions in relation to the world around them. More precisely, these models are acquired and developed through the infant's interpersonal interactions with their caregiver. While an emotionally available and reliable attachment figure allows the child to develop a healthy sense of self-worth and self-reliance, an unreliable and emotionally unavailable parent will instill a sense of unworthiness and incompetency in the child. Following the repetition of such interactions over time, Bowlby posits that these internal working models become the lens through which the child will predict the behavior of their attachment figure, thereby informing their beliefs and relational expectations of others' reliability, intentions, and behaviors. Within his final volume, *Loss* (1980), Bowlby consolidates the concept of internal working models through the use of the information processing theory, which explains the establishment and stabilization of habitual and automatic behaviors, which eventually come to characterize these attachment patterns. Accordingly, attachment research has suggested correlations between internal working models and participants' adaptive functioning (Mikulincer & Shaver, 2010; Nichols et al., 2019).

Attachment Expansions

While a substantial body of research has been devoted to determining the impact of parental attachment on an individual, significant studies examining the implications of adult attachment style have begun emerging within the past few decades. Indeed, adult attachment has been found to play a critical role in determining an individual's physical and mental states (Bifulco et al., 2002; Brennan et al., 1998; Flynn et al., 2018; Fraley et al., 2000; Hankin et al., 2005; Hecht & Baum, 1984; Lapsley & Edgerton, 2002; Liu et al., 2009; Lopez & Gormley, 2002; Marganska et al., 2013; Mikulincer & Shaver, 2010; Murphy & Bates, 1997; Oldmeadow

et al., 2013; Roberts et al., 1996; Wei, Russell, & Zakalik, 2005; Wei, Vogel, Ku, & Zakalik, 2005).

Subsequent attachment theorists sought to expand upon this initial theory through the differentiation of relationship types. Firstly, Shaver and Hazan (1988) translated Ainsworth's infant-caregiver attachment theory to the context of adulthood and the relationships which occur later in an individual's life. Moving beyond the early works of both Bowlby and Ainsworth, Fraley et al. (2000, 2011) extended these concepts through the proposal of specific adult attachment relationships; this led to the examination of two other notably influential relationships, specifically those with peers and romantic partners (Cicirelli, 1991; Fraley et al., 2011; Goodcase et al., 2018; Hudson et al., 2015). Additionally, while the foundational dichotomous perspective of avoidant and anxious attachment has been found to remain steady across these diverse relationships, this expanding field of study has developed multiple instruments which enable a variety of approaches when measuring these complex constructs.

Given the central role of relationships throughout an individual's life, the pervasive effects accompanying attachment style come as no surprise. The past several decades of research have well-established the significant implications of attachment style on an individual's mental and physical health. Indeed, attachment literature has provided substantial support for a connection between insecure attachment style and a host of adverse psychological and behavioral outcomes, such as self-sabotaging behaviors, internalizing symptoms, increased loneliness, problematic internet usage, decreased self-esteem, and depressive symptoms (Blackwell et al., 2017; Chen, 2019; Davila, 2001; Eroglu, 2015; Gao et al., 2018; Hankin et al., 2005; Hart et al., 2015; Laible et al., 2000; Lee and Hankin, 2009; Murphy & Bates, 1997; Oldmeadow et al., 2013; Roberts et al., 1996; Schimmenti, Passanisi, Gervasi, Manzella, & Famà, 2014; Shaver et

al., 2005; Wei et al., 2005a, 2005b). Consequently, attachment research has provided evidence suggesting the value of differentiating between these two types of insecure attachment, as researchers have found evidence of attachment style-specific underlying motivations, behavioral mechanisms, and subsequent outcomes (Kobak and Sceery, 1988; Wei et al., 2005a, 2005b).

Social Media

The internet has become one of the most prominent, influential developments within the past century; it has permanently altered the methods by which individuals receive information and choose to communicate. More specifically, the development of social media has provided a surplus of platforms that enable users to develop, build, and cultivate their relationships. However, despite the newfound agency provided by these advancements, the manifestation of previously dysfunctional behaviors are enabled a more pervasive, digital route. Despite society's progress in its means of forming and maintaining connections, preexisting behavioral and cognitive predispositions remain.

In terms of mobile phone usage, a survey conducted by the Pew Research Center (2019) reported that 96% of Americans report owning a phone, with specifically 81% owning a smartphone device. Consequently, while research would anticipate this increase in digital connectedness to result in greater relational connectedness, these expectations remain unmet. In fact, studies have provided mixed findings as to whether technology may exacerbate previously existing relational difficulties (Eroglu, 2015; Lepp, Li, & Barkley, 2016; Schimmenti, Passanisi, Gervasi, Manzella, & Famà, 2014; Synder, Li, O'Brian, & Howard, 2015). For instance, Synder and colleagues (2015) identified conflicting findings, with results indicating problematic internet use (PIU) as able to lead to either increased or decreased feelings of closeness with family and peers. Additionally, dependency on technology has resulted in device-specific attachments, such

as mobile phone addiction (Vorderer, Krömer, & Schneider, 2016). Interestingly, the Pew Research Center conducted an early survey in 2005, which indicated that approximately 5% of American adults reported using at least one social media platform; subsequently, their 2011 survey indicated that approximately 50% of Americans utilize social media. Less than one decade later, the Pew Research Center released its 2019 survey findings, reporting that approximately 72% of American adults indicated using some form of social media. Recognizably, social media expands communication abilities, where previously private experiences can readily be made public through the click of a button, thereby allowing constant access between oneself and others, enabling both information sharing and receiving.

Given the many styles of interaction individuals exhibit, developers have provided an abundance of options when it comes to social media platforms, each with their own unique features and target demographics; some of the more well-known are Facebook, Instagram, YouTube, Snapchat, Twitter, and LinkedIn. Founded back in 2004, Facebook began as a school-based social network, allowing users to keep in touch and reconnect with friends through the sharing of photos, videos, and status updates. In their third quarterly report for 2019, Facebook indicated that they have approximately 2.45 billion active monthly users (Clement, 2019; Facebook Q3 2019 Results, 2019). Similarly, Instagram enables users to share photo and video content with those in their network; however, in contrast to Facebook's more intimate social setting, which focuses on a private network of more familiar individuals in one's social network, Instagram encourages the following of those both familiar and unfamiliar. Nearly one decade since its initial launch in 2010, Instagram Statistics (2019) report having over one billion monthly active users. Another prominent and expanding platform is Snapchat, which enables its users to send quick messages, photos, and videos to users' "Friends" or "Followers." Once

accessed, the content is made available for a brief span of time before being "permanently" deleted. This platform-specific feature differentiates it from other available social media platforms; within its third quarter 2019 report, Snapchat reported having over 210 million daily active users (Snap Inc, 2019). In fact, image-focused platforms, such as Instagram and Snapchat, provide their users with not only a digital space for the documentation of images, but they also create a space for social connection through self-expression via the utilization of photographs (Lee et al., 2015). Interestingly, Pittman and Reich (2016) found a decrease in participants' levels of loneliness when engaging image-based platforms. They hypothesize this may be due to the heightened perceptions of social presence and intimacy experienced by participants using image-based platforms. Collectively, these statistics indicate the prominent role of social media in the daily lives of individuals around the world. However, it should be noted that, despite these growing numbers and increasing connections, loneliness and relational gaps persist.

Despite the aforementioned surplus of social media statistics and data, there remain inconsistencies in determining the implications of social media on an individual's well-being. Social media has been identified to have notable benefits for an individual, such as the potential to increase an individual's levels of self-esteem (Gonzales & Hancock, 2011; Shaw & Gant, 2002), aid in relationship building (Steinfield, Ellison, & Lampe, 2008), and improve an individual's ability of self-expression (Stokes & Price, 2017); however, despite these identified benefits, research has also found consistent connections between social media use and increased levels of depression (Frison & Eggermont, 2017; Gao et al., 2018; Lup, Trub, & Rosenthal, 2015), anxiety, and loneliness (De Choudhury et al., 2013). Indeed, findings on the effects of social media on individuals' well-being have been inconsistent and contradictory (Kalpidou, Costin, & Morris, 2011; Lou et al., 2012; Oldmeadow, Quinn, Kowert, 2013). While some

studies have found that social media usage leads to increased levels of self-esteem (Apaolaza et al., 2013; Gonzales & Hancock, 2011), others have indicated an erosion of self-esteem (Blomfield & Barber, 2014; Forest & Wood, 2012). Further, while research has frequently found that social media increases levels of perceived loneliness (De Choudhury et al., 2013), it has also identified evidence suggesting the opposite (Gao et al., 2018; Pittman & Reich, 2016). Given the relatively novel nature of social media, this emerging, yet preliminary research requires further investigation of both its preceding influences and subsequent implications.

Social Media and Attachment

Contemporary literature on the relationship between social media use and adult attachment style suggests that social media use varies between individuals with secure versus insecure attachment style. In fact, emerging studies have found evidence for insecure attachment style-specific characteristics which predispose an individual toward problematic internet and social media use (Blackwell et al., 2017; Hart et al., 2015; Oldmeadow et al., 2013; Schimmenti, Passanisi, Gervasi, Manzella, & Famà, 2014; Wei et al. 2005a; 2005b). For instance, Wei et al. (2005a) identified distinct mediators which led to increased interpersonal problems and loneliness, each of which was found to correlate with a specific style of attachment; further supporting this, a follow-up study by Wei et al. (2005b) found attachment-specific behavioral outcomes suggesting the value of differentiating between the distinct types of insecure attachment. Subsequently, Flynn et al. (2018) found that an individual's behavioral engagement with social media was contingent upon their specific style of attachment; for example, attachment anxiety was identified as predictive of multiple facets of problematic Facebook use, while attachment avoidant individuals concentrated on impression management and the social consequences of intrusive Facebook use. Interestingly, Flynn et al. identified self-esteem as a

significant mediator in the relationship between attachment style and potential for problematic use. Further, in a study on the mediating role of needs satisfaction, Chen (2019) found that needs satisfaction for both relatedness and self-presentation mediated a positive relationship between attachment anxiety and social networking site (SNS) addiction. Chen attributes social networking sites' abilities to satisfy an individual's particular needs as a significant behavioral reinforcing factor, potentially leading to the subsequent development of SNS addiction. Interestingly, the study also found a negative relationship between attachment avoidance and SNS addiction; more specifically, needs satisfaction for autonomy functioned as a mediator within the relationship between SNS addiction and attachment avoidance. Indeed, attachment takes on an influential role in determining how an individual not only perceives communication but also how they approach relationships; accordingly, such perceptual disparities inevitably result in distinct, pervasive implications which extend across an individual's daily life. For instance, in terms of social media, Wardecker and colleagues (2016) found that attachment avoidant individuals may actually perceive more immediate forms of communication, such as face-to-face interactions, as less intimate, and particularly less likely to allow resolution of any interpersonal conflicts. In contrast, predictably accompanying the need for frequent affirmation of relational security, attachment anxiety has been consistently correlated with increased levels of internet and social media use. In fact, Oldmeadow and colleagues (2013) identified attachment anxiety as positively predictive of increased Facebook usage; as to be expected, in response to perceived feelings of disconnect or anticipated abandonment, anxious individuals become increasingly engaged in social media, both via computer and mobile application, with the aim of bolstering any existing relational gaps. Reinforcing this notion, Schimmenti et al. (2014) found that late adolescents with an anxious attachment style displayed increased problematic internet usage behaviors;

additionally, Eroglu (2015) found a positive correlation between anxious attachment style and Facebook usage. In contrast, attachment avoidance has been inconsistently correlated with decreased Facebook usage (Oldmeadow, Quinn, & Kowert, 2013). Interestingly, Hart et al. (2015) found avoidant attachment was not predictive of social media engagement behaviors; such differences between attachment styles advocate not only for the existence of attachment style-specific motivators but also the value of attachment-specific interventions.

Self-Esteem

Beyond the documentation of daily activities, social media provides the potential for increased intimacy; however, with such intimacy comes heightened vulnerability to either positive or negative outcomes on one's self-esteem. To begin, Kernis (2003) differentiates between two forms of high self-esteem: secure high self-esteem and fragile high self-esteem; while those with secure high self-esteem experience a valid and stable base for their feelings, those with fragile high self-esteem display a need for frequent validation of their worth. In situations of success, both types remain steady; however, when experiencing failure, those with secure high self-esteem are able to remain stable as a result of their ability to recognize not only their weaknesses but also their strengths, which buffer against experiencing overwhelming feelings of failure, while individuals with fragile high self-esteem display increased vulnerability to negative consequences in such an experience. This produces heightened levels of self-protection and a preoccupation with behaving in ways that lead to the validation of their worth, thereby affecting an individual's activities and decisions on a daily basis. Accordingly, researchers propose that the amount of positive or negative influence social media has on its users depends on the ways in which they engage it.

Social Media and Self-Esteem

A significant portion of the existing body of literature on social media has provided evidence for the influential role of social media on an individual's self-esteem (Andreassen et al., 2017; Apaolaza et al., 2013, Blomfield Neira & Barber, 2014; Chou & Edge, 2012; Forest & Wood, 2012; Gonzales & Hancock, 2011; Hawi & Samaha, 2017; Kalpidou, Costin, & Morris, 2011; Mehdizaheh, 2010; Orehek & Human, 2016; Roberts et al., 1996; Shaw & Gant, 2004; Steinfield et al., 2008; Twenge, 2019; Twenge & Campbell, 2019; Valkenburg, Peter, & Schouten, 2006; Vogel et al., 2014; Wilcox & Stephen, 2013); moreover, despite the volume of existing research, emerging studies have yet to determine the particular direction and nature of this relationship. Specifically, the extent of outcome predictability remains uncertain in current research. It should be noted that as access to social media has grown, so too has the number of studies dedicated to the potential relationship between social media use and self-esteem. Consequently, research has provided mixed findings as to whether social media is more beneficial or harmful to an individual's self-esteem.

While researchers have hypothesized a number of reasons as to why these inconsistencies exist, early studies which have identified the benefits of social media use on self-esteem have determined several notable recurring characteristics. For instance, Shaw and Gant (2002) found internet usage to have significantly positive effects after placing subjects into a series of online chat sessions; the researchers hypothesized that the proactive nature of this online social behavior is what determined the positive outcome of the engagement. In fact, further studies indicating these beneficial effects of social media have repeatedly demonstrated the significance of the nature of the interaction between user and platform. Research which further substantiates this notion has found that increases in social capital and connectedness are correlated with users'

active, versus passive, engagement with social networking sites (Apaolaza et al., 2013; Steinfield et al., 2008).

Popular amongst its diverse features, social media provides users the ability to construct a digital identity, enabling some degree of control over their presentation of self; notably, such capabilities have been found to increase an individual's levels of self-esteem (Gonzales & Hancock, 2011; Stokes & Price, 2017). Collectively, research suggests some positive outcomes associated with proactive utilization of the resources offered through social media, thereby providing a form of control over self-presentation and the effective bridging of social capital; however, in contrast, the negative outcomes of social media on self-esteem were correlated with particular behaviors and circumstances (Blomfield Neira & Barber, 2014). Notably, such behaviors manifested in the addictive use of social media, engagement in social comparison, negative beliefs due to unfamiliarity and misconceptions with connections on social media, and ineffective utilization of platforms (Blomfield Neira & Barber, 2014; Chou & Edge, 2012; Hawi & Samaha, 2017; Kalpidou, Costin, & Morris, 2011; Vogel et al., 2014).

Collectively, the general consensus of research suggesting a link between self-esteem and social media has determined that the positive or negative implications of social media use on self-esteem are contingent upon the quality of each specific interaction; more precisely, the extent to which an individual proactively interacts with social media is highly predictive of the subsequent outcome (Andreassen et al., 2017). Additionally, Twenge and Campbell (2019) found that the amount of time spent on social media was predictive of an individual's well-being; interestingly, while excessive use was correlated with decreased well-being, light social media use was associated with heightened levels of well-being. Interestingly, the study found that light use of social media was more beneficial than complete abstention. Further studies have identified

evidence confirming the highly variable outcomes as dependent on the individual's personal engagement with social media; for example, while Valkenberg et al. (2006) found that participants levels of self-esteem were contingent upon the reception of either positive or negative feedback, Shaw and Gant (2004) found evidence indicating that participants experienced the benefits of social media use when they perceived receiving social support.

Attachment, Self-Esteem, Social Media, and Depression

Given that insecure attachment is frequently accompanied by specific cognitive and behavioral predispositions, which, in combination with social media use, may increase an individual's vulnerability to the potential adverse outcomes of social media use, research warrants further examination of the relational dynamics between these constructs. For example, the debilitating internalization that accompanies anxious attachment may contribute to upward social comparison (Vogel et al., 2014) or negative self-attributions made by individuals with already decreased self-esteem, thereby exacerbating the resulting damage. Moreover, insecure adult attachment has been consistently correlated with maladaptive attitudes and behaviors, which Roberts et al. (1996) posits may lead to a heightened vulnerability to decreased self-esteem, thereby consequently increasing susceptibility to depressive symptoms. Further, Hankin et al. (2005) found that both anxious and avoidant attachment were predictive of depressive symptoms when mediated by decreased levels of self-esteem. Less than half a decade later, Lee and Hankin (2009) found that self-esteem mediated the relationship for both attachment avoidance and attachment anxiety, notably affecting the subsequent development of depressive symptoms. Over a decade later, further substantiating these early findings, Set (2019) identified self-esteem as a significant mediating construct in the relationship between attachment anxiety and psychopathology. Interestingly, a portion of self-esteem literature suggests a potential

bidirectional relationship in which self-esteem affects social media use, which then results in an outcome further affecting the individual's preexisting levels of self-esteem. In fact, Forest and Wood (2012) found evidence suggesting that individuals with low self-esteem interacted with social media in particular ways which perpetuated adverse outcome; moreover, Andreassen et al. (2017) identified particular characteristics, such as low self-esteem and being female, as correlated with addictive use. Conclusively, recognizing such complexities advocates further study of such interactions.

Following an examination of data from a longitudinal study examining college freshmen and self-esteem, Crocker (2002) suggests that individuals consider the costs which accompany the pursuit of self-esteem. She contends that individuals who seek self-esteem from external factors will not only be required to dedicate greater amounts of time and engagement to their specific sources of validation, but they will also have an increased vulnerability to damage when the established criteria fails to be met. Consequently, research suggests that individuals with low self-esteem lack the abilities necessary to accurately and realistically assess not only themselves but also their situation (Zeigler-Hill, 2011). Interestingly, self-esteem researchers have determined that the positivity of the information shared on Facebook informed the positive reception of the poster; accordingly, low self-esteem individuals shared significantly more negative posts than those with high self-esteem. As such, it can be hypothesized that such negative reception from the already low self-esteem user's social network may work to further decrease their levels of self-esteem, thereby potentially resulting in a perpetual debilitating cycle. Given these findings, the necessity of determining the factors contributing to the strengthening or weakening of self-esteem will provide insight into particularly harmful behaviors which may decrease self-esteem; subsequently, this enables the promotion of healthier behaviors.

The Diagnostic and Statistical Manual (2013) has provided ample indication of the relationship between self-esteem and psychopathology, as it has noted excessively high or low levels of self-esteem as criteria linking it to several mood disorders, eating disorders, and personality disorders. In fact, research has consistently indicated the vital role of self-esteem in determining an individual's mental health outcomes. An early examination of self-esteem determined an association between self-esteem, insecure attachment, and depression; more specifically, researchers identified the dysfunctional attitudes which accompany insecure attachment styles as particularly correlated with decreased self-esteem, consequently leading to the subsequent development of depression (Lee & Hankin, 2009; Roberts et al., 1996). As prior findings suggest, self-esteem holds an integral role in both the development and treatment of psychopathology; accordingly, it is well-reasoned to conduct further research examining the relationship between the two.

Loneliness

Upon developing a definition for loneliness, Weiss (1973) differentiates between two distinct types of the condition: emotional loneliness and social isolation. While the first consists of a lack of intimate relationships in an individual's life, the second describes the lack of a social network. Additionally, Rook (1984) conceptualizes loneliness as, "an enduring condition of emotional distress that arises when a person feels estranged from, misunderstood, or rejected by others and/or lacks appropriate social partners for desired activities, particularly activities that provide a sense of social integration and opportunities for emotional intimacy." As these definitions and descriptions suggest, the experience of loneliness permeates an individual's life, affecting both physical and psychological health.

Attachment and Loneliness

It should be noted that research has consistently suggested loneliness as developing subsequent to the establishment of an attachment style, more precisely as a result of relational strain and the interpersonal difficulties which arise from the maladaptive, dysfunctional coping mechanisms which accompany insecure attachment (Fujimori et al., 2017; Hecht & Baum, 1984; Kobak & Sceery, 1988; Pandeya, 2017; Shaw & Gant, 2002; Spence et al., 2018; Wei, Russell, & Zakalik, 2005). In fact, attachment literature articulates not only the pervasive implications of the debilitating internal working models but also suggests that these models inform an individual's perceptions of intimacy. Consequently, research has identified evidence suggesting the outcomes of loneliness are largely contingent upon the individuals' perceptions of the interpersonal relationships currently present in their life.

Moreover, there has been a broad and consistent body of research which bolsters the notion of a relationship between insecure attachment style and heightened levels of loneliness (Bernardon et al., 2011; Deniz et al., 2005; DiTommaso et al., 2003; Illhan, 2012; Naderi et al., 2016; Sahin Kiralp & Serin, 2017; Spence et al., 2020). Within a recent study, Spence et al. (2020) identified evidence of an association between avoidant attachment, a heightened vulnerability to social isolation, and decreased social support; moreover, angry-dismissive attachment style was found to be correlated with loneliness, and subsequently, psychopathology, such as depression. Further, following the examination of 652 university students, Erozkan (2011) determined a positive correlation between insecure attachment, loneliness, and depression. In fact, a notable number of studies have also provided evidence suggesting additional variables mediating the relationship between attachment style and loneliness; for instance, while Bernardon et al. (2011) found perceived social support to be a significant

mediating variable, DiTommaso et al. (2003) found both social skills and social competence to be effective mediators in the pathway between attachment style and feelings of social loneliness. Further, within an examination of other potential variables, Fujimori et al. (2017) conducted a study on an individual's attachment style and their family relations on levels of loneliness. The findings from this study showed that attachment avoidance and anxiety were both positively correlated with levels of loneliness, while family cohesion may function as a buffer against loneliness, despite attachment style. Such studies suggest the value of examining the nature of alternate variables in relation to loneliness.

Social Media and Loneliness

While many would anticipate decreases in loneliness to parallel the spread of social media, pervasive loneliness persists despite the narrowing of physical distance between individuals. Similar to self-esteem, the past few decades of research on loneliness and social media have yielded mixed findings (Kim, LaRose, & Peng, 2009; Lepp, Li, & Barkley, 2016; Moody, 2001; Pittman & Reich, 2016; Synder, Li, O'Brian, & Howard, 2015). While many studies indicate increased use as predictive of loneliness, others suggest social media's function as a mitigator of loneliness and its adverse outcomes. Moreover, while research on loneliness, social media, and problematic internet use has identified evidence of such positive correlations (Moody, 2001; Kim et al., 2009), there remains alternate research which has not identified any such evidence (Lou et al., 2012). Such a lack of consensus suggests the need for further study of loneliness and its accompanying contextual variables. Alternatively, research on the implications of social media on family cohesion and loneliness has displayed mixed findings, with studies indicating either increases (Synder, Li, O'Brian, & Howard, 2015) or decreases (Lepp, Li, & Barkley, 2016) in perceived closeness. Further, findings by Kim et al. (2009) provided evidence

of a correlation between loneliness and problematic internet use; in fact, they found that difficulties with healthy social interaction in lonely individuals may translate to compulsive internet use. Subsequently, this exacerbates initial levels of loneliness and may cause additional damage to their work life, academic performance, and relationships. In contrast, suggesting platform-specific implications, a research study on image-based versus text-based platforms found evidence suggesting the benefits of image-based platforms in not only aiding loneliness but also increasing happiness and satisfaction with life. Pittman and Reich (2016) attribute this to the increased intimacy afforded by image-based social media. Overall, current literature on social media and loneliness suggests that it ultimately may be the nature of the interaction with social media which determines the increases or decreases in loneliness. Research has indicated both correlations between proactive socialization and decreases in loneliness, and, in contrast, passive engagement with heightened levels of loneliness.

Mental Health Implications

Alongside the notable correlations amongst loneliness, attachment, self-esteem, and social media, a host of literature has recognized the significant implications of these constructs on an individual's mental health (Bahmani et al., 2017; Boivin, Hymel, & Bukowski, 1995; Ceyhan & Ceyhan, 2011; Diehl et al., 2018; Gao et al. (2018); Joiner, 1997; Kilinc et al., 2019 Sadeghi). While frequently both broadly and inconsistently defined, depression is a widespread and debilitating form of psychopathology. As stated within the 5th Edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5, 2013), the diagnostic criteria for Major Depressive Disorder (MDD) consists of symptoms, such as: "depressed mood most of the day, or nearly every day, as indicated by either subjective report or observation; markedly diminished interest or pleasure in all, or almost all, activities most of the day; significant weight loss when

not dieting or weight gain, a decrease or increase in appetite nearly every day; and insomnia or hypersomnia nearly every day; and fatigue or loss of energy nearly every day." In alignment with the above symptomology, depression has severe debilitating repercussions on an individual's well-being and quality of life.

The Potential Adverse Outcomes Amongst University Students

Early research has found evidence identifying insecure attachment as a potential vulnerability factor in the development of depressive disorder in children (Armsden et al., 1990). Subsequently, Beatson and Taryan (2003) found evidence of a connection between early life stress, environmental factors, the resulting infant attachment, and, consequently, the later development of depression. In fact, Bifulco et al. (2002) identified previous evidence indicating the necessity of differentiating between each distinct style of insecure attachment; further substantiating this, Marganska and colleagues (2013) found strong positive correlations between insecure attachment, emotion dysregulation, and subsequent depressive and generalized anxiety disorder (GAD) symptoms. The researchers contend the significant role of emotion regulation in the development of psychopathology. Furthermore, the findings suggest attachment style-specific outcomes, with evidence identifying anxious attachment as affecting both depressive and GAD symptoms, while avoidant attachment was related to depression alone. In their study of first-year college students, Wei et al. (2005) found evidence indicating each style of insecure attachment as correlated with either social self-efficacy or self-disclosure, loneliness, and subsequent depression. The complexity of the study's mediation model supports a diverse number of possible mediating factors within the relationship between attachment style and depression. Similarly, Shaver et al. (2005) found that the excessive reassurance-seeking accompanying attachment anxiety was correlated with depression. Building upon existing

research, it is well-reasoned to anticipate these predispositions manifesting through alternate means, such as interactions with social media.

Emerging research on loneliness within universities has found evidence substantiating positive correlations between loneliness, depression, and anxiety. In terms of protective factors, research has found that students who were either in committed relationships or were married had a decreased likelihood of developing subsequent psychopathology. Alternatively, in contrast, university students studying the social sciences, those with low levels of physical activity, and individuals with an immigrant background all experienced an increased vulnerability to psychopathology (Diehl et al., 2018). Similarly, in terms of risk factors, research has determined that students within their first year as university students display an increased vulnerability to loneliness and depression (Ceyhan & Ceyhan, 2011). Given the evidence indicating university students as a particularly vulnerable population, continued research which concentrates on such individuals is necessary in efforts to develop effective interventions.

Moreover, the bulk of research on the aforementioned constructs has been conducted on university students; as a result, findings are particularly significant and pertinent to populations of university students. Following their examination of loneliness and depression in sample of 550 university students, Ceyhan and Ceyhan (2011) determined a moderately significant relationship between the two constructs. Most notably, their research identified first-year university students has displaying heightened levels of loneliness and depression, in comparison to the other students within their sample. Along a similar vein, Kilinc et al. (2019) identified a positive relationship between loneliness and subsequent levels of depression in university students. More specifically, class year, type of family, relationships with their mother, and location of residence were each influential factors on the relationship between loneliness in university students and

subsequent psychopathology, particularly depression. Furthermore, given that approximately 48% of individuals aged 18 to 29 have reported their status as online "almost constantly" (Perrin & Kumar, 2019), further research which examines the implications of social media on university students is critical.

CHAPTER THREE: METHODOLOGY

IRB Approval

Following all necessary procedures, approval from the Institutional Review Board (IRB) was received prior to conducting the present study. A link to the Qualtrics survey was distributed via the university email system; students were presented the consent form prior to taking part in the study (See Appendix A). Compensation was comprised of psychology activity credit. All data collected from the university was anonymous, not collecting any identifying information, thereby minimizing any potential risks to the participating students. Such potential risks may be due to the sensitive nature of the utilized measures within the survey; however, the benefits, such as further insight into the involved variables, were understood to outweigh the potential risks.

Participants & Data Collection

Sample One

The first proposed dataset is composed of archival data which was collected prior to the present study. The participants were recruited via Amazon's Mechanical Turk (MTurk), an online website designed specifically for the collection of convenience sample data. This method of sampling not only aids in the gathering of larger, more diverse samples of participants, but is also cost effective and can be collected over a brief period of time. Moreover, existing research has determined evidence that such a method of data collection is equally as reliable as data collected through other methods of sampling, such as in-person data collection (Briones & Benham, 2017; Casler, Bickel, & Hackett, 2013).

In the data gathering process, each participant was compensated $1 for their participation; while, all respondents received compensation, only the individuals fulfilling the designated criteria were included in the final dataset. Those who displayed inattentive responding or

incomplete responses were removed from the dataset. The MTurk survey was accessible to participants with a variety of relationships; while the data assessed mother attachment, father attachment, best friend attachment, and romantic partner attachment, the present study proposes an examination of best friend attachment in response to the lack of current literature on this specific construct. The designated criteria of the study consisted of those who completed responses for best friend attachment, self-esteem, loneliness, social media usage, and depression. Of the original dataset, which contained 904 participants, the screened dataset contained 670 participants. After removal of participants over the age of 30, as the large majority of university undergraduate students fall below the age of 30, the final dataset contained 206 participants (U.S. Census Bureau, 2018).

Screening Examples

- More than 15 of the same responses in a row
- Bogus questions "all of my friends say I would make a great poodle" (for the MTurk dataset)
- Social media hours – more than 12, one person indicated 24 hours
- Took less than 7 minutes or more than 70
- Not Psychology students (for the university dataset)

Sample Two

Secondly, this study proposes the collection of data from a sample of undergraduate psychology students. Their participation will be voluntary and rewarded with psychology activity credit. Each participant will be presented a self-report questionnaire, consisting of the same scales and measuring the same constructs as those of the already existing archival dataset. Following the collection of the two samples, the present study aims to investigate the potential

differences between a dataset containing undergraduate students' experiences with those of an alternate population. The comparison between data collected from the university students and a sample from a broader population will provide insight into the effects of the university student environment on an individual's attachment style, amount of social media use, levels of self-esteem, feelings of loneliness, and depressive symptoms. While all participants were screened in order to ensure a sample of undergraduate psychology students over 18 years of age, the university dataset did not collect any identifying information. Additionally, all uncompleted surveys were removed from the analyses. Responses were exported from Qualtrics to SPSS. Following a thorough data screening, the final dataset contained 61 participants, of the original 94 responses.

Measures

Experiences in Close Relationships (ECR) – Relational Structures – Best Friend Attachment

Initially developed in 1998 (Brennan, Clark, Shaver, 1998) and subsequently revised in 2000 (Fraley, Waller, & Brennan, 2000), the Experiences in Close Relationships Scale (ECR) was designed as a self-report measure to assess adult attachment relationships. The present study aims to utilize Fraley and colleagues (2011) more recently updated Experiences in Close Relationships – Relationship Structures Scale in order to differentiate and measure the more specific facets of adult attachment; it enables differentiation between mother, father, best friend, and romantic partner attachment relationships (Fraley, Heffernan, Vicary, and Brumbaugh, 2011). Consisting of nine-items, participants are asked to indicate the degree to which they relate to the presented statements (i.e. "I find it easy to depend on this person" or "I don't feel comfortable opening up to this person") on a seven-point Likert scale, ranging from "Strongly

disagree" to "Strongly agree." The scale contains two subscales, attachment avoidance and attachment anxiety, with items 1-4 reverse coded and 5-6 corresponding with avoidance and items 7-9 corresponding with avoidance. Within the present study, Cronbach's alpha for the Mechanical Turk dataset was .86 (avoidance) and .91 (anxious); the alpha for the university dataset was .83 (avoidance) and .88 (anxious).

Social Media Usage

Participants' social media usage will be measured in terms of hours spent on social media in a day; responses will be collected through a single-item measure. The given prompt was open-ended, "On average, about how many hours a day do you spend interacting with social media?" In addition to this, respondents will be presented a list of social media platforms and asked to indicate which platforms they actively use; a variety of common platforms were provided: Facebook, Twitter, Google+, Youtube, LinkedIn, Instagram, Pinterest, Tumblr, Snapchat, Reddit, and Other.

ULS8 - Loneliness

The ULS-8 (Hays & DiMatteo, 1987), a shortened version of the UCLA (University of California at Los Angeles) Loneliness Scale (Russell, Peplau, & Ferguson, 1978), will be used to measure participants' experienced feelings of loneliness. The ULS-8 consists of eight items and was found to be highly correlated (r = .91) with the original 20-item UCLA scale. It is comprised of statements such as, "I feel isolated from others" and "People are around but not with me". Participants are asked to indicate to what degree each of the eight statements applies to them on a 10-point Likert scale, ranging from 1 – "not like me" to 10 – "extremely like me"; increased scores indicate higher levels of loneliness. The Cronbach's alphas within the present study were .87 (Mechanical Turk) and .81 (University).

Rosenberg Self-Esteem Scale (RSE)

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a 10-item self-report measure, consisting of both positive and negative statements (i.e. "I feel that I have a number of good qualities" or "I feel I do not have much to be proud of") which are designed to assess the participant's perceptions of self. The participants are asked to indicate the degree to which they agree with the presented statement on a four-point Likert Scale, ranging from 1 – "Strongly disagree" to 4 – "Strongly agree." Higher result scores are associated with heightened levels of self-esteem, while lower scores indicated decreased levels; conclusively, the Rosenberg Self-Esteem Scale has previously demonstrated good internal consistency. Within the present study, the Cronbach alphas are .88 (Mechanical Turk) and .88 (University).

Depression, Anxiety, Stress Scale (DASS) - Depression

The study intends to utilize a shortened version of the Depression Anxiety Stress Scale (DASS-21) in order to examine participants' negative emotional states (Lovibond & Lovibond, 1995). The scale contains 21-items and consists of three subscales which measure depression, anxiety, and stress; the present study will focus on the depression subscale (consisting of items 3, 5, 10, 13, 16, 17, and 21). The participants are asked to respond on a four-point Likert scale (i.e. 1 – "Did not apply to me", 2 - "Applied to me to some degree, or some of the time", 3 – "Applied to me to a considerable degree, or a good part of time", and 4 – "Applied to me very much, or most of the time") with the degree to which each of the presented statements applied to them (i.e. "I felt down-hearted and blue" and "I felt that I was using a lot of nervous energy"). The DASS-21 has demonstrated good reliability in previous research, with a total scale score of .89 (Osman, Wong, Bagge, Freedenthal, Gutierrez, & Lozano, 2012). Within the present

study, the Cronbach's alphas for the depression subscale are .91 (Mechanical Turk) and .90 (University).

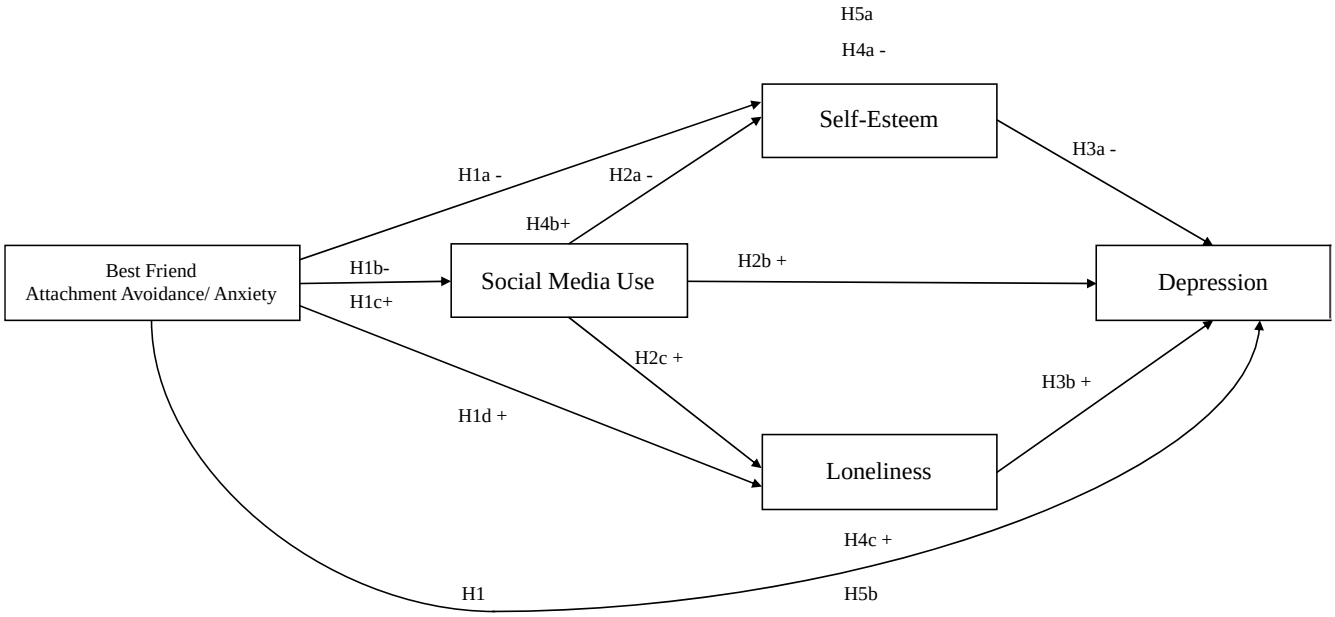

Figure 1. Hayes' Mediation Model 81

Insecure Best Friend Attachment Hypotheses

H1:

• The correlation between insecure best friend attachment style and depression will be contingent upon the present predictor and mediating variables (H1).

- Insecure best friend attachment avoidance will be negatively correlated with self-esteem (H1a-) and negatively correlated with loneliness (H1b+)
- Best friend attachment avoidance will be negatively correlated with social media (H1c-)
- Best friend attachment anxiety will be positively correlated with social media (H1c+)

H2: Social media will be negatively correlated with self-esteem (2a-) and positively correlated with both depression (2b+) and loneliness (2c+)

H3:

• Self-esteem will be negatively correlated with depression (H3a-)

• Loneliness will be positively correlated with depression (H3b+)

H4: Insecure best friend attachment is correlated with heightened levels of depression when mediated by:

- Decreased levels of self-esteem (H4a-)
- Increased use of social media (H4b+)
- Increased levels of loneliness (H4c+)

H5: Insecure best friend attachment is correlated with heightened levels of depression when mediated by:

- In combination, increased social media use and decreased self-esteem (H5a)
- In combination increased social media use and increased levels of loneliness (H5b)

Procedure

While the present study utilized two separate datasets, identical mediation models were utilized for both analyses (See Figure 1). Following the data screening process, a series of regression analyses were conducted via Hayes' PROCESS mediation, specifically Model 81 (Hayes, 2018) in IBM SPSS Statistics Version 26. Accordingly, PROCESS generated the regression coefficients, 95% confidence intervals (alongside the 10,000 bootstrap samples function), and the accompanying *p*-values. Further examination of the data included an analysis of the Pearson's correlations, Cronbach alpha, and the necessary descriptive statistical analyses. The Pearson's *r* correlations provided insight into the relationships between insecure adult attachment style, social media usage, self-esteem, loneliness, and depression, while Cronbach's alpha confirmed the reliability of each of the utilized measures. Further calculations involved

assessment of dataset means, standard deviations, and frequencies. Conclusively, utilization of Hayes' mediation models enabled an efficient means of addressing multiple hypotheses simultaneously; this method examined both the direct and indirect pathways of interaction with the intent of determining any significant correlations between the involved constructs.

CHAPTER FOUR: RESULTS

Correlation Analyses

A series of statistical analyses were conducted in an effort to gain a more thorough comprehension of the involved datasets and the results following the primary analyses. Pearson's *r* was calculated for each of the measures within each of the two datasets; additionally, both descriptive statistics and Pearson correlations are presented in Tables 1 and 2.

Mechanical Turk Dataset

Table 1. Pearson's *r*, Means, and Standard Deviations (Mechanical Turk).

	1	2	3	4	5	6
(1) ECR - Best Friend Attachment Avoidance	1					
(2) ECR - Best Friend Attachment Anxiety	.511**	1				
(3) RSE – Self-Esteem	-.383**	-.428**	1			
(4) ULS8 - Loneliness	.267**	.466**	-.636**	1		
(5) Social Media Use	.135	.213**	-.200**	.181*	1	
(6) DASS - Depression	.315**	.433**	-.583**	.571**	.190**	1
Mean	2.827	2.902	27.879	38.408	3.356	12.447
SD	1.328	1.793	6.004	15.832	2.224	10.473
Cronbach's α	.860	.910	.875	.869	-	.911

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

Results indicated a significant positive correlation between best friend attachment avoidance and best friend attachment anxiety (r = .511, p < .001), loneliness (r = .267, p < .001), and depression (r = 315, p <.001); in contrast, best friend attachment avoidance was found to have a significant negative correlation with self-esteem (r = -.383, p < .001). Each of these findings are in alignment with their associated hypotheses; further, results indicated each of these interactions were in the anticipated direction. Similarly, best friend attachment anxiety was significantly negatively correlated with self-esteem (r = -.428, p < .001), while it was positively correlated with loneliness (r = .466, p < .001), social media use (r = .213, p < .001), and depression (r = .433, p < .001). These similarities may be suggestive of another common mediating variable between the two. Further, in accordance with the previously stated hypotheses, results indicated a significant negative correlation between self-esteem and loneliness (r = -.636, p < .001), social media use (r = -.200, p < .001), and depression (r = -.583, p < .001). Next, loneliness was significantly positively correlated with both social media use (r = .181, p <.05) and depression (r = .571, p < .001); interestingly, however, social media use was not significantly correlated with best friend attachment avoidance (r = .135), suggesting potential confounding variables influencing the interaction. Lastly, as anticipated, a positive significant correlation was found between social media use and depression (r = .190, p < .001).

University Dataset

Table 2. Pearson's *r*, Means, and Standard Deviations (University).

	1	2	3	4	5	6
(1) ECR - Best Friend Attachment Avoidance	1					
(2) ECR - Best Friend Attachment Anxiety	.266*	1				
(3) RSE – Self-Esteem	-.390**	-.503**	1			
(4) ULS8 - Loneliness	.205	.541**	-.646**	1		
(5) Social Media Use	.158	-.004	-.239	.038	1	
(6) DASS - Depression	.262*	.322**	-.631**	.599**	.031	1
Mean	1.836	2.417	29.787	27.771	3.402	11.082
SD	.864	1.445	5.037	11.565	2.146	9.822
Cronbach's α	.832	.879	.883	.808	-	.902

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

The Pearson's *r* was also calculated for the dataset collected from the university; these statistics are presented in Table 2. To begin, attachment avoidance was found to be significantly positively correlated with best friend attachment anxiety ($r = .266$, $p < .05$) and depression ($r = .262$, $p < .05$). Conversely, it was significantly negatively correlated with self-esteem ($r = -.390$, $p < .001$). Displaying similar patterns of significance, best friend attachment anxiety was significantly positively associated with both loneliness ($r = .541$, $p < .001$) and depression ($r = .322$, $p < .001$) and significantly negatively correlated with self-esteem ($r = -.505$, $p < .001$). In

an examination of self-esteem with loneliness, the analysis indicated a significant negative relationship (r = -.646, p < .001). Next, self-esteem and depression were also significantly negatively correlated (r = -.631, p < .001). In examination of the H3 hypotheses constructs, a significant positive correlation between loneliness and depression was found (r = .599, p < .001). Lastly, in stark contrast to the Mechanical Turk dataset, no significant correlations were found between social media use and the other study's constructs within the university dataset. This will be further examined in the Discussion chapter.

Mechanical Turk PROCESS Results

Best friend attachment style, both avoidant and anxious, functioned as the predictor variable within Hayes' PROCESS mediation Model 81 and depression was examined as the outcome variable; within this, social media use, followed by self-esteem and loneliness were all placed as mediators. Significance is indicated by solid lines; dotted lines are indicative of insignificance.

Best Friend Attachment Avoidance - Mechanical Turk

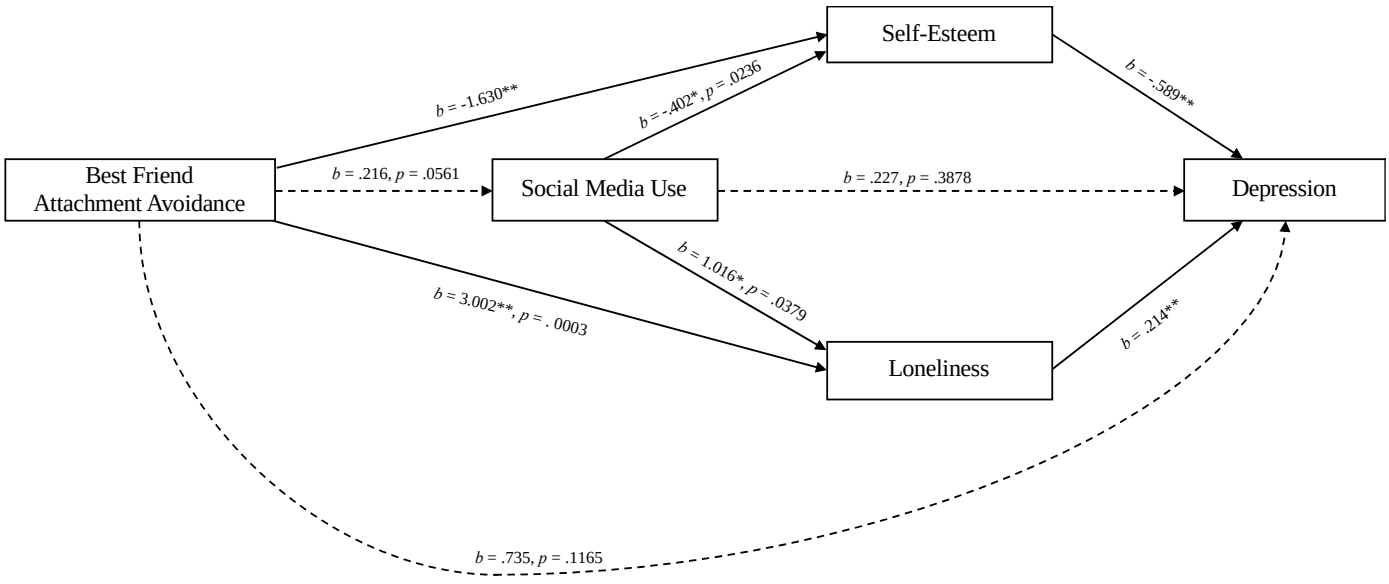

Figure 2. Best friend attachment avoidance mediation model (Mechanical Turk).
* p < .05, ** p < .001

In accordance with the H1 hypotheses (see Figure 2), best friend attachment avoidance was significantly negatively correlated with self-esteem (H1a, p <.001) and increased levels of loneliness (H1d, p < .001). In contrast, results indicated the relationships between social media and best friend attachment as approaching significance, yet not (H1c, p = .0561). Next, in alignment with H2 hypotheses, social media use was significantly positively correlated with loneliness (H2c, p = .0379) and negatively correlated with self-esteem (H2a, p = .0236). In further support, each determined association was in the anticipated direction according to the stated hypotheses. These results substantiate the notion within previous literature which posits the detrimental effects of social media on an individual. Interestingly, the results did not indicate social media use as significantly correlated with depression (H2b, p = .3878); this suggests the potential absence of a necessary mediating variable in the relationship between the two. Conversely, the results supported each of the H3 hypotheses, as there was a negative correlation between self-esteem and depression (H3a, p < .001), and a positive correlation between loneliness and depression (H3b, p < .001). Next, substantiated within the present model, two of the three H4 hypotheses were significant. These hypotheses anticipated relationship between attachment avoidance and depression when mediated by self-esteem (H4a) and when mediated by loneliness (H4c); in contrast, results did not support H4b, as social media did not mediate the relationship between attachment avoidance and depression. In terms of indirect effects (see Table 4), while social media did not significantly mediate the relationship between attachment avoidance and depression (H4b), self-esteem was an effective mediator in the relationship between the two (H4a, Effect = .9594, CI = [.4703, 1.5494]); this provides support for previous research articulating self-esteem's role as a mediating variable in the relationship between attachment style and the subsequent development of psychopathology. Similarly, loneliness was

a significant mediator between the attachment avoidance and depression (H4c, Effect = .6417, CI = [.2545, 1.1765]). Lastly, contrary to predictions, neither of the two H5 hypotheses were supported, as neither social media and self-esteem (Effect = .0534, CI = [-.0004,.1536] nor social media and loneliness (Effect = .0491, CI = [-.0005, .1357]) displayed significant combined mediating effects. Overall, it should be acknowledged that the Total Effect Model displayed significance (R = .3143, R-sq = .0988, MSE = 100.3456, F (1, 200) = 21.9169, p < .001); further, while the direct effect of X on Y was not significant (Effect = .7345, p = .1165), the total effect of X on Y did display significance (Effect = 2.4895, p < .001).

Table 3. Conditional Process Analysis Results for Best Friend Attachment Avoidance (Mechanical Turk).

Source	*b*	*se*	*t*	*p*	*LLCI*	*ULCI*
Social Media Use: R = .1346, R^2 = .0181, MSE = 4.915, F(1, 200) = 3.690, p = .0561						
ECR – Best Friend Attachment Avoidance	.216	.118	1.921	.0561	-.006	.458
RSE – Rosenberg Self-Esteem: R = .4079, R^2 = .1664, MSE = 30.4524, F(2, 199) = 19.8591, p < .001						
ECR – Best Friend Attachment Avoidance	-1.630	.296	-5.514	<.001	-2.213	-1.047
Social Media Use	-.402	.176	-2.282	.0236	-.749	-.055
ULS8 – Loneliness: R = .304, R^2 = .093, MSE = 232.517, F(2, 199) = 10.155, p < .0001						
ECR – Best Friend Attachment Avoidance	3.002	.817	3.675	.0003	1.391	4.613
Social Media Use	1.016	.486	2.090	.0379	.057	1.976
DASS – Depression: R = .648, R^2 = .420, MSE = 65.529, F(4, 197) = 35.706, p < .001						
ECR – Best Friend Attachment Avoidance	.735	.466	1.577	.1165	-.184	1.653
Social Media Use	.227	.262	.866	.3878	.290	.744
RSE – Self-Esteem	-.589	.129	-4.564	<.001	-.843	-.334
ULS8 - Loneliness	.214	.047	4.580	<.001	.122	.306

Table 4. Indirect effects of X on Y (Mechanical Turk).

Pathway	*Coefficient*	*LLCI*	*ULCI*
Best Friend Avoidance > Social Media Usage > Depression	.0513	-.0690	.2340
Best Friend Avoidance > Self-Esteem > Depression	.9594	.4703	1.5494
Best Friend Avoidance > Loneliness > Depression	.6417	.2545	1.1765
Best Friend Avoidance > Social Media Usage > Self-Esteem > Depression	.0534	-.0004	.1536
Best Friend Avoidance > Social Media Usage > Loneliness > Depression	.0491	-.0005	.1357

Best Friend Attachment Anxiety - Mechanical Turk

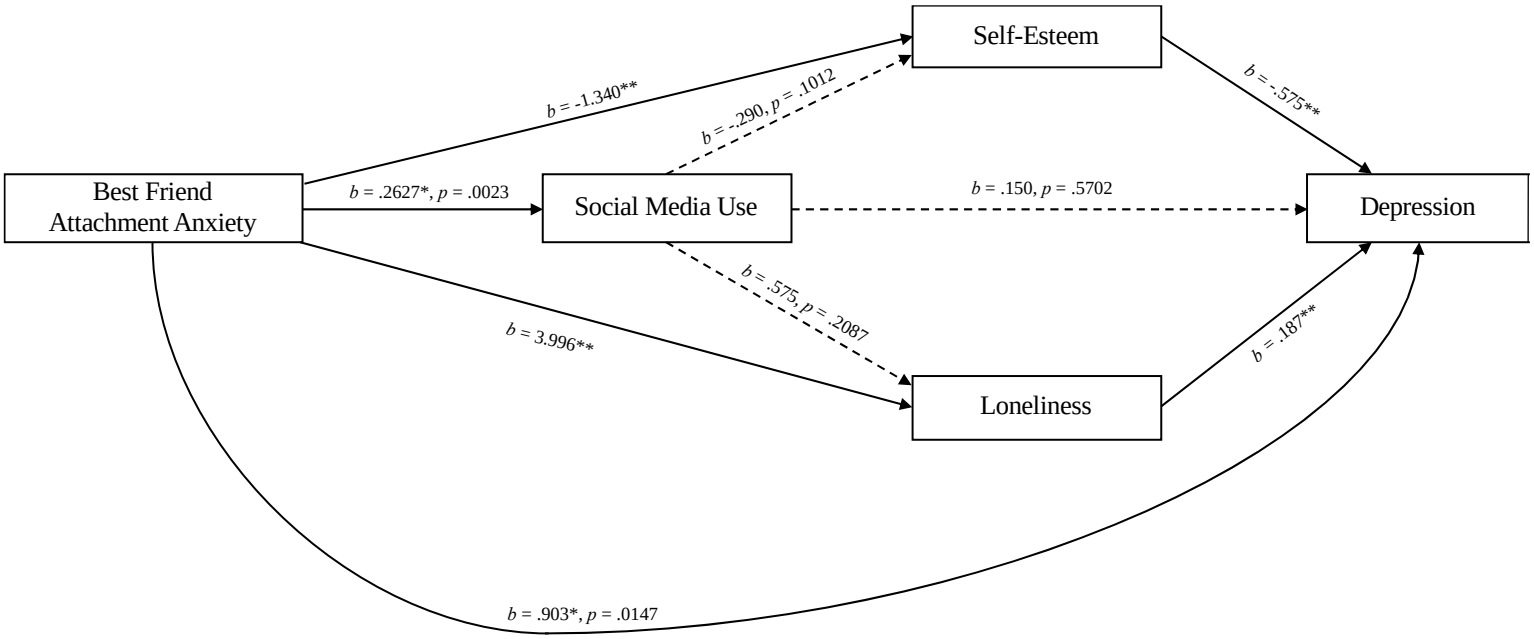

Figure 3. Best friend attachment anxiety mediation model (Mechanical Turk).
* $p < .05$, ** $p < .001$

In accordance with three of the H1 hypotheses, results indicated a negative correlation between best friend attachment anxiety and self-esteem (H1a, $p < .001$), and a series of positive

correlations between attachment anxiety with social media use (H1c, $p = .0023$), loneliness (H1d, $p < .001$), and depression ($p = .0147$). However, contrary to the H2 hypotheses, results indicated a lack of significance in the relationship between social media with self-esteem (H2a, $p = .1012$), loneliness (H2c, $p = .575$), or depression (H2b, $p = .5702$). Rationale for these results discussed in the following chapter. Further, as anticipated and seen from Figure 3, self-esteem was negatively correlated with depression (H3a, $p < .001$) while loneliness was positively correlated with depression (H3b, $p < .001$); moreover, and in further support of the H3 hypotheses, these results were also consistent in each of the hypothesized directions. Substantiating each of the H4 hypotheses regarding indirect effects, both self-esteem (H4a, Effect = .7697, CI = [.3785, 1.2880]) and loneliness (H4c, Effect = .7487, CI = [.3539, 1.2014]), individually served as effective mediators in the relationship between attachment anxiety and depression. In contrast, however, results did not support H4b, as social media (H9b, Effect = .0394, CI = [-.1026, .2245]) did not significantly mediate the relationship between the attachment anxiety and depression. Additionally, contrary to the H5 hypotheses, results did not indicate social media use, in combination with either self-esteem (Effect = .0437, CI = [-.0042, .1234]) or loneliness (Effect = .0283, CI = [-.0113, .0878]), as significant variables in mediating the relationship between attachment anxiety and depression. These findings suggest the absence of alternate, necessary mediating factors within the pathway from attachment anxiety to depression. In sum, results indicated the overall total effect model as significant: $R = .1877$, $R\text{-}sq = .1524$, $MSE = 89.5820$, $F(1, 201) = 46.4556$, $p < .001$; moreover, both the total effect of X on Y (Effect = 2.5330, $p < .001$, CI = [1.8002, 3.2658]) and the direct effect of X on Y (Effect = .9032, $p = .0147$, CI = [.1796, .1.6267]) were significant, thereby providing support for the overall model.

Table 5. Conditional Process Analysis Results for Best Friend Attachment Anxiety (Mechanical Turk).

Source	*b*	*se*	*t*	*p*	*LLCI*	*ULCI*
Social Media Use: $R = .213$, $R^2 = .0453$, $MSE = 4.689$, $F(1, 201) = 21.3616$, $p = .0023$						
ECR – Best Friend Attachment Anxiety	.2627	.085	3.089	.0023	.095	.430
RSE – Rosenberg Self-Esteem: $R = .4373$, $R^2 = .191$, $MSE = 29.1769$, $F(2, 200) = 23.642$, $p < .001$						
ECR – Best Friend Attachment Anxiety	-1.340	.217	-6.173	<.001	-1.768	-.912
Social Media Use	-.290	.176	-1.647	.1012	-.637	.0572
ULS8 – Loneliness: $R = .476$, $R^2 = .227$, $MSE = 195.692$, $F(2, 200) = 29.256$, $p < .001$						
ECR – Best Friend Attachment Anxiety	3.996	.562	7.108	<.001	2.888	5.105
Social Media Use	.5748	.456	1.261	.2087	-.324	1.473
DASS – Depression: $R = .651$, $R^2 = .423$, $MSE = 64.559$, $F(4, 198) = 36.342$, $p < .001$						
ECR – Best Friend Attachment Anxiety	.903	.367	2.462	.0147	.180	1.627
Social Media Use	.150	.265	.569	.5702	-.370	.700
RSE – Self-Esteem	-.275	.125	-4.600	<.001	-.821	-.328
ULS8 - Loneliness	.187	.048	3.885	.0001	.092	.283

Table 6. Indirect effects of X on Y – (Mechanical Turk).

Pathway	*Coefficient*	*LLCI*	*ULCI*
Best Friend Anxiety > Social Media Usage > Depression	.0394	-.1026	.2245
Best Friend Anxiety > Self-Esteem > Depression	.7697	.3785	1.288
Best Friend Anxiety > Loneliness > Depression	.7487	.3539	1.201
Best Friend Anxiety > Social Media Usage > Self-Esteem > Depression	.0437	-.0042	.1234

Best Friend Anxiety > Social Media Usage > Loneliness > Depression	.0283	-.0113	.0878

University PROCESS Results

Best Friend Attachment Avoidance – University

Identical analyses were conducted with the university dataset. In contrast to the Mechanical Turk results, the university results displayed differences across each model.

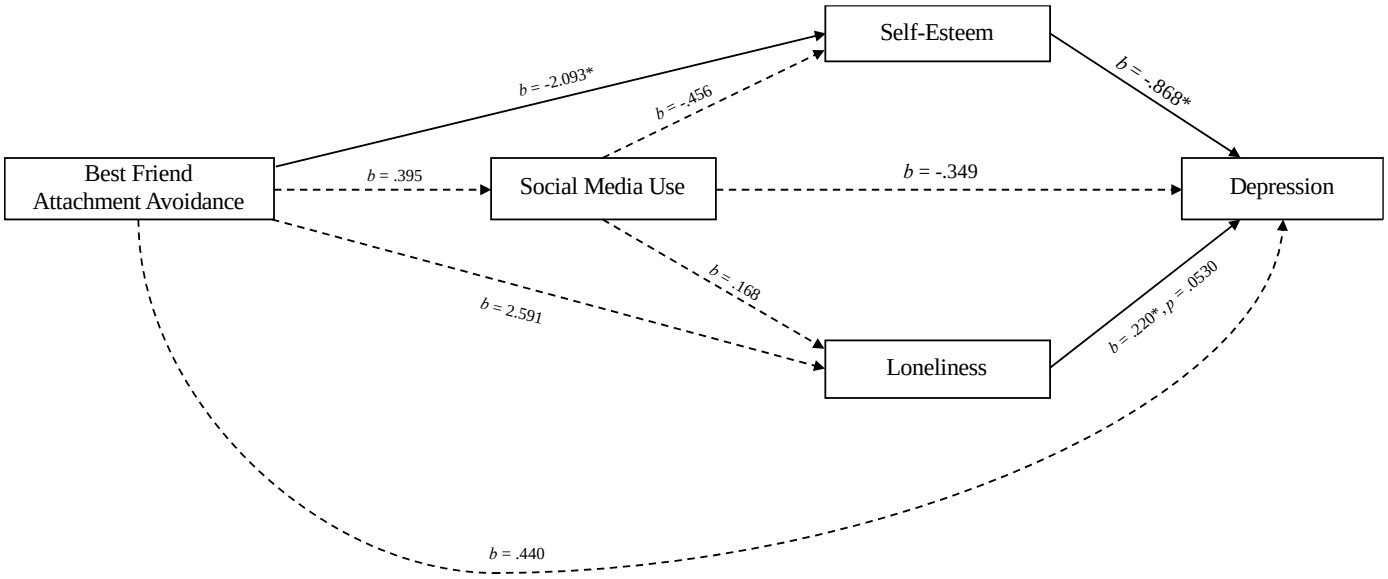

Figure 4. Best friend attachment avoidance mediation model (University)
* $p < .05$, ** $p < .001$

Firstly, it was hypothesized that best friend attachment avoidance would be significantly negatively related to self-esteem (H1a) and social media (H1b), and significantly negatively related to loneliness (H1d, $p = .1336$). While results failed to support H1b ($p = .2268$) or H1d ($p = .1336$), they did find a significant correlation between attachment avoidance and self-esteem, in support of H1a ($p = .0043$). Results did not indicate a significant correlation between social

media use with self-esteem (H2a, p = -1.615) nor with loneliness (H2c, p = .8070). Despite this, results did identify a significant negative correlation between self-esteem and depression (H3a, p = .0021) and a significant positive correlation between loneliness and depression (H3b, p = .0530). Further, while, results did not indicate any significant correlations between depression with attachment avoidance (p = .7147) or social media use (H1b, p = -.7602), they did find support for the H4a hypothesis, which anticipated self-esteem to be an effective mediator in the relationship between attachment avoidance and depression (Effect = 1.8163, CI = [3213, 3.5502]). Contrary to anticipations, the relationship between best friend attachment avoidance and depression was not effectively mediated by loneliness (H4c, Effect = .5708, CI = [-.1476, 2.0493]) or social media in combination with either self-esteem (H5a, Effect = .2562, CI = [-.3108, .7721]) or loneliness (H5b, Effect = .1358, CI = [-.2252, .3327]). Despite these unanticipated results, the total effect model, when depression was an outcome variable, displayed significance (R = .2621, *R-sq* = .0687, *MSE* = 84.3737, F (1, 58) = 4.2777, p = .0431). Lastly, while results did not indicate significant direct effects of X on Y (Effect = .4395, p = .7147, CI = [-1.9574, 2.8365]), the total effect of X on Y provided support of the overall model's significance (Effect = 2.8596, p = .0431, CI = [.0920, 5.6271]).

Table 7. Conditional Process Analysis Results for Best Friend Attachment Avoidance (University).

Source	*b*	*se*	*t*	*p*	*LLCI*	*ULCI*
Social Media Use: R = .158, R^2 = .025, *MSE* = 4.613, F(1, 58) = 1.492, p = .2268						
ECR – Best Friend Attachment Avoidance	.395	.323	1.222	.2268	-.252	1.042
RSE – Rosenberg Self-Esteem: R = .435, R^2 = .189, *MSE* = 21.322, F(2, 57) = 6.650, p = .0025						
ECR – Best Friend Attachment Avoidance	-2.093	.704	-2.973	.0043	-3.502	-.683
Social Media Use	-.456	.282	-1.615	.1118	-1.021	.109

ULS8 – Loneliness: R = .207, R^2 = .043, MSE = 124.716, F(2, 57) = 1.279, p = .2861						
ECR – Best Friend Attachment Avoidance	2.591	1.702	1.522	.1336	-.818	6.00
Social Media Use	.168	.683	.2455	.8070	-1.200	1.535
DASS – Depression: R = .666, R^2 = .444, MSE = 53.127, F(4, 55) = 10.976, p < .001						
ECR – Best Friend Attachment Avoidance	.440	1.196	.3675	.7147	-1.957	2.837
Social Media Use	-.349	.460	-.7602	.4504	-1.270	.572
RSE – Self-Esteem	-.868	.269	-3.221	.0021	-1.408	-.328
ULS8 - Loneliness	.220	.111	1.978	.0530	-.0030	.444

Table 8. Indirect effects of X on Y (University).

Pathway	*Coefficient*	*LLCI*	*ULCI*
Best Friend Avoidance > Social Media Usage > Depression	-.1379	-.7902	.4958
Best Friend Avoidance > Self-Esteem > Depression	1.8163	.3213	3.5502
Best Friend Avoidance > Loneliness > Depression	.5708	-.1476	2.0493
Best Friend Avoidance > Social Media Usage > Self-Esteem > Depression	.2562	-.3108	.7721
Best Friend Avoidance > Social Media Usage > Loneliness > Depression	.1358	-.2252	.3327

Best Friend Attachment Anxiety – University

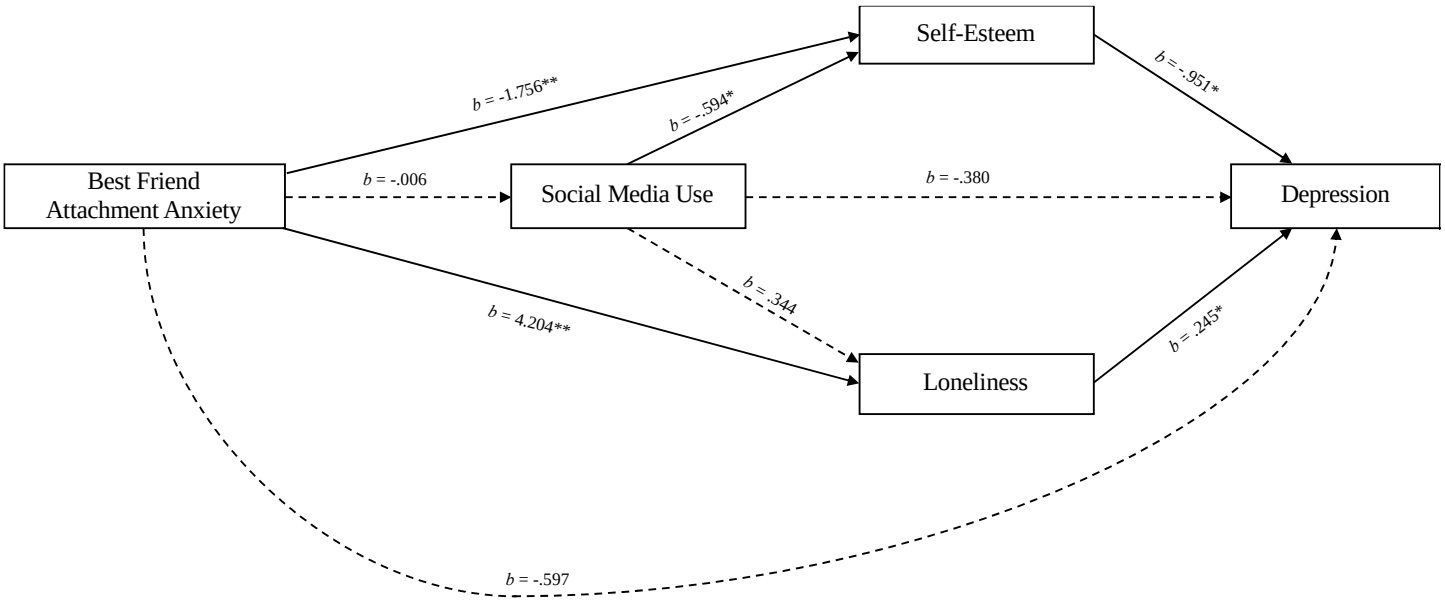

Figure 5. Best friend attachment anxiety mediation model (University).
* $p < .05$, ** $p < .001$

While attachment anxiety was not significantly correlated with social media use (H1c, $p = .9740$) or depression ($p = .4627$) it was found to be significantly negatively correlated with self-esteem (H1a, $p < .001$), and significantly positively correlated with loneliness (H1d, $p < .001$). Subsequently, in support of H2a, social media use was significantly negatively correlated with self-esteem ($p = .0238$). Interestingly, results did not indicate social media use as significantly associated with loneliness (H2c, $p = .5535$) or depression (H2b, $p = .4122$). Despite this, both self-esteem (H3a, $p = .0007$) and loneliness (H3b, $p = .0403$) were significantly correlated with depression. Moreover, both loneliness (H4c, Effect = 1.0312, CI = [.0156, 2.3445]) and self-esteem (H4a, Effect = 1.6705, CI = [6334, 2.8750]) were effective mediators in the relationship between attachment anxiety and depression. Contrary to hypothesis H4b, social media did not function as a significant mediator in the relationship between attachment anxiety

and depression (Effect = .0024, CI = [-.2637, .3226]). Lastly, in the relationship between attachment anxiety and depression, neither social media usage with self-esteem (H5a, Effect = -.0036, CI = [-.2656, .3225]) nor loneliness (H5b, Effect = -.0005, CI = [-.0494, .1186]) emerged as significant mediators. Despite these findings, the overall Total Effect Model displayed significance: R = .2621, R-sq = .0687, MSE = 84.3737, F (1, 58) = 4.2777, p = .0431; additionally, while the direct effect of X on Y was not significant (Effect = .4395, p = .7147), the total effect of X on Y did display significance (Effect = 2.8596, p = .0431).

Further rationale in Discussion below.

Table 9. Conditional Process Analysis Results for Best Friend Attachment Anxiety (University).

Source	*b*	*se*	*t*	*P*	*LLCI*	*ULCI*
Social Media Use: R = .0043, R^2 = .0000, MSE = 4.7312, F(1, 58) = .0011, p = .9740						
ECR – Best Friend Attachment Anxiety	-.006	.196	-.033	.9740	-.399	.386
RSE – Rosenberg Self-Esteem: R = .5631, R^2 = .3171, MSE = 17.958, F(2, 57) = 13.236, p < .001						
ECR – Best Friend Attachment Anxiety	-1.756	.382	-4.601	<.001	-2.521	-.992
Social Media Use	-.594	.256	-2.322	.0238	-1.106	-.082
ULS8 – Loneliness: R = .5452, R^2 = .297, MSE = 91.5743, F(2, 57) = 12.056, p < .001						
ECR – Best Friend Attachment Anxiety	4.204	.862	4.877	<.001	2.478	5.930
Social Media Use	.344	.578	.596	.5535	-.813	1.501
DASS – Depression: R = .669, R^2 = .448, MSE = 52.733, F(4, 55) = 11.1612, p < .001						
ECR – Best Friend Attachment Anxiety	-.597	.807	-.740	.4627	-2.215	1.020
Social Media Use	-.380	.460	-.826	.4122	-1.303	.542
RSE – Self-Esteem	-.951	.264	-3.606	.0007	-1.480	-.423
ULS8 - Loneliness	.245	.117	2.100	.0403	.011	.480

Table 10. Indirect effects of X on Y (University).

Pathway	*Coefficient*	*LLCI*	*ULCI*
Best Friend Anxiety > Social Media Usage > Depression	.0024	-.2637	.3236
Best Friend Anxiety > Self-Esteem > Depression	1.6705	.6334	2.8750
Best Friend Anxiety > Loneliness > Depression	1.0312	.0156	2.3445
Best Friend Anxiety > Social Media Usage > Self-Esteem > Depression	-.0036	-.2656	.3425
Best Friend Anxiety > Social Media Usage > Loneliness > Depression	-.0005	-.0494	.1186

CHAPTER FIVE: DISCUSSION

The model indicated in Figure 1 was analyzed via Hayes' PROCESS Macro for SPSS, utilizing a mediation model, Model 81, and 5,000 boot-strap samples. In accordance with previous research, these results provide evidence in support of the vital role that adult attachment holds in affecting an individual's psychological well-being and subsequent behaviors; further, several of the proposed hypotheses were supported within these findings.

HYPOTHESES DISCUSSION

As articulated within H1, evidence has suggested that the precise nature of the relationship between insecure best friend attachment style and depression may be contingent on the mediating variables present. Previous research has indicated that an individual's susceptibility to the development of depression is largely influenced by the specific behaviors accompanying the attachment style. As anticipated, a correlation between anxious attachment within the MTurk dataset and subsequent depression was identified. This falls in accordance with previous literature which articulates the relationship between insecure attachment and mental health implications (Armsden et al., 1990; Bifulco et al., 2002; Jinyao et al., 2012; Lee & Hankin, 2009; Liu et al., 2009; Murphy & Bates, 1997; Spence et al., 2018). In contrast, attachment avoidance within the MTurk dataset and both insecure attachment styles within the university dataset were not significantly associated with depression.

Attachment Style and Participants

Regarding attachment anxiety within the university dataset, it may be hypothesized that such results may be attributed to the difference in sample size (N = 61 within the university dataset, N = 206 within the MTurk dataset). Next, there are several potential causes as to why avoidant attachment style results failed to reach significance. To begin, the inherent avoidant

nature which accompanies avoidant attachment style may have influenced the participants' responses to the DASS, thereby skewing the study's results; in fact, research has found a correlation between insecure attachment and alexithymia (Szpak & Białecka-Pikul, 2015). As a condition which affects the processing of emotions, alexithymia manifests in several notable ways, two of which are difficulty identifying feelings and difficulty describing feelings; consequently, such a condition has significant implications on avoidantly attached individuals. Further, such results may also indicate the presence, or absence, of mediating or moderating variables unaccounted for within the present study.

H1 Hypotheses

It was hypothesized that insecure best friend attachment would be negatively correlated with self-esteem (H1a-) and positively correlated with loneliness (H1d+). Substantiating these hypotheses and an alignment with findings of previous studies, results supported both H1a and H1d. In accordance with previous research by Hankin et al. (2005), results indicated evidence suggesting decreases in self-esteem as correlated with insecure attachment; this was further supported in a recent study, which identified the mediating role of self-esteem following the presence of attachment anxiety (Set, 2019). Additionally, the findings supported H1d, which is further reinforced by research (Deniz et al., 2005; Hecht & Baum, 1984; Ilhan, 2012; Kobak & Sceery, 1988; Naderi et al., 2016; Pandeya, 2017; Sahin Kiralp & Serin, 2017; Spence et al., 2018). Contrary to anticipations, best friend attachment avoidance was not negatively correlated with social media (H1c); while the Mechanical Turk dataset indicated a correlation approaching significance (p = .0561), it failed to reject the null hypothesis. Further, had the relationship attained significance, it would have displayed a positive, rather than a negative, correlation with social media.

Additionally, the university dataset did not display a significant relationship between the two. While these results were unanticipated, it should be noted that the existing literature has failed to identify consistent results regarding this relationship. While some research has found a consistent association between attachment avoidance and decreased Facebook use (Hart et al., 2015; Oldmeadow et al., 2013), other studies have found attachment avoidance to be predictive of specific interaction motivations, such as impression management, which subsequently leave avoidant individuals vulnerable to outcomes, such as the social consequences of intrusive Facebook use (Flynn, Noone, & Sarma, 2018); further contributing to the unpredictability, Wardecker et al. (2016) found that avoidantly attached individuals perceived face-to-face communication as less close and less efficient at reducing conflict. Such previous findings result in uncertainty regarding whether avoidant individuals will utilize social media to navigate relationships within which they intend to maintain an acceptable distance or if they will perceive it as a tool that increases already uncomfortably intimate relationships.

Previous research which has examined the relationship between attachment anxiety and social media use has consistently yielded results indicating a positive correlation between the two. Interestingly, while the Mechanical Turk results supported H1c, which predicted a positive correlation between attachment anxiety and social media use, the university dataset failed to find the presence of such an association. There are several potential explanations regarding the results of the current study. To begin, there are substantial differences between the two datasets; while Mechanical Turk is a convenience sampling source which has been found equally as reliable as data collected via other sampling methods (Briones & Benham, 2017; Casler, Bickel, & Hackett, 2013), the university dataset consisted of a very specific demographic, more specifically, undergraduate students studying Psychology at a university. The disparities between these two

samples result in an inability to appropriately compare the two. While the MTurk users were below the age of 30, they were not limited to being residential university students. Given that the selected university requires all unmarried students below the age of 21 years old to live residentially, such requirements are accompanied by the benefits of the more readily accessible and available relationships on a university campus; consequently, this promotes a more proactive usage of the communicative aspects of social media. Individuals experiencing anxious attachment on a university campus are uniquely positioned, as they are surrounded by relationships which may decrease their passive usage of social media in exchange for face-to-face interaction, versus MTurk users, who are representative of a broader population and are less likely to receive such continual access to others.

H2 Hypotheses

Social media will be negatively correlated with self-esteem (2a-) and positively associated with both depression (2b+) and loneliness (2c+).

Social Media and Self-Esteem

H2a hypothesized a negative correlation between social media and self-esteem. This was significant for those with attachment avoidance within the MTurk dataset and those with attachment anxiety in the university dataset; consequently, this was not significant for the MTurk participants with attachment anxiety or the university participants experiencing attachment avoidance. Previous research has indicated the critical function of the nature of the interaction between the user and social media (Apaolaza et al., 2013; Forest & Woo, 2012; Gonzales & Hancock, 2011; Steinfield et al., 2008; Vogel et al., 2014; Valkenburg et al., 2006; Wilcox & Stephen, 2013). Subsequently, recent and emerging research has suggested that the amount of time spent on social media affects its effects on the user (Hawi & Samaha, 2017; Twenge, 2019;

Twenge & Campbell, 2019); while heavy use was correlated with decreased well-being, Twenge and Campbell (2019) found light use to have more beneficial effects than complete abstention from social media.

Social Media and Depression

H2b hypothesized a positive correlation between social media and depression. This was not found to be significant across any of the four models. This is particularly interesting, as it strongly suggests the absence of either a mediating or moderating variable present in the research conducted prior to this study. Utilizing a Hayes' mediation model, Mitra and Rangaswamy (2019) found a significant relationship between social media usage and depression when mediated by rumination; the present findings may indicate a particular lack of such behavior within the study's participants. Further, Ybarra et al. (2005) identified a correlation between specific internet behaviors and depressive symptoms, behaviors such as amounts of self-disclosure.

Social Media and Loneliness

In alignment with H2c, the attachment avoidance mediation model utilizing the MTurk dataset identified a significant positive correlation between social media and loneliness; however, none of the other three models displayed significance. This may suggest further disparities between the already discussed two datasets. Moreover, in light of previous research which advocates the benefits of social media use on loneliness (Halston et al., 2019; Lou et al., 2012; Pittman & Reich, 2016), results substantiate the critical role of the nature of the interaction between use and outcome; more specifically, when engaged proactively, social media use may aid in attenuating an individual's loneliness. Given that neither of the university mediation models indicated a significant direct association between social media use and loneliness, it may

be hypothesized that the environment fostered by the residential on-campus housing community may affect the nature of an individual's social media use. Additionally, while results failed to identify a direct association between social media use and depression, they did reveal both self-esteem and loneliness as separate, distinct pathways in their preceding relationship with depression across all models. Such differing routes of significance within the mediation models may be indicative of confounding variables.

H3 and H4 Hypotheses

Attachment, Self-Esteem, and Depression

In accordance with previous literature, results indicated a strong positive relationship between insecure attachment and self-esteem; further, consistent with the previous research which utilized a mediation model (Hankin et al., 2005), self-esteem emerged as a negative predictor of depression across all four models (H3a; H4a). This suggests the absence of self-esteem as a potential vulnerability factor in developing depression for individuals experiencing insecure forms of attachment. Moreover, the repeatedly significant correlation between attachment style, self-esteem, and depression (H4a) suggests the potential value of an intervention designed to mitigate the potential developmental sequence from occurring. It should also be acknowledged that this association between attachment and self-esteem remained regardless of attachment style, whether avoidant or anxious; this suggests a potentially shared trait connecting the two, such as behavioral or cognitive predispositions, such as excessive reassurance-seeking (Davila, 2001). An early study on the relationship identified dysfunctional attitudes as mediating the relationship between anxious attachment and decreased self-esteem; this was found to predispose the insecurely attached individual to further adverse outcomes, specifically depression (Roberts et al., 1996). Interestingly, the significance of this correlation

was dependent upon the presence of mediators, as the absence of dysfunctional behaviors and decreased self-esteem resulted in an inability to reject their null hypothesis.

Attachment, Social Media, and Depression

In contrast, H4b, which posited social media's mediating role in the relationship between insecure attachment and depression, was not supported across any of the four models. There are several possible reasons for this; as stated above, the nature of the interaction between the user and social media was found to be predictive of the outcome. As such, results may indicate a more regulated use of social media amongst the participants of both datasets (Twenge, 2019; Twenge & Campbell, 2019); alternately, it may suggest their more proactive use of social media, which would mitigate the relationship between insecure attachment and depression.

Attachment, Loneliness, and Depression

While H3b, which hypothesizes a positive correlation between loneliness and depression, was supported across all four models, H4c, which posited loneliness as mediating the relationship between insecure attachment and heightened depression levels, was supported across three of the four models. In accordance with the existing literature (Pandeya, 2017; Sadeghi Bahmani et al., 2017; Spence et al., 2020), the correlation between loneliness and depression was positive. Interestingly, while the university attachment avoidance condition did not identify a correlation between avoidant attachment and loneliness, the university anxious attachment and the MTurk dataset displayed significance across both of the attachment conditions. This may be due to the difference in sample sizes or environments. A study examining the risk and protective factors in the relationship between depression and loneliness found that students studying in their first year at university, those coming from a fragmented family, or students staying with relatives each displayed an increased vulnerability to depression and loneliness (Kilinc et al., 2019).

Interestingly, having a good relationship with their mother and the availability of adult social support both functioned as protective factors from such adverse outcomes.

H5 Hypotheses

Attachment, Social Media, Loneliness, Self-Esteem, and Depression

In acknowledgment of the results and rationales as mentioned above, neither of the H5 hypotheses were supported by the present models. The absence of a correlation between insecure attachment style and social media use functioned as the primary contributor to these results; however, these findings contribute to research's current understanding of the relationship between these constructs. More specifically, these results underscore the necessity of an investigation into the underlying motivations and behaviors which may occur and mediate the relationships currently displaying a lack of significance. Further, these hypotheses were built upon the previous research, which revealed uncertain, inconsistent findings; thus, the present results were not entirely unanticipated. The current study's overall investigative nature, alongside the present limitations, provided insight and knowledge for future research studies. These are further examined in the following sections.

Participants

This decision was made for exploratory purposes. While partly due to convenience, a copious number of studies have utilized convenience samples of university students across the globe. Similarly, the present study gathered a sample of university students studying Psychology. Subsequently, an additional dataset was collected via a sample of Mechanical Turk users below the age of 30. While the populations differ to an extent which restricts direct comparison, they both enable unique contributions to the existing literature on each of these populations. Several factors may be responsible for the population-distinct findings. Notably, university students

experience substantially different daily routines and responsibilities than individuals below the age of 30 who respond to questionnaires on Mechanical Turk would have. Indeed, residential undergraduate university students are in a transition period as they adjust to beginning new classes while living away from home; however, while uniquely positioned, university students may choose to engage in higher levels of social media use in an attempt to cope with their shifting norm.

Further, an examination of adult attachment in university students proves particularly valuable as the dominant present attachment relationships in an individual's life shift from parental attachment to best friend and romantic partner attachment. In contrast, participants contributing to datasets collected from MTurk may have a heightened likelihood of engaging in social media use due to the increased time spent online and its continual convenient accessibility. In contrast, residential university students may find themselves in situations which promote more frequent face-to-face interaction. While emerging research has identified evidence indicating a relationship between heightened amounts of digital media use and decreased psychological well-being, it has also determined a correlation between light use and heightened psychological well-being. Interestingly, evidence has also suggested light use may be more beneficial than complete abstention from digital media use (Twenge & Campbell, 2019). Consequently, the absence of a correlation between insecure attachment and social media use may also suggest more regulated levels of digital media use.

IMPLICATIONS

Implications and the Coronavirus

Social media has become extensively intertwined throughout an individual's daily life, being utilized not only as a means of communication within personal relationships but also as a

wide-ranging tool to receive information from businesses, the government, and academic institutions. The use of social media has become increasingly unavoidable in present-day culture; moreover, the increasing enforcement of social distancing policies and self-quarantining has led to an unprecedented amount of communication occurring via the internet. Further, as social media has become a ubiquitously traversed route of information due to its extensive ability to reach those across the globe, its usage has become a primary source of information during the present pandemic (Sharma et al., 2020; Tasnim et al., 2020). While this has provided a means of convenient, rapid communication of information regarding the Coronavirus, it has also left ample space for miscommunication and the escalation of misrepresented data. As a result, despite any inaccuracies or misinformation, the utilization of social media use for the reception of legitimate and reliable information continues and has instilled heightened amounts of anxiety within the public. As such, the above research suggests the potential benefits of interventions which encourage a healthy skepticism concerning the information gathered via social media.

Additionally, when considered in combination with the cognitive and behavioral predispositions of those with insecure attachment (El-Hage et al., 2020), such interactions would be anticipated to perpetuate the development of adverse outcomes on mental health (Stankovska et al., 2020). In fact, a recent study examining the negative implications of the COVID-19 pandemic on mental health has identified its association with heightened levels of anxious attachment within a population of Chinese university students (Chi et al., 2020). In response to these recent and emerging developments, research which examines these implications alongside attachment theory may benefit through the contribution of insight, which may enable an increased understanding of vulnerability factors, thereby subsequently informing potential interventions (Rajkumar, 2020). Lastly, it should also be noted that the present data collection of

the university sample was collected in the early spring of 2020, prior to the university's spring semester switch to entirely online classes.

Additionally, the Mechanical Turk dataset was collected Summer of 2019. Consequently, in light of COVID-19, future research may anticipate responses that vary from those within the present study. Notably, research may anticipate increases in the reported amount of time spent on social media due to decreased face-to-face interaction and self-quarantining as a means of deterring the spread of the virus. The transformations in social media behavior may necessitate a re-examination of the implications of social media use. Consequently, interventions that encourage proactive behaviors on social media may enable it to become a temporary extension of an individual's in-person ability to cultivate relationships that may have been compromised due to COVID-19.

Further Implications and Future Research

The primary intent of this study was to examine the relationship between insecure adult best friend attachment style and depression when mediated by social media use, loneliness, and self-esteem in two populations, one consisting of university students and one consisting of young adults below the age of 30 collected via Mechanical Turk. While numerous previous studies have contributed insight into the relational dynamics between attachment style and social media usage, the present study aimed to extend early literature's findings through the combination of several variables: attachment style, social media use, self-esteem, loneliness, and depression. Previous research has collectively demonstrated much uncertainty regarding the positive or negative implications of social media usage on the variables mentioned above. Indeed, the present study offers insight into the relationship between social media use and mental health. Additionally, the results substantiate previous research, which suggests a correlation between

social media use, self-esteem, and depression; consequently, it may be hypothesized that social media provides a space which promotes behaviors toward social comparison, which may exacerbate already low levels of self-esteem.

As attachment style follows individuals across the lifespan, expansion of study beyond infant parental attachment would prove vital to a thorough comprehension of the development and shifting of attachment style across an individual's life. A notable transition which many individuals experience is the transition to higher academia, particularly their transition to university; indeed, research has indicated early college years as a significant adjustment period for young adults across the country (Cutrona, 1982; Kenny & Rice, 1995; Lapsley & Edgerton, 2002; Lepp, Li, & Barkley, 2016; Lopez & Gormley, 2002 Lou et al., 2012; Pandeya, 2017). Given that attachment literature articulates the substantial role of adult attachment relationships, an examination of this period in an individual's life identified as valuable, as it provided further insight into this transitional, developmental phase for young adults. Despite the present study's correlational nature, results substantiate the complexity of the relationship between attachment style and its subsequent behavioral and cognitive outcomes. Moreover, the absence of a correlation between attachment style and social media usage strongly suggests either potential alternate mediating or moderating variables, such as underlying motivations or temperaments influencing the individual's decision to engage in social media use.

These findings offer relatively strong evidence that self-esteem and loneliness are correlated with specific vulnerabilities to psychopathology; however, despite this, it remains unclear as to whether these factors may be contributing to its development or whether they coexist alongside alternate contributing factors. In sum, given past work which articulates the particularly strong association between attachment style, self-esteem, and subsequent depressive

symptoms, the present study substantiates and contributes to researchers' understanding of the relational dynamics between these constructs. Notably, for individuals with an insecure attachment style, improved levels of self-esteem may prove particularly beneficial within an intervention's efforts to reduce psychopathology and depressive symptoms.

LIMITATIONS

While the present study manages to contribute to existing attachment literature, there are several limitations to be addressed.

Sequential Uncertainty

Firstly, the correlational nature of the study prevents any causal inference; additionally, while the placement of factors within the model was designed to be consistent with previous research and the earlier conceptualizations of these constructs (Hankin et al., 2005; Mitra & Rangaswamy, 2019; Wei et al., 2005), the existing inconsistencies within the literature present the possibility of a bidirectional relationship. In fact, Gowen et al. (2012) found evidence suggesting that individuals with mental illness may be predisposed towards increased engagement with social media. Additionally, studies by Mehdizadeh (2010) and Andreassen et al. (2017) revealed that low self-esteem might be predictive of increased online activity and the potential addictive use of social media. Moreover, research has even suggested that an individual's behaviors on social media may be an indicator of depression (De Choudhury et al., 2013). Next, the present study is established upon the fundamental assumption that individuals experiencing insecure attachment will have unique predispositions toward maladaptive behaviors. As best friend attachment style has been noted to frequently precede the establishment of final communicative behavioral predispositions, it would logically function as a predictor variable. Consequently, yet of less sequential certainty, social media use could plausibly precede

shifts in an individual's levels of self-esteem and loneliness; despite these hypotheses, an alternate chronological developmental sequence may also prove probable. For example, some research has examined social media and its implications on self-esteem, while other studies have sought to investigate the reverse order. Given this, future research may consider a reversal of the variables' sequence.

Participants

To begin, similar to a majority of previous research on these variables, data collection for the present study relied on convenience samples; the absence of random selection limits the representativeness of the actual population. Further, the present study examined data collected from two significantly different populations: undergraduate students and a convenient sample of individuals gathered from Mechanical Turk. That is, the uniqueness of each of the two samples restricts any direct comparisons between the populations. To reconcile the disparities between these two samples, thereby somewhat increasing comparability of samples, responses from the Mechanical Turk dataset were limited to those below the age of 30; despite this, the disparities prevented any significant relevant comparison between the two datasets. Consequently, it should be noted that this study utilized a dataset which recruited participants through Amazon's Mechanical Turk, which has been found to enable the collection of larger and more representative samples (Casler, Bickel, & Hackett); despite this, an analysis of the reported demographics indicated limited diversity within the present sample. Finally, regarding participants, as each of these samples were drawn from highly specific populations of individuals, there is a limited generalizability of the present study's findings.

Survey Measures

Next, in terms of the measurements utilized within the present study, the data was gathered from a series of self-report measures; further, the constructs under examination are of a more sensitive nature. As such, participants may have biased responses in an attempt to select more socially desirable responses; consequently, this raises questions regarding the overall validity of each of the participant's responses. Indeed, gauging the reliability of the survey results may prove difficult, as insecurely attached individuals may experience a reluctance to share too much personal information. It is also possible that respondents had differing concepts and interpretations of the items presented to them; moreover, specific individuals may have a narrow perspective of the measure statements as a result of limited experience with a precise scale item. As such, these characteristics limit the overall implications of the present study.

FUTURE RESEARCH

Motivations Research

Alongside previous research, these findings suggest that a bulk of current research documenting the outcomes, either negative or positive, of social media use is neglecting to fully investigate the motivations behind usage; more specifically, it can be theorized that social media is providing an avenue by which individuals are able to engage in either positive or negative behaviors, such as relationship building or social comparison. As the measures utilized within the present study limit understanding of such variables, future research intent on examining these relationships would benefit immensely from an investigation of user motives alongside hours of usage per day, as a motivation study would provide a more thorough understanding of the outcomes. Further, despite the abundance of research suggesting that social media is associated with decreased self-esteem and increased loneliness, contrasting research posits the benefits of

social media use under certain conditions, thereby leading to increased self-esteem and reduced loneliness. In response to these contradictory findings, there is a heightened need to further examine the possible underlying mechanisms leading to previous studies' varying outcomes.

Alternate Contributing Factors

The importance of research which examines social media has become increasingly prominent with the upcoming generation of individuals, whose use of social media has become both a standard and compulsive behavior interspersed throughout their daily activities. The use of social media has become more than a mere pastime, as there has become an increased reliance on it for knowledge. Further exploration and incorporation of moderating or alternative mediating variables to the present model would provide further understanding of attachment and social media use. Moreover, the addition of covariates, such as personality differences like extroversion or neuroticism, may also offer unique contributions to the existing literature. A recent study by Blackwell et al. (2017) on social media use found extroversion and neuroticism predictive of social media use and insecure attachment style as a predictive factor of social media addiction. As attachment style has been found to be correlated with distinct cognitive and behavioral implications (Beatson & Taryan, 2003; Leenders et al., 2019; Richards & Schat, 2011; Saferstein et al., 2005; Set, 2019; Spence et al., 2018; Wei et al., 2005a, b), further exploration into the underlying motivations and reasons for use is necessary to better differentiate between the attachment styles. Suggesting the presence of additional mediating variables between attachment style and loneliness, DiTommaso et al. (2003) found both social skills and social competence to be effective mediators in the pathway between attachment style and feelings of social loneliness; further, within a 2011 study, Bernardon et al. found the relationship between attachment and loneliness to be mediated by perceived social support.

The inconsistencies within the existing literature provide multiple avenues of study for future research. Expansion of the existing models has the potential to extend research through the addition of alternate mediating or moderating factors. Research has identified several alternative significant variables in the relationships between the present variables (Blomfield Neira & Barber, 2014) within the present study: personality characteristics, extroversion, neuroticism, FOMO (Blackwell et al., 2017; Hart et al., 205), social factors and perceptions (Chou & Edge, 2012; Kim & Lee, 2011; Kraut et al., 2002; Shaw & Gant, 2002, 2004), self-efficacy, self-disclosure (Lee et al., 2011; Wei, Russell, & Zakalik, 2005), perception of self (Murphy & Bates, 1997), environmental stressors (Beatson & Taryan, 2003), gender (Deniz et al., 2005; Fujimori et al., 2017; Mehdizadeh, 2010; Pandeya, 2017), other present relationships (Fujimori et al., 2017; Lepp et al., 2016), unhealthy emotional or behavioral coping mechanisms (Marganska et al., 2013; Lee & Hankin, 2009; Roberts et al., 1996; Shaver et al., 2005) and levels of investment. As evidenced, the relationship between these variables involves numerous factors and confounding variables; as such, covariates, such as controlling for gender or levels of extroversion, may significantly affect the results.

Expansions of Study Type and Scope

Furthermore, emerging research continues to indicate specific risk and protective factors for individuals attending university. Availability of adult social support, those in their first year of college, those staying with relatives (Kılınç et al., 2019), physical inactivity, and studying the social sciences have each been identified as risk factors for the development of depression and loneliness (Diehl et al., 2018). More specifically, Kılınç et al. (2019) found that college students staying with relatives may display an increased risk of developing depression or heightened levels of loneliness; as such, future research may consider differentiating between residential and

commuting university students, as this may provide unique insight into ways physical distance shifts an individual's experience of community. Moreover, this may affect students' behaviors on social media; research might hypothesize that those without easily accessible relationships may utilize social media in more socially proactive ways.

Additionally, a majority of literature concerning the significant associations within our model has been comprised of correlational studies; as such, future experimental research would be a valuable next step in the pursuit of determining causality. Longitudinal research which engages participants over an extended period may also provide insight into potential fluctuations of each factor. It should also be noted that, within the past decade, there has been a rise in the use of online dating websites; in fact, the Pew Research Center (2019) stated that three in ten adults in the United States have reported using a dating website or application, versus 11% of adults in 2013. Interestingly, of those reporting, 45% have reported feeling more frustrated versus 28% who indicated feeling hopeful; in light of these statistics, future research which examines this unique form of social media use would provide substantial contributions to the research.

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APPENDIX A: Informed Consent

Title of the Project: TRACING RELATIONS BETWEEN ATTACHMENT, SOCIAL MEDIA USE, SELF-ESTEEM, LONELINESS, AND DEPRESSION: A MEDIATION MODEL
Principal Investigator: Meagan Sabo, Liberty University

You are invited to participate in a research study that aims to gain a better understanding of the relationship between attachment style, social media use, its effects on self-esteem and loneliness, and each of their potential roles in the development of depression. Please take time to read this entire form before deciding whether to take part in this research project.

In order to participate, you must be 18 years of age or older and an undergraduate residential Psychology student at Liberty University. Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships. If you choose to withdraw from the study, please exit the survey and close your browser, and do not submit your study materials. Your responses will not be recorded or included in the study.

If you agree to be in this study, I am requesting that you to do the following:
Respond to a series of five scales designed to measure: attachment style, self-esteem, loneliness, depression levels, and social media use. Provide basic demographic information: gender, year, age range. This is estimated to take a total of 25 minutes.

Compensation
Participants will be compensated with Psychology activity credit upon completion of this survey.

Risks and Benefits
Participants should not expect to receive a direct benefit from taking part in this study. Benefits to society include contribution to current research literature.

Confidentiality
The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life. The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records. Participants responses will be anonymous. The collected data will be stored on a password-locked computer and may be used for future presentations.

Contact Information
The researcher conducting this study is Meagan Sabo. If you have questions later, you are encouraged to contact her at mpsabo@liberty.edu. You may also contact the researcher's faculty sponsor, Brian Kelley, at bkelley12@liberty.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu

Your Consent

By continuing on to the survey, you are indicating that you have read and understood the above information and that you consent to participate in this study.

APPENDIX B: Data Collection Instruments

Experiences in Close Relationships – Relational Structures Scale (ECR_RS)

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The Experiences in Close Relationships-Relationship Structures Questionnaire: A Method for Assessing Attachment Orientations Across Relationships. *Psychological Assessment, 23*(3), 615–625. https://doi.org/10.1037/a0022898

http://labs.psychology.illinois.edu/~rcfraley/measures/relstructures.htm

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Rosenberg Self-Esteem Scale (RSE)

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

https://fetzer.org/sites/default/files/images/stories/pdf/selfmeasures/Self_Measures_for_Self-Esteem_ROSENBERG_SELF-ESTEEM.pdf

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Depression, Anxiety, Stress Scale (DASS_21)

Lovibond, S. H., & Lovibond, P. F. (1995). The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. *Behaviour Research and Therapy, 33*(3), 335-343. https://doi.org/10.1016/0005-7967(94)00075-U

http://www2.psy.unsw.edu.au/dass/

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ULS8 Loneliness Scale (ULS-8)

Hays, R. D., & DiMatteo, M. R. (1987). A short-form measure of loneliness. *Journal of Personality Assessment, 51*(1), 69-81. https://doi.org/10.1207/s15327752jpa5101_6

https://www.tandfonline.com/doi/abs/10.1207/s15327752jpa5101_6

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Social Media Usage

1. On average, about how many hours do you spend interacting with social media?

2. Select all of the social media platforms you have used in the last six months:
   Facebook
   Twitter
   Google +
   YouTube
   LinkedIn
   Instagram
   Pinterest
   Tumblr
   Snapchat
   Reddit
   Other