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# Constant connection: College students' smartphones attachment and close relationship attachments across domains

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Constant Connection: College Students' Smartphones Attachment  
and Close Relationship Attachments across Domains

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A Research Project submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

Partial Fulfillment of the Requirements

for the degree of

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## Abstract

This study aims to conceptualize the way individuals, more notably college students and emerging adults, use their smartphones, applying an attachment framework. Recently, research has shifted from using vocabulary akin to addiction, and researchers are beginning to see similarities and consistencies in how individuals relate to their phones and how attachment was originally conceptualized in the infant-mother relationship. Moreover, research is moving away from considering attachment as categorical, and is instead considering it continuous, and as varying in domains from individual to individual. This research used a new assessment tool (the YAPS) to assess college students' attachment to phones, their important relationship attachments (ECR-RS) and their perceived relationship quality (PRQC). Research found that though many important relationship domains, notably parents, were related to smartphone attachment; however, there was no relationship between smartphone attachment and perceived relationship quality or its constructs. Future research should aim to validate the biological attachment between humans and smartphones, as well as tease out any impact smartphones and our attachments to them may have on relationships and our perception and threshold of intimacy.

Constantly Connected: College Students' Smartphones Attachment and Close  
Relationship Attachments across Domains

**Introduction**

**Background of Study**

Smartphones have become a pervasive part of everyday life, specifically for college students and young adults. Over the past ten to fifteen years, the development and widespread use of smartphones has impacted and shaped the way we communicate, work, learn, and play. Smartphones are now widespread hand-held devices that are found in society, providing users with many more functions than previous versions of mobile phones and telephones. They combine the ability to constantly be connected with others and the outside world as a whole through the internet, social media, and various means of messengers. It was reported that 92% of adults ages 18-34 in the United States own a smartphone (Poushter, 2016). These devices provide us with everyday tools such as clocks, maps, cameras, and phones, as well as provide leisure, social networks, and supplementary functions spanning across multiple contexts. The slogan coined by Apple in regards to their iPhone ("There's an app for that") quite accurately encompasses the vast span of functions smartphones provide us, just about anything we could possibly need or want on a phone. They are becoming commonplace for office and classroom functions as well as social connections.

Smartphone technology is relatively new; therefore, there has been limited research on its impact on various dimensions of functioning. Considering the growing body of literature on smartphone usage in light of attachment theory, one might wonder whether or not a person has the capacity for an attachment relationship with a

smartphone. The widespread dependence on smartphones may suggest that it is a normative phenomenon with a biological basis (Konok, Gigler, Bereczky, & Miklósi, 2016). While previous literature has used terminology akin to addiction when discussing relationship with smartphones, some emerging research suggests the potential for an attachment relationship between humans and smartphones (Konok et al., 2016; Trub & Barbot, 2016; Thorsteinsson & Page, 2014), as humans have been found to form compensatory attachments to non-human objects since attachment research began (Bowlby, 1969; Hazan & Shafer, 1994).

College is a challenging transitional time in the life of many young people, as they are faced with many new challenges, responsibilities, and dynamics. Strong and secure parent and peer attachments can help college students adjust adaptively and thrive (Kenny & Rice, 1995; Laible et al., 2000). Moreover, many college students are considered “digital natives,” a term coined by Prensky (2001) encompassing individuals brought up during the widespread adoption of digital technology. Smartphone technology was introduced relatively early in their development, and they are the first generation to grow up using this technology. It is important to consider the unique impact smartphones may have on their social and emotional functioning, as this is a variable did not exist at this time in generations prior.

Given my knowledge of the developmental period of emerging adulthood, the widespread use and reliance on smartphones, and the limited research on the topic of smartphones as it relates to counseling, I explore college students' relationships with their smartphones through a lens of attachment. Human beings across the lifespan are innately social creatures. The introduction of the smartphone has changed how we socialize,



communicate, and new ways of conceptualizing ourselves. Emerging research has started to explore the possibility that we develop an attachment bond with our phones, and suggests that use and motivation for use may vary, depending on various dimensions of attachment. While smartphone use can become problematic at some point, its normative experience makes me think that describing it as an addiction or disorder may be too simplistic. Additionally, certain features of a smartphone can provide us with connection and communication to current attachment figures in our lives, making a smartphone an emerging key component in not only our relationship with it, but our relationship with all other attachment figures.

### **Statement of Purpose and Research Questions**

The purpose of this Ed.S. research is to examine the relationship between college students' attachment to their smartphone and their attachment across other important domains found in emerging adulthood (parents, peers, and romantic partner) as well as general attachment. This correlational research was guided by two research questions: 1) Is there a relationship between smartphone usage and attachment among college students?; and 2) Does attachment to smartphones impact relationship satisfaction? Additionally, looks at any differences among various groups in the study. The review of the literature reveals that there are many unanswered questions with regard to the impact of smartphones on the social and emotional development of emerging adults. This Ed.S. research is a modest contribution to the field's overall understanding of the intersection between healthy human development and modern technology.

## Literature Review

### College Students

College is a transitional time for people in many ways. Developmentally, college students are often caught at a crossroad that impacts them physically, mentally, and socially. Erik Erikson (1950) proposed that each stage of development had its own developmental task, with college coming at a crossroads between adolescence and early adulthood (Erikson, 1997). Failure to successfully complete a task at each stage results in a reduced ability to complete later stages, creating interpersonal and intrapersonal dysfunction and an unhealthy sense of self. However, unfinished stages can be resolved successfully at a later time. Adolescence (ages 12-18) poses the task of “identity vs. role confusion.” In this stage, people are transitioning between childhood and adulthood, become more independent from parents, and search for sense of self and personal identity. The peer group increases in importance, as adolescents explore relationships outside the family. Young adulthood (ages 19-40) has the developmental task of “intimacy vs. isolation.” In this stage, relationships leading to longer-term commitments with someone other than a family member are explored. Successful completion of this stage can result in happy relationships and a sense of commitment, safety, and care within a relationship. Avoiding intimacy, fearing commitment and relationships can lead to isolation, loneliness, and sometimes depression (Erikson 1997/1950).

Additionally, Jeffrey Arnett proposed a new stage of “emerging adulthood,” defined as an age of identity, instability, self-focus, feeling in between, and possibilities (Arnett, 2000), encompassing much of college. He presented this concept for the developmental period from the late teens through the twenties, with a focus on ages 18-

25. This theory came from Erikson's acknowledgment that a "prolonged adolescence" often occurs in industrial societies where "psychosocial moratorium" is allowed for (Erikson, 1968), Daniel Levinson's (1978) idea of a "novice phase" during ages 18-33, and Kenneth Keniston's (1971) "theory of youth" (Arnett, 2000). Erikson (1968) proposed his stage of adolescence could be prolonged in many industrial societies, where adult responsibilities and commitments are delayed, while the role experimentation that began in adolescence continues and even intensifies (Arnett, 2000; Erikson, 1968). Emerging adulthood is a considered distinct period demographically, subjectively, and in terms of identity explorations, and exists only in cultures that allow for a prolonged period of independent role exploration during late teens and twenties (Arnett, 2000).

**Relationships in college.** College, being the developmental crossroads it is, is also a time where many different domains of relationships play important roles. In adolescence, peer relationships begin to increase in importance and people often move away from their family being the primary source of socialization, to peers and friends (Erikson, 1997/1950). While many people remain reliant on their parental attachment figures, college is often the first time they are not in constant proximity to their parental attachment figures. Smartphones can provide a way for college students to maintain contact with their primary caregivers in a time when both peer and romantic relationships are prominent (Reed et al., 2015; Bartholomew & Horowitz, 1991; Hazan & Shafer, 1994; Arnsden & Greenberg, 1987). Once people reach emerging adulthood or young adulthood, the developmental task of intimacy vs. isolation occurs and people begin to explore intimate, romantic relationships. College is the time when people may be relying on peer or parental figures for attachment needs, but may also be exploring romantic

relationships as a form of intimacy and connection. Additionally, more than one of these relationship domains (if not all) may be present and maintain some level of importance throughout college.

**Smartphone use in college students.** Smartphones help young adults and college students maintain this sense of proximity to parental figures while the importance of peer and romantic relationships increases in their life (Lepp, Li, & Barley, 2016; Reed et al., 2015). This is a time when people are going through a new time of separation and individuation, renegotiating relationships with parents, forming intimate relationships outside the home, and forming their own identity. Smartphones can make this process smoother, reducing anxieties for both college students and their parents (Cundy, 2015). A study found that college students perceive their mobile phone as an important tool for overcoming geographical distance and for keeping in contact with family, as well as found evidence that communicating with others using their phones has been found to reduce stress (Chen & Katz, 2009; Fullwood et al., 2017).

Just as smartphones can provide positives for college students and their relationships, they also open the door for potential drawbacks. The access to constant connection and tools to monitor others may give rise to “helicopter parents,” who themselves have anxieties and fears about their child’s newfound independence and relationships. This may make individuation and exploration for emerging adults, specifically college age students, more difficult and contribute to their own anxieties (Cundy, 2015). The pervasiveness and lack of effort it takes to share and search for personal information on social media, combined with the increasing social expectation of instantaneous and constant communication, contribute to dating partners blurring digital

boundaries (Reed et al., 2015). This may put specifically college students at risk for several types of problematic digital dating behaviors (Bennett et al., 2011; Melander, 2010; Reed, Tolman, & Ward, in press; Zweig, Dank, Yahner, & Lachman, 2013) which can include monitoring someone's activities and location, controlling to whom they talk and their relationships with friends, name-calling, threats and hostility, spreading embarrassing and sexual photos with others, and pressuring for sexual behavior (Bennett et al., 2011; Reed et al., 2015).

Currently "digital natives," who have grown up in an age where digital technologies predominate their everyday lives, comprise the entire population of traditionally-aged college students. While this new and useful technology has infiltrated what seems like every aspect of our lives, its novelty makes it relatively underresearched. College students today in 2018 may even be considered the guinea pigs of how this technology affects our lives, notably, our social relationships and connections to others. Conversely, college students have grown up and developed with this new technology, while their parents had to learn it later in life. This difference in knowledge and purpose for using smartphones may contribute to miscommunications, and the relatively underresearched aspect of technology leaves the understanding of many relationships triangulated by smartphones to trial and error. One study on college students and their relationships with mobile phones noted "the greatest irony of the wired world may be an undermining of emotional security for some vulnerable students who turn to it for greater security" (Klein, 2013, p. 154), suggesting that college students may have different motivations and underlying purposes for engaging in certain smartphone behaviors. It

also suggests that there may be attachment related purposes phones serve for certain individuals.

### **Modern Smartphone Use**

Some degree of dependence on mobile phones for aspects of everyday life (such as school, work, and daily tasks) is becoming increasingly prevalent. In the United States, it was reported that on average people use their smartphones 3.3 hours a day, with young adults (age 18-24) using them 5.2 hours a day (Salesforce Marketing Cloud, 2014). Most smartphone users claim to carry it everywhere and never turn it off (Poushter, 2016). Many Americans would describe their phone as feeling like a leash (30%), while also describing themselves as being unable to live without it (46%) (Smith 2015).

Smartphones can be used for personal and leisure, including apps related to text messaging, voice calls, email, music, games, videos, movies, T.V., social media, and more. However, the use of the smartphone is not limited to leisure; smartphone users are relying on their mobile devices for a wide range of life events. Smith (2015) reported that 62% of smartphone owners have used their phone in the past year to look up information about a health condition, 57% have used their phone to do online banking, 44% have used their phone to look up real estate listings or other information about a place to live, 43% have gathered information about a job, 40% looked up government services or information, 30% took a class or get educational content, and 18% submitted a job application. Individuals with lower income, those with lower degrees in education, non-whites, and younger adults are especially likely to be reliant on their smartphones for tasks such as these. This group, or the “smartphone dependent,” is less likely to have other means to utilize internet resources or voice calling (Smith, 2015). Text messaging

was found to be the largest used basic feature or app, with 97% of smartphone owners used text messaging at least once over the course of the study. It was also the feature that was used most frequently, as the participants reported using text messaging in the past hour in an average of seven surveys (out of a maximum total of 14 across the one-week study period) (Smith, 2015).

There are many practical benefits of smartphones that are increasing not only every day convenience, but are creating an utter necessity. Aside from functional tools (calendar, camera, flashlight, access to work materials from anywhere), there are a variety of social and emotional benefits resulting from the increased convenience and accessibility allowed by smartphones, including: enhanced romantic feelings (Schade, Sanberg, Bean, Busby, & Coyne, 2013; Jin & Peña, 2010), increased interactions and collaboration in learning environments (Gikas & Grant, 2013), greater medical care compliance (Luxton, McCann, Bush, Mishkind, & Reger, 2011), and access to use of apps that promote healthy behaviors and practices (Trub & Barbot, 2016; West et al., 2012). Research has found the ability to personalize phones is a key mechanism in the relationship users have with their phone (Fullwood et al., 2017; Tian et al., 2009; Venta et al., 2008). The smartphone is seen as an extension of the self, reflecting many personal functions and storing personal memories of the user. Along with expression of personal identity, there is evidence to suggest that phones express aspects of social identities, or the extent to which we define ourselves by our membership to specific groups (Walsh, White, and Young, 2009).

While the technology provided by smartphones is largely thought to be positive, the technology can be vehicles for impulsive, dangerous behaviors. Sexting and cyber-

bullying are widespread among young people and are related to a range of negative mental and physical health outcomes (Hinduja & Patchin, 2010; Kowalski, Giumetti, Schroeder, & Lattanner, 2014). Also, anxiety or fear in response to being separated from one's phone is an increasingly common phenomenon (Trub & Barbot, 2016; Bragazzi & Del Puente, 2014). Other dangerous behaviors have been introduced due to the smartphone, such as texting while driving or walking, (Feldman et al. 2011; Panek et al. 2015). Texting while one is engaged in other tasks can cause “cognitive overload,” which negatively impacts concentration, focus, and performance (Trub & Starks, 2017; Ellis et al. 2010; Greenfield 2009; Lister-Landman et al. 2015). It increases the risk of car accidents by 8–23% (National Safety Council 2015), and an equally increased probability of cell phone-related injuries for those who text while walking. Between 2005 and 2010 (in the midst of time the iPhone was introduced and increased in popularity), there was a sixfold increase in phone-related pedestrian injuries resulting in visits to the emergency room (Nasar & Troyer 2013). In addition to its negative effects on performance, a number of studies suggest that increased smartphone use may be an attempt to avoid or escape unpleasant internal and external conditions (Hoffner et al. 2015; Leung 2008). Moreover, people who use smartphones and texting for emotion regulation have been associated with greater likelihood to text while driving (Feldman et al., 2011).

As one can see, and probably knows firsthand, smartphones serve countless important purposes. However, one key function found across a number of studies are their communicational capacity (Fullwood et al., 2017). Before phones came equipped with internet, Armsden and Greenberg (1987) proposed that telephones (“landline” phones without internet) can successfully strengthen and sustain significant social



relationships during college. Today, the modern telephone comes equipped with internet and a multiarray of functions, further changing how we communicate and connect. While close relationships previously were primarily established and maintained with face-to-face communication, smartphones are now crucial for the foundation, maintenance, and strengthening of relationships (Reed, Tolman, & Safyer, 2015). The “augmentation hypothesis” (Ahn & Shin, 2013) postulates that smartphones increase feelings of belonging and relatedness by supplementing traditional methods of forming and sustaining social relationships. This is supported by Lepp, Li, and Barkley (2016), who found smartphone users with both high and low rates of use recognize strengthening and maintaining social relationships as their main motivation for use. Smartphones have been found to provide the impression of constantly connectivity, leading to decreased perceived loneliness and an increase perception of belonging (Konok et al., 2016). Research has shown that the use of cell phones and texting was positively associated with relationship satisfaction and intimacy (Reed et al., 2015; Morey, Gentzler, Creasy, Oberhauser, & Westerman, 2013), and that texting helps adolescents feel close to romantic partners (Reed et al., 2015; Pettigrew, 2009). Instant messaging (a function of smartphones) was also found to be negatively related to loneliness (Regina, van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008). There is some research that suggests calling and texting enhances existing social relationships (Lepp et al., 2016; Blais, Craig, Pepler, & Connolly, 2008; Jin & Park, 2010; Wei & Lo, 2006). Additionally, research has found that internet communication may increase feelings of family connectedness (Lepp et al., 2016; Synder, Li, O’Brian, & Howard, 2015; Williams & Merten, 2011). Uses and Gratifications theory postulates individuals make certain

media choices to fulfill personal needs (Katz, Blumler, & Gurevitch, 1974). Moreover, satisfactorily gratifying these needs predicts continued engagement with these media options (Fullwood et al., 2017; Katz et al., 1974). Further research has revealed that key motivations for Smartphone use relate to helping users to relax, escape problems, and alleviate negative mood and boredom (Pew Research Center, 2015). This suggests that individuals have different motives for using phones, and how they use them can point to a need being met.

However, many social challenges come with the constant exposure and reliance on smartphones. The appeal of texting previously described (Smith, 2015) has been explained at least in part by the diminishing inhibitions and anxieties (Broadus & Dickson-Gomez, 2013; Kelly et al., 2012), as well as giving the perception of increased control over the outcome of text-based communication (Kelly et al., 2012; Mahatanankoon & O'Sullivan 2008), which could lead to texting in states of decreased awareness or poorer judgment. The displacement theory suggests smartphones take away from face to face interactions and therefore diminish social relationships (Ahn & Shin, 2013). The lack of real-time face-to-face interaction in texting reduces physical cues and produces less synchronicity (Kelly et al., 2012). This has been supported by Lepp et al. (2016) who found that problematic cell phone use is negatively related to parent and peer attachment. Likewise, Snyder et al. (2015) also found that maladaptive internet use can interrupt family time, leading to decrease feelings of connection. People feel constantly connected with others which can lead to feelings of stress because their perception of the phone as a source of interference in romantic relationships. This produces lower relationship satisfaction and feeling more depressed (Trub & Barbot, 2016; McDaniel &

Coyne, 2014). A study of college students found that Facebook uniquely contributed to feelings of jealousy in romantic relationships (Muise, Christofides, & Desmarais, 2009) and smartphone specifically were a source of conflict for young couples. They found it difficult to balance being constantly connected to each other by their smartphone with establishing and maintaining healthy boundaries and rules for communication (Duran, Kelly, & Rotaru, 2011). Similarly, in platonic relationships, Turkle (2011a) suggested technology provide us with the “illusion of companionship without the demands of friendship” (p. 1). Simply the presence of a phone has been found to hinder interpersonal trust in friendships (Trub & Barbot, 2016; Przybylski & Weinstein, 2012). The access to constant, global communication lacking boundaries has been suggested to shape our social connectivity to be constantly connected, but in a more superficial, less intimate way (Cundy, 2015)

### **Attachment Theory**

Attachment theory is a lifespan developmental theory. It is our perception of security about others' reliability and ability to respond in times of need (Mikulincer, Florian, Cowan, & Cowan, 2002). It is thought to be an important factor in emotion regulation, development of models about others in the world, and engagement and connection with others. Evolutionarily, it serves as a way to increase chances of species survival through protection (Bowlby, 1969.1979). Bowlby claimed many animal species are born with an innate attachment system to motivate them to seek and maintain proximity to significant others. This provides them with protection and access to resources. Humans also are born with instincts to gain proximity to an adult for both protection and care, and this instinct to reach out to other in time of need persists

throughout the lifetime (Cundy, 2015; Bowlby, 1969). Going beyond basic survival, interactions with available and responsive attachment figures provide a sense of attachment security in the humans of all ages, as well as optimal psychological and interpersonal health and functioning (Cundy, 2015).

Ainsworth (1985) described the attachment bond as serving the function of maintaining proximity to the caregiver, using the caregiver as a secure base to explore, viewing the caregiver as providing a safe haven, and experiencing separation anxiety when caregiver is removed. Attachment is a balance between connection and spatial and emotional distance. Humans need attachment figures to be available and at a comfortable distance in times of need in order to feel safe and connected. Based on the qualities of the caregiver-infant relationship, distinct attachment patterns emerge that shape the infant's expectations of close relationships (Ainsworth, Blehar, Waters, & Wall, 1978).

When an attachment figure is not reliably available and supportive, a child may enact a defensive strategy to developing secondary attachment strategies. These strategies may result in insecure attachment styles, or they may attain security by obtaining alternate attachment figures, developing a hierarchy of important attachment figures (Hazan & Shaver, 1994). The two primary domains in describing the manifestation of attachment are avoidance and anxiety (Mikulincer et al., 2002; Bartholomew & Horowitz, 1991). Attachment anxiety is the degree to which one worries an attachment figure will not be available or respond in a time of need (Bartholomew & Horowitz, 1991). Attachment avoidance is the degree one distrusts the attachment figure's willingness or ability to connect to them and care for them in times of need and stress. Avoidantly attached people will remain detached or disengage from others due to and

strive to maintain a level of emotional distance (Bartholomew & Horowitz, 1991).

Generally, those who score higher on avoidance and anxiety are less resilient, have more unrealistic expectations of others, have a more negative perception of themselves, and are less sensitive to their partner's needs, compared with those who score lower in said dimensions (Mikulincer et al., 2002). Ainsworth (1985) also noted that when children do not develop a secure attachment with the parent, they may find other attachment figures to fulfill their needs.

**Adult attachment.** While originally conceptualized as a child-caregiver system (Bowlby, 1969, Ainsworth, 1985), attachment systems were found to play an important role in other important relationships in humans such as romantic relationships (Hazan & Shaver, 1987) and friendships (Armsden & Greenberg, 1987). Even Bowlby (1982) acknowledged human attachments play an important role in our relationships “from the cradle to the grave” (p. 208). However, research shows that the conceptualizing adult attachment can be more complex than in childhood, often involving relational experiences from the family of origin, peer relationships, relationship-specific dynamics, and potential genetic predispositions (Fraley, Roisman, Booth-LaForce, Owen, & Holland, 2013; Gillath, Shaver, Baek, & Chun, 2008). As humans grow, so does their tolerance for space and distance from attachment figures, with attachment and connection seeking behaviors becoming more complex (Cundy, 2015; Fraley et al., 2015). It has been suggested that these varying experiences with primary caregivers during infancy lead to the creation of an internal self-concept and beliefs about others, which become the way in which an individual interprets intimacy throughout the lifespan (Bowlby, 1979/1980). Their internal working model provides a connection from the relationship

and connection patterns from infancy to similar expectations and behaviors relationships across context.

However, taking into account an alternative assumption that individual differences in adult interpersonal relationships are continuous, it seems natural to assume that multiple interpersonal factors play a role in shaping those individual differences (Fraley et al, 2015). Early research on adult attachment assumed individual attachments were categorical traits that were consistent across context (e.g., secure, avoidant, anxious–ambivalent). Recently, however, researchers have been transitioning toward a dimensional framework. This shift was driven by research, suggesting that people vary continuously (and not categorically) in security (Fraley & Waller, 1998). Researchers have increasingly come to study attachment in relationship-specific domains, such as romantic, peer, and parental relationships (Fraley et al., 2011; Fraley & Heffernan, 2013; Klohnen, Weller, Luo, & Choe, 2005; Overall, Fletcher, & Friesen, 2003; Sibley & Overall, 2008). Research has implied there is within-person variation in attachment working models. While some people may be secure across different relationship domains and contexts (e.g. parents, friends, romantic), others may have more differentiation (Fraley et al., 2011; Donahue, Robins, Roberts, & John, 1993). For example, a person may have been invalidated and rejected by their parents, but have a secure and supportive network of close friends. Additionally, while someone may have a cold and distant set of parents, their romantic partner may be responsive and warm. Moreover, there is potential for different conceptualization between ones mother and father based on different experiences and expectations of the two. It is possible that the conceptualization and

working models one has for these different kinds of relationships will not be identical and vary from person to person (Fraley et al., 2011/2015).

**Peer attachment.** Armsden and Greenberg (1987) defined attachment as an enduring and significant affectional bond between parent or close peer. It was originally thought that attachment with primary caregivers is maintained throughout the lifetime, and these primary attachments influenced other relationships (Bowlby, 1969; Ainsworth, 1985). However, as adolescents mature into independent adults, physical proximity to parental attachment figures becomes less important. Simultaneously, the importance of peer attachment increases. Peer attachment typically complements, rather than replaces, parental attachment (Armsden & Greenberg, 1987). The development of supplementary social relationships for support and connection to aid one in life's transitions and challenges makes peer attachment an important aspect of social health and personal growth. Developing and maintaining attachment bonds with parents and peers contributes to psychological adjustment, mental health, and well-being (Kenny & Rice, 1995; Laible, Carlo, & Raffaelli, 2000). Secure attachments have been found to be positively related to self-esteem and life satisfaction (Wilkinson, 2004) and negatively related to anxiety and depression (Papin & Roggmen, 1992).

**Romantic attachment.** Research on adult attachment among college students finds that attachment anxiety or avoidance influence romantic relationships. Insecure attachment styles are often associated with negative relationship characteristics and lower relationship satisfaction (Bartholomew & Horowitz, 1991). College students with an avoidant attachment tendency may try to ease anxiety about intimacy by creating distance and avoiding closeness (Gentzler & Kerns, 2004), as well as report offering romantic

partners less emotional support (Collins & Feeney, 2000; Feeney & Collins, 2001).

Another study researching dating in college found anxiously attached partners intensified conflicts more often, perceived conflicts to be more severe, and experienced greater distress from relationship conflict (Campbell, Simpson, Boldry, & Kashy, 2005). This suggests that insecure attachment styles are associated with negative relationship characteristics and experiences.

**Object attachment.** Additionally, it was proposed by Bowlby (1969), Harlow (1961) and Hazan and Shaver (1994) that humans could form attachments to material objects. Numerous researchers have since recognized emotional attachments between individuals and various nonhuman objects (Thorsteinsson & Page, 2014). Harlow's (1961) groundbreaking research demonstrated that we, as primates, can develop attachments to inanimate objects, particularly when those objects can provide support. Inanimate objects can be used as a secure base in children (Bowlby, 1969). Although inanimate objects lack human characteristics, their permanence gives them an advantage (Keefer et al., 2012). While there is limited research on its relationship to smartphones, it has been shown that humans display proximity-seeking behaviors with their smartphones akin to the way they do with primary attachment figures. When separated from their phones, experiencing anxiety and fear is common (Trub & Barbot, 2016). Phones are perceived as offering a safer and more consistent secure base than close relationships. Attachment to objects was found by Keefer et al. (2012) to increase when they felt others reliability was threatened, mediated by an increase in attachment anxiety. Additionally, participants who were primed to feel uncertain about their relationships displayed increased separation anxiety when a valued object of theirs was removed. They showed



motivation to reunite with this object regardless of its perceived importance for facilitating relationships.

### **Attachment to Smartphones**

The amount of time spent on smartphones and their function of facilitating attachment relationships suggest they could serve as an attachment object. While some authors conceptualize cell phone use using an addiction model, there is no consensus on terminology (Fullwood, Quinn, Kaye, & Redding, 2017; Konok et al., 2016; Trub & Barbot, 2016). Across cultures, the widespread dependence on some degree to one's cellphone suggests that the relationship between humans and smartphones is normative and may serve a biological function. Conceptualizing smartphone use in the realm of attachment, as opposed to addiction, helps reduce pathologizing behaviors that are becoming normal across society (Trub & Barbot, 2016). Vincent (2006) claimed that our ability to personalize phones lead to attachment to phones. He claimed it did not just enhance social lives, but exemplifies them. Attachment to smartphones is proposed to be the consequence of the neuronal circuits of the attachment system (Konok et al., 2016; Parkinson & Wheatley, 2015). This may be the reason why our relationship with smartphones has similar constrictions and features as infant-mother attachment (e.g. proximity-seeking, separation stress). Fullwood et al. (2017) showed individuals may form attachments to specific features and affordances on smartphones, gives individuals the emotions that people may give them; anger, joy, excitement, sadness, and feelings of anxiety are shown when people think of being separated with their phones. Konok et al (2016) demonstrated that young people usually try to maintain proximity to their phone, reporting distress when they are separated from it (the two main indicators of

attachment). For anxiously attached people, the most important features of the phone have the relationship-facilitating functions (being constantly connected to others). This has been proposed as the result of their constant fear of being abandoned or rejected. Attachment to objects can be considered compensatory when primary attachment figures are not available (Bowlby, 1969). A perceived unreliability of primary attachment figures triggers this compensatory attachment to objects in general as well as phones. When primed with uncertainty about relationships, participants reported increased attachment to belongings and increased desire to reunite with them (Keefer et al., 2012). The smartphone may serve to compensate for other attachment insecurity, providing a sense of security and substituting a person's social connections; those with a higher attachment anxiety show an increase attachment to objects (Keefer et al., 2012; Konok et al., 2016). However, this compensatory attachment to the phone is independent from its relationship-facilitating functions, humans' need for contact, and the preference of using smartphone communication in uncomfortable social situations. (Fullwood et al., 2017; Konok et al., 2016). Adolescents with depressive symptoms are increasingly likely to turn to electronic objects, such as cell phones and computers, to establish felt security (Erkolahti & Nyström, 2009). Billieux (2012) also suggested that attachment anxiety can contribute to excessive mobile phone use.

Konok et al. (2016) and Trub and Barbot (2016) were the first to measure attachment to smartphones. Konok et al. (2016) found that in a Hungarian population, people show attachment towards their smartphones and anxiously attached individuals need more contact; however, they do not show more proximity seeking and separation stress. This suggests they may not use a phone as a compensatory object any more than

others. Trub and Barbot (2016) suggested mobile phone attachment contained a paradox of providing a refuge as well as a burden. Hertlein & Twist (2018) proposed that the ways people use technology in intimate relationships may contribute to developing an attachment with the technology itself, and applied current attachment style inventories to measuring smartphone attachment style (secure, preoccupied, dismissing). However, it has also been proposed that due to the complete controllability of smartphones and other objects, the attachment styles (secure, avoidant, anxious) described in case of interpersonal (Bowlby, 1969) and interspecies (e.g. human-dog: Zilcha-Mano, Mikulincer, & Shaver, 2011) attachment irrelevant. Trub and Barbot (2016) suggested that the attachment may be to the functions of the phone, not the device itself. In support of this, Kim and Jun (2013) found from a Korean consumer survey that the more smartphone users feel self-connected or socially connected with mobile applications, the stronger they formed attachment with the applications. It also showed that when users have stronger attachments with applications, they display also higher self-efficacy and higher general life satisfaction. Konok et al (2016) suggested that despite the differences between object attachment and interpersonal, we assume that viewing smartphone behavior in an attachment lens is useful not only in extreme cases (e.g. problematic use) but also normal behavior that can be discussed and studied.

### **Smartphones and Multidomain Attachment**

Since smartphone technology is relatively new, there is limited research in the field of smartphones and how it related to mental and social health and functioning. It has been suggested that smartphone use, and more specifically social media use, varies with attachment style. Ribak (2009) suggested smartphones are used as a tool of negotiating

between dependence and independence. Meaning, anxiously attached people may tend to value the dependence smartphones offer, while largely for secure and avoidant individuals they may promote feelings of “overdependence and entrapment.” According to Turkle (2008), because they allow us access to the internet, smartphones give individuals an opportunity to communicate whenever we have a feeling. This may promote inability to reflect on emotions. As people with insecure attachment tendencies have difficulty with self-reflection (Fonagy & Target, 1997), reliance on outside validation of inner circumstances through mobile communication may increase dependence on others; therefore, increasing attachment anxiety. She also pointed out that smartphones allowing us to be constantly connected, introduces the new concept of “anxieties of disconnection” (Turkle, 2011a). The pressure to be always on and connected, almost on call, introduces new insecurities. Cundy (2015) suggested in her literature review that both anxious and avoidant people would use smartphone technology, but for their own distinct, maladaptive purposes. Konok et al. (2016) also suggested that those with different attachment styles use the phone with different motivations, but the amount of time they spend on it is almost the same. It was also suggested that frequency of use is not a good indicator of the user's attachment style, while other features like the need for contact through the phone are more accurate. Anxiously attached people are thought to need more contact through the phone, and perhaps because of this they use the phone more for smartphone specific functions such as social media and instant chatting, but not for traditional mobile phone functions like calling or SMS. Oldmeadow, Quinn, and Kowert (2013) found Facebook to be directly associated with adult attachment and is most often used by people who are anxiously

attached when they are lonely. In another study of attachment styles and relationships among college students, secure attachment was associated with increased feelings of interpersonal competency, and increased Facebook use was associated with secure college students' ability to initiate social relationships (Jenkins-Guarnieri, Wright, & Johnson, 2013). This suggests that anxious college students are more likely to use social media than others, and may feel less competent about digital social relationships and comparing themselves to peers.

**Smartphones and parent attachment.** As emerging adults strive for independence and proximity to parental attachment figure(s) becomes less important for their development and functioning, these connections may be sustained through mediums of communication available on smartphones, mimicing proximity (Armsden & Greenberg, 1987; Wei & Lo, 2006). However, Cundy (2015) pointed out how anxious parents may use smartphones to constantly monitor, hinder independence, and limit privacy. Parents' own maladaptive attachment wounds may manifest, using the smartphone as a medium to transfer their anxieties on to their maturing child (Cundy, 2015). In a study done to look at how electronic communication with parents affects students' adjustment to college, Gentzler et al. (2011) found students who report more frequent phone conversations with parents had more satisfying, intimate, and supportive relationships with parents; however students who use a social-networking sites to communicate with their parents reported increased loneliness, anxious attachment, as well as conflict within their parental relationships.

**Smartphones and peer attachment.** Additional research has found adolescents' problematic internet use, computer gaming, and total screen time (television, video,

internet, and computer gaming) to be negatively related to both parental and peer attachment, along with additional measures of relationships (Blais et al., 2008; Lei & Wu, 2007; Rasmussen et al., 2015; Richards, McGee, Williams, Welch, & Hancox, 2010). Importantly, all of these behaviors (e.g., calling, texting, internet use, video, gaming, etc.) are now possible with a single smartphone, implying results would be similar. Lepp et al. (2016) found that mere smartphone use does not affect attachment to parents or peers in college; however, problematic use (e.g. checking it during class and/or while studying, allowing the it to delay and disrupt the going to sleep, and using the phone in the middle of the night) negative affects both parent and peer attachments.

**Smartphones and romantic attachment.** Cundy (2015) hypothesized that anxiously attached and avoidant people would both use smartphones differently: the anxious person to constantly feel close and connected to others, and the avoidant to maintain relationships remotely, at arm's length, and on their own terms. This is supported by Morey et al. (2013), who assessed cell social media and smartphone use in college students in romantic relationships. This study found that avoidant attachment was associated with decreased cell phone use and texting, and was positively associated with email use, proposing that avoidant individuals may favor digital communication requiring less intimacy than calling, texting, or face-to-face interaction. It also found that for those reporting high levels of attachment anxiety, greater frequency of Facebook use was associated with increased feelings of intimacy and closeness. Marshall et al. (2013) proved that attachment anxiety was positively associated with relationship jealousy in adults due to Facebook and monitoring a partner's Facebook profile. Avoidant attachment was negatively associated with both Facebook jealousy and

monitoring a partner's profile. Trust in the relationship partially mediated these associations. Research has only begun to consider whether smartphones alleviate or worsen the negative impacts of insecure attachment styles on college students' romantic relationships, although it suggests that social media exacerbates anxiously attached college students' tendency to engage in electronic intrusion for anxiety relief and avoidance (Reed et al., 2015). Therefore, this literature suggests that smartphone use within college students' dating relationships varies by attachment style.

**Smartphone attachment.** Trub and Barbot (2016) found refuge subscale of attachment to phones had a strong positive relationship with ECR (Brennen, Clark, and Shaver, 1998) anxiety. This supports general insecurity about close relationships led to an increase in attachment anxiety, which consequently triggered separation anxiety towards one's cell phone when it was removed (Keefer et al., 2012). Research has generally supported that characteristics of anxious attachment (e.g. fear of abandonment) manifest online (Marshall, 2012; Drouin & Tobin, 2014). Romantic relationships that rely on texting have also been related to higher levels of attachment anxiety and decreased relationship satisfaction (Luo, 2014). Additionally, Trub and Barbot (2016) found the phone attachment subscale of burden to be related to general attachment avoidance using the ECR (Brennen et al., 1998). This is consistent with the research findings that some people use avoidance of technology as their primary means for coping with its often-arduous demands (Jarvenpaa & Lang, 2005). Since smartphones can be viewed as an attachment object as well as a means to connect with attachment figures (Thorsteinsson & Page, 2014), people with higher attachment avoidance may be more likely to feel burdened by their smartphone. If people tend to feel intruded upon or overwhelmed in

certain close relationships and avoid relying on other people, it would make sense that they consistently would avoid objects (e.g. smartphones) that connect them to others (Trub & Barbot, 2016; Bartholomew & Horowitz, 1991). Research has found that high levels of attachment avoidance are associated with less texting and phone use (Morey et al., 2013) and fewer and shorter voice calls with romantic partners (Jin & Pena, 2010).

### **Hypothesis**

Currently smartphone technology, being so new and evolving so quickly, is a relatively underresearched topic as regards to college students, interpersonal relationships, and attachment. Additionally, it is just recently being suggested that humans can form attachments to the smartphones and technologies themselves (Fullwood et al., 2017; Konok et al., 2016; Trub & Barbot, 2016; Thorsteinsson & Page, 2014; Keefer et al., 2012). While some research has discussed these topics separately, there is not a lot of research discussing the specific domains of college student attachment (parents, peers, romantic) as it relates to smartphone attachment. To understand more about this subject matter, I looked for a correlation between attachment to smartphones and attachment to parents, peers, romantic partners, general attachment, and relationship quality.

Based on the research outlined above, I hypothesize that there would be a (1) positive correlation between anxious attachment across all Experience in Close Relationships-Relationship Structures scale (ECR-RS) domains (mother, father, romantic partner, close friends, and general) and the degree to which people seek refuge in their phones, (2) positive correlation between avoidant attachment across all domains in the ECR-RS and the degree to which people perceive their phones as being burdens, and (3)



a negative correlation between relationship quality (and its domains of intimacy and satisfaction) and the refuge and burden people find in their phones. Additionally, I predict that of the different attachment domains, maternal attachment and general attachment would have the strongest relationship with their attachment to phones.

## **Methodology**

### **Participants**

This study recruited research participants using the Psychology Research Pool at James Madison University. Participants consisted of 212 students attending James Madison University, who received class credit for completing research on James Madison University's SONA system. Originally, there were 255 participants, but the researcher did not include responses that took less than two minutes due to potential inaccuracy in participants responses. Additionally, the researcher disregarded responses in which participants responded the same across the survey (e.g. answered 4 for all or most responses). Participants ranged from ages 17 to 27 years, with the majority of students ranging from 18 to 21 years. See Table 1 below. The average age was 19 years old.

Table 1.  
*Frequency Distributions for Age*

	Frequency	Percent	Cumulative Percent
17	1	.5	.5
18	98	46.2	46.7
19	59	27.8	74.5
20	35	16.5	91.0
21	11	5.2	96.2
22	3	1.4	97.6
23	1	.5	98.1
25	2	.9	99.1
26	1	.5	99.5
27	1	.5	100.0
Total	212	100.0	

Participants included primarily cis-gendered college students (99.1%). There were 47 who identified as male, and 163 who identified as female. However, one student identified as gender non-conforming, and one student identified their gender was not listed, but did not indicate what they identified as. See Table 2 below.

Table 2.

*Frequency Distributions for Gender*

	Frequency	Percent	Cumulative Percent
Male	47	22.2	22.2
Female	163	76.9	99.1
Gender non-conforming	1	.5	99.5
Not Listed	1	.5	100.0
Total	212	100.0	

The participants in this study identified as primarily white: 85.8% identified as Caucasian, 4.2% Hispanic-white, 3.8% Asian, 2.4% black or African American, 1.9% Hispanic non-white, 0.5% American Indian or Alaska Native, and 1.4% other (“two or more,” “Caucasian/Filipino,” “Canadian and Korean”). So, the participants selecting the “other” option appeared to be of more than one race. See Table 3.

Table 3.

*Frequency Distributions for Race*

	Frequency	Percent	Cumulative Percent
White/Caucasian	182	85.8	85.8
Black or African American	5	2.4	88.2
Hispanic	4	1.9	90.1
Hispanic-White	9	4.2	94.3
American Indian or Alaska Native	1	.5	94.8
Asian	8	3.8	98.6
Other	3	1.4	100.0
Total	212	100.0	

Of the participant sample 50.2% were first year/freshmen, 31.0% were sophomores, 13.6% were juniors, 3.3% were seniors, 0.9% were graduate students, and 0.5% were professional students. See Table 4 below.

Table 4.  
*Frequency Distribution for Academic Year*

	Frequency	Percent	Cumulative Percent
First Year/Freshman	107	50.2	50.2
Sophomore	66	31.0	81.2
Junior	29	13.6	94.8
Senior	7	3.3	98.6
Graduate Student	2	.9	99.5
Professional Student	1	.5	100.0
Total	212	100.0	

The sample consisted of 60.1% single people, 38.7% in a relationship, 0.5% engaged, and 0.5% married. See Table 5.

Table 5.  
*Frequency Distribution for Relationship Status*

	Frequency	Percent	Cumulative Percent
Single	128	60.1	60.1
In a relationship	82	38.7	99.1
Engaged	1	.5	99.5
Married	1	.5	100.0
Total	212	100.0	

In regards to sexual orientation, the sample consistent primarily of heterosexual or straight students (95.3%). Additionally, .9% identified as gay, 1.4% as lesbian, 1.4% as bisexual, and 0.5% as not listed (wrote in "pansexual"). See Table 6 below.

Table 6.  
*Frequency Distribution for Sexual Orientation*

	Frequency	Percent	Cumulative Percent
Heterosexual or Straight	203	95.3	95.3
Gay	2	.9	96.2
Lesbian	3	1.4	97.7
Bisexual	3	1.4	99.5
Not listed	1	.5	100.0
Total	212	100.0	

Though the sample was not evenly distributed among some categories, the sample was relatively representative of the James Madison University population (not including academic year).

### **Procedure**

Demographic information was collected from all participants using the online Qualtrics survey software (See Appendix A). All participants were then administered the Experience in Close Relationships (Relationship Structures) (ECR-RS) questionnaire, Young Adult Attachment to Phone Scale (YAPS), and the Perceived Relationship Quality Component (PRQC). The results from these assessments were correlated in SPSS to determine the nature of the relationship between each construct.

### **Instruments**

**ECR-RS.** The first instrument used was the Relationship Structures Questionnaire developed by Fraley, Waller, and Brennan (2011). The Relationship Structures (ECR-RS) questionnaire is a self-report instrument to assess attachment patterns across a variety of close relationships. The same nine items are used to assess attachment styles with respect to five targets (mother, father, romantic partner, friends, and relationships in general). The items are written in a way that allows them to be used for a variety of interpersonal targets (not just romantic relationships) and for a variety of age groups. Recent research suggests that humans develop attachment patterns specific to different relationships. This leads people to have separate attachment models for relationships that are not always related to other important relationships in their lives (Fraley, Heffernan, & Vicary, 2011; Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996; LaGuardia, Ryan, Couchman, & Deci, 2000). The ECR-RS can be used to assess attachment-related anxiety and

avoidance in relationships with their mothers, fathers, romantic partners, and friends. Because a uniform set of items is used to conceptualize attachment in different domains, security across contexts can be contrasted and compared. The ECR-RS is designed to assess adult attachment in multiple contexts as well as a general attachment measure. The test-retest reliability (more than 30 days) of the individual scales were approximately .65 for the domain of romantic relationships (including individuals who broke up during the 30-day period) and .80 in the parental domain. Furthermore, lab research showed that the scales are implicitly related to various relational outcomes (relationship satisfaction, likelihood of experiencing a breakup, the perception of emotional expressions), as well as to each other (Fraley et al., 2011).

Two scores for each attachment domain are given, one for attachment-related avoidance and the other for attachment-related anxiety. The avoidance score is computed by obtaining the mean from items 1 - 6, reverse keying items 1, 2, 3, and 4. The anxiety score is computed by averaging items 7 - 9. These two scores are computed separately for each relationship domain (Fraley, 2011; See Appendix B). Previously, the ECR-RS averaged all four scores to obtain a general attachment score; however, recently researchers have been supplementing the ECR-RS with an item set that is designed to more explicitly examine people's general attachment styles. The literal averaging of the relationship-specific measures made it difficult to study how general and relationship-specific domains may impact one another. The instructions and nine items are similar to those used to assess relationship-specific attachment. They are scored in a similar way: The first 6 items measure avoidance with the first 4 items reverse keyed; the last 3 items test anxiety (Fraley, 2015) (See Appendix B).

**YAPS.** To test attachment to phones, the Young Adult Attachment to Phone Scale (YAPS) was used (Trub & Barbot, 2016). This scale was developed to accurately evaluate people's attachment to their phones. There had been a gap in research to develop a reliable and valid measure of phone use and misuse other than applying concepts of addiction to phone use (Billieux et al., 2015). Other researchers had measured attachment to phones, but not on a validated measure (Konok et al., 2016; Thorsteinsson et al., 2016; Keefer et al., 2012). The YAPS is the first multi-dimensional measure of smartphone attachment. It was developed using focus groups of young adults and content validity analysis from attachment experts. Then, a preliminary version was given to 955 participants ages 18-29. Factor analysis confirmed their 2-dimensional hypothesis structure of refuge and burden.

Refuge is characterized by heightened feelings of safety when a person is with their phone and feelings of anxiety or discomfort when separated from it. Refuge was found to be substantially correlated with attachment anxiety measured by the ECR ( $r=0.30^{**}$ ) as well as expert attachment researchers. The other subscale, Burden, is "characterized by feelings of relief upon separation from the phone and feeling that the phone's very presence detracts from ability to be present or enjoy a given moment" (Trub & Barbot, 2016; p. 670). The relationship between burden subscale and attachment avoidance was supported by the expert evaluation of these items as conceptually having a strong relationship with general attachment avoidance. However, correlation with attachment avoidance in general close relationships measured by the ECR, was weak ( $r=0.11^{**}$ ). This suggests that it may also be domain-specific, as proposed by Fraley et al. (2011) in the ECR-RS measurement of attachment (Trub & Barbot, 2016).

Their findings reflect strong psychometric properties of the YAPS, including reliability, internal consistency (Chronbach's  $\alpha = 0.82$ ), factorial validity, and criterion validity with relevant constructs (Trub & Barbot, 2016). When completing the items, the first three questions measure refuge and the second three measure burden (See Appendix C).

**PRQC.** In order to measure relationship satisfaction, the Perceived Relationship Quality Component (PRQC) Inventory was used. This research tested three models of how the relationship evaluation components of satisfaction, commitment, intimacy, trust, passion, and love to develop a subscale for each (Fletcher, Simpson, & Thomas, 2000). For the purpose of this research, only the relationship satisfaction and intimacy subscales were used, due to the other subscales' focus on romantic relationship specifically. In developing the scale, the inventory went through two repetitions with different small samples before the final scale items were decided upon. Three items measuring each component were developed using a thesaurus and a dictionary to produce items that had high face validity and were as close as possible to the true meaning of each construct. Fletcher et al. (2000) then had participants rate their intimate relationships on six previously developed scales that measured each construct as well as on the PRQC. Six previously developed scales were designed to specifically measure these same perceived relationship quality constructs. All of the scales have good internal and test-retest reliability measuring their constructs. All scales were completed according to their authors' instructions and were answered on 7-point Likert scales. Confirmatory factor analysis revealed that the PRQC was effective in measuring overall perceived relationship quality. These results were replicated on a different sample in other studies

and across gender (Fletcher et al., 2000). The PRQC has 18 items, each component assessed by three questions. Statements are answered on a 7-point Likert-type scale (See Appendix D).

## Results

Responses to the survey were recorded, calculated, and averaged. Parent avoidance and anxiety scores were found by averaging mother and father scores. Additionally, relationship quality was calculated by obtaining the mean of the two subscales: relationship satisfaction and intimacy. ECR-RS avoidance and anxiety have been suggested to be mutually exclusive constructs, as well as YAPS burden and refuge.

The sample reported relatively secure attachments. The ECR-RS avoidance scores had an average of 2.0881 for mothers, 2.9017 for fathers (2.4949 for parents), 2.2044 for romantic partners, 2.2697 for friends, and 2.9520 for general. The ECR-RS anxiety scores averaged 1.4135 for mothers, 1.7656 for fathers (1.6046 for both parents), 3.3852 for romantic partners, 2.8978 for friends, and 3.7720 for general. This suggests that college students are generally less anxious in their relationship with their parents than in romantic relationships, friendships, and general attachment conceptualization. The YAPS scores (Burden and Refuge) were normally distributed with a mean of 3.2044 for refuge (SD=0.88170) and 2.7720 for burden (SD=0.86320). The sample, on average, perceived their relationships to be intimate (mean=5.5346) and reported relatively high relationship satisfaction (mean=5.5708) (*See Table 7. Below*).



Table 7.

*Descriptive Statistics for Age, ECR-RS, YAPS, and PROC*

	Mean	Std. Deviation	Min	Max	Skewness
Age	18.99	1.392	17	27	
Mother Avoidance	2.0881	1.06111	1.00	6.00	1.155
Mother Anxiety	1.4135	.83333	1.00	6.00	2.815
Father Avoidance	2.9017	1.52257	1.00	7.00	0.787
Father Anxiety	1.7956	1.24347	1.00	7.00	1.884
Parent Avoidance*	2.4949	1.11518	1.00	6.50	0.841
Parent Anxiety*	1.6046	.88278	1.00	5.83	2.028
Romantic Avoidance	2.2044	.99300	1.00	7.00	0.964
Romantic Anxiety	3.3852	1.80162	1.00	7.00	0.142
Friend Avoidance	2.2697	.98435	1.00	6.00	0.797
Friend Anxiety	2.8978	1.61924	1.00	6.67	0.566
General Avoidance	2.9520	1.09930	1.00	6.33	0.456
General Anxiety	3.7720	1.67027	1.00	7.00	0.086
YAPS Refuge	3.2044	.88170	1.00	5.00	0.014
YAPS Burden	2.7720	.83620	1.00	5.00	0.099
Relationship Satisfaction	5.5708	1.09800	1.00	7.00	-1.231
Intimacy	5.5346	.99517	1.67	7.00	-0.910
Relationship Quality*	5.5527*	.97573	1.83	7.00	-0.985

\* Not reported scores, but averages of two other reported scores

A correlation was run, and YAPS burden and refuge displayed an inverse relationship ( $r=-0.369^{**}$ ), with a medium effect size ( $r^2=0.136$ ) which compared to Trub and Barbot's (2016) original negative correlation found ( $r = -0.41, p < 0.001$ ), also with a medium effect size.

As predicted, a positive relationship was found between smartphone refuge and ECR-RS domains of anxious attachment to mothers ( $r=0.153^*$ ) with a small effect size ( $r^2=0.023$ ), anxious attachment to fathers ( $r=0.185^{**}$ ) with a small effect size ( $r^2=0.034$ ), parent anxiety ( $r=0.202^{**}$ ) with a small effect size ( $r^2=0.041$ ), general anxiety ( $r=0.138^*$ ) with a small effect size ( $r^2=0.019$ ), and romantic anxiety ( $r=0.135^*$ ) with a small effect size ( $r^2=0.018$ ) (see Table 8). This partially supports the original hypothesis that there would be a positive relationship between the domains of mothers, fathers, parent, general

and romantic anxiety on the ECR-RS and refuge seeking behaviors with smartphones. However, there was not a relationship between smartphone refuge and peer anxiety attachment ( $r=0.019$ ), which contradicted the original hypothesis that peer anxiety was related to smartphone anxiety as well.

Additionally, as predicted, a positive relationship was found between smartphone burden and father avoidance ( $r=0.159^*$ ) with a small effect size ( $r^2=0.025$ ), and parent avoidance ( $r=0.139^*$ ) with a small effect size ( $r^2=0.019$ ) on the ECR-RS (*see Table 8*). Moreover, there was a positive relationship found between smartphone burden and age ( $r=0.141^*$ ), parent anxiety ( $r=0.176^*$ ), and father anxiety ( $0.165^*$ ) although not previously hypothesized (*see Table 8*). There was not a correlation found between mother avoidance, romantic avoidance, friend avoidance, and general avoidance, which contradicted the original hypothesis that these domains would have a positive relationship with smartphone burden.

Relationship Quality and its constructs of intimacy and relationship satisfaction measured by the PRQC were found to be inversely related all ECR-RS constructs except for maternal anxiety, where only intimacy showed a negative correlation, and paternal anxiety, where relationship satisfaction and relationship quality had an inverse relationship, but intimacy did not display any relationship to paternal attachment anxiety. Additionally, there was no relationship between paternal anxiety and reported intimacy (See Table 8.). Contrary to the hypothesis, there was no relationship found between the YAPS scores of the PRQC scores.

Table 8.

*Correlations for YAPS, PROC, and ECR-RS Relationship Avoidance and Anxiety*

		YAPS Refuge	YAPS Burden	Relationship Quality	Intimacy	Relationship Satisfaction	Age
YAPS Refuge	Pearson Correlation	1	<b>-.369**</b>	-0.002	0.005	-0.008	-0.110
	Sig. (2-tailed)		0.000	0.978	0.941	0.909	0.112
YAPS Burden	Pearson Correlation	<b>-.369**</b>	1	-0.036	0.010	-0.072	<b>.141*</b>
	Sig. (2-tailed)	0.000		0.607	0.887	0.296	0.040
Relationship Quality	Pearson Correlation	-0.002	-0.036	1	<b>.925**</b>	<b>.939**</b>	-0.006
	Sig. (2-tailed)	0.978	0.607		0.000	0.000	0.933
Intimacy	Pearson Correlation	0.005	0.010	<b>.925**</b>	1	<b>.738**</b>	0.009
	Sig. (2-tailed)	0.941	0.887	0.000		0.000	0.897
Relationship Satisfaction	Pearson Correlation	-0.008	-0.072	<b>.939**</b>	<b>.738**</b>	1	-0.018
	Sig. (2-tailed)	0.909	0.296	0.000	0.000		0.789
Age	Pearson Correlation	-0.110	<b>.141*</b>	-0.006	0.009	-0.018	1
	Sig. (2-tailed)	0.112	0.040	0.933	0.897	0.789	
Mother Avoidance	Pearson Correlation	-0.009	0.062	<b>-.277**</b>	<b>-.314**</b>	<b>-.208**</b>	-0.130
	Sig. (2-tailed)	0.901	0.365	0.000	0.000	0.002	0.060
Mother Anxiety	Pearson Correlation	<b>.153*</b>	0.124	-0.117	<b>-.138*</b>	-0.083	0.017
	Sig. (2-tailed)	0.026	0.072	0.089	0.045	0.228	0.802
Father Avoidance	Pearson Correlation	0.078	<b>.159*</b>	<b>-.224**</b>	<b>-.215**</b>	<b>-.204**</b>	-0.026
	Sig. (2-tailed)	0.261	0.020	0.001	0.002	0.003	0.707
Father Anxiety	Pearson Correlation	<b>.185**</b>	<b>.167*</b>	<b>-.139*</b>	-0.107	<b>-.151*</b>	-0.007
	Sig. (2-tailed)	0.007	0.015	0.043	0.120	0.028	0.918
Parent Avoidance	Pearson Correlation	0.049	<b>.139*</b>	<b>-.285**</b>	<b>-.296**</b>	<b>-.238**</b>	-0.079
	Sig. (2-tailed)	0.479	0.044	0.000	0.000	0.000	0.250
Parent Anxiety	Pearson Correlation	<b>.202**</b>	<b>.176*</b>	<b>-.153*</b>	<b>-.140*</b>	<b>-.145*</b>	0.003
	Sig. (2-tailed)	0.003	0.010	0.026	0.041	0.035	0.964
Friends Avoidance	Pearson Correlation	0.019	-0.019	<b>-.564**</b>	<b>-.510**</b>	<b>-.541**</b>	0.066
	Sig. (2-tailed)	0.780	0.787	0.000	0.000	0.000	0.337
Friends Anxiety	Pearson Correlation	0.078	0.090	<b>-.328**</b>	<b>-.253**</b>	<b>-.355**</b>	-0.004
	Sig. (2-tailed)	0.260	0.192	0.000	0.000	0.000	0.952
Romantic Avoidance	Pearson Correlation	-0.007	0.077	<b>-.492**</b>	<b>-.410**</b>	<b>-.504**</b>	-0.005
	Sig. (2-tailed)	0.915	0.267	0.000	0.000	0.000	0.947
Romantic Anxiety	Pearson Correlation	<b>0.135*</b>	0.043	<b>-.371**</b>	<b>-.269**</b>	<b>-.415**</b>	-0.058
	Sig. (2-tailed)	0.050	0.535	0.000	0.000	0.000	0.398
	Pearson Correlation	0.026	-0.019	<b>-.493**</b>	<b>-.501**</b>	<b>-.421**</b>	-0.099

General Avoidance	Sig. (2-tailed)	0.705	0.788	0.000	0.000	0.000	0.151
General Anxiety	Pearson Correlation	<b>0.138*</b>	0.102	<b>-.414**</b>	<b>-.331**</b>	<b>-.435**</b>	-0.029
	Sig. (2-tailed)	0.044	0.138	0.000	0.000	0.000	0.672

\*\**. Correlation is significant at the 0.01 level (2-tailed).*

\**. Correlation is significant at the 0.05 level (2-tailed).*

In short, the data suggest that parent anxiety and father anxiety have a stronger relationship with YAPS refuge than mother, romantic and general anxiety, and no relationship with peer anxiety. Parent avoidance and father avoidance were related to YAPS burden, but mother avoidance, romantic relationship avoidance, friend avoidance, and general avoidance were not. Attachment to smartphones had no relationship with perceived relationship quality, and perceived relationship quality and its domains had a strong, inverse relationship with attachment avoidance and anxiety across domains, except for maternal anxiety where only intimacy was related.

### Discussion

The present research proposed that attachment across close relationships in college would be related to the novel concept of smartphone attachment. As Fraley et al. (2015) suggested, participants were conceptualized and assessed for individual attachment differences using dimensional models of individual differences. It was proposed that all domains of anxiety (mother, father, parent, friend, romantic relationship, and general) would have a similar, positive relationship with smartphone refuge, or feeling safe with the phone and uncomfortable when separated. It was also proposed that across domains of avoidance, there would be a similar, positive relationship with smartphone burden, or relief upon separation and the belief the smartphone with diminish enjoyment of given moments. Additionally, it was proposed that burden and refuge

would have an inverse relationship with relationship quality and its domains of intimacy and relationship satisfaction (not including commitment, trust, passion, and love).

Across domains, mother, father, parent combined, romantic, and general attachment anxiety were positively correlated with the smartphone attachment subscale of refuge. This would suggest that college students with anxious attachments to their mothers, fathers, romantic partners, combined parents, and in general would be more likely to seek feelings of safety from their smartphones and feel anxious when separated from it. Peer attachment appears to have no relationship with college students' smartphone refuge. The strongest relationship between smartphone refuge and ECR-RS attachment is the combined parent attachment anxiety, meaning students with higher attachment anxiety to their parental unit are most likely to find refuge and become the most distressed when separated from their smartphones.

Moreover, father and parent attachment avoidance were the only proposed scales to have a positive relationship with smartphone attachment subscale of burden. In addition to the hypothesized correlations between close relationship attachments and smartphone attachment, father and parent combined attachment anxiety had a positive relationship with smartphone attachment subscale of burden. This would suggest that college students with both avoidant and anxious attachment to their fathers and combined parents experience perceived burden of smartphones. Mother-specific, romantic, peer, and general attachment were found not related to smartphone burden. One theory could be due to the concept of "helicopter parents." Just as smartphones may create a paradoxical attachment, when students go away to school they may feel a paradoxical attachment to their parents as well. With the advent of smartphones, as Cundy (2015)

suggested, anxious parents may use smartphones as a tool to constantly monitor their maturing children. This may hinder independence, and parents may pass their anxieties on to their children. However, it is conceivable that anxious attached students may view the smartphone paradoxically as well. While those with high attachment avoidance towards their parents may view the phone as a burden, high anxiety may also indicate viewing the phone as a burden. Having to constantly stay connected to parents and checking in even when away at school, may lead some students to become resentful towards their phones and view them as the vehicles their "helicopter parents" use to quell their independence. Consequently, it would make sense that students who are anxiously attached to their parents in college may "feel pressure from their phones and relief upon separation from it" (Trub & Barbot, 2016, p. 663).

The differential findings of how different domains of relationships attachments are related to smartphone attachment support the conceptualization by Fraley et al. (2011/2015) of attachment relationships as separate and often independent across domains. While certain relationship attachments (e.g. mother or father) may influence attachments later in life for some individuals (e.g. friends, romantic, general, smartphone), others may find little or no relationship between them. Even mother and father attachment, previously conceptualized as one entity, may be more accurately depicted as separate domains. While relationships in certain domains may impact one another, researchers must keep in mind individual circumstances for how and why they differ.

Although smartphone burden and refuge have variable relationships with different domains of attachment figures in college, they have little to no relationship with

intimacy, relationship satisfaction, and moreover relationship quality. While perceived relationship quality was negatively related to all ECR-RS domains besides mother anxiety, it was not related to smartphone burden or refuge as previously hypothesized. Moreover, its subconstructs of intimacy and relationship satisfaction had similar patterns. Intimacy was negatively related to all ECR-RS constructs except for father anxiety, and relationship satisfaction was related to all of them except for mother anxiety. Like perceived relationship quality, none of its subconstructs were related in any way to smartphone burden or refuge. These findings suggest that how college students relate to their smartphones has little to no impact on their relationship satisfaction, perceived intimacy, and perceived relationship quality as measured with the current sample. This could be due to the fact that smartphones may indeed facilitate interactions and improve connection and relationships for college students. However, it is also possible that smartphones and the technology they come with have lowered the threshold for intimacy, relationship satisfaction, and connection. It is possible students may perceive their relationships to be more intimate and satisfying than they actually are. Turkle (2011a; 2011b) has hypothesized that smartphones are creating a sense of false intimacy, while simultaneously allowing themselves considerable distance. Instead of bringing us closer, smartphones are bringing us in contact with more people, subsequently limiting the amount of intimacy each relationship can have. "People are comforted by being in touch with a lot of people whom they also keep at bay" (Turkle, 2011a, p. 31). This would support the idea that students may be misinterpreting and changing their ideas of what it means to be intimate and connected.

### **Limitations and Future Directions**

This study contributes to the understanding and conceptualizing of college students' relationship with their smartphones and its impact on other important relationships, but there are several limitations. Firstly, the population, while relatively representative of James Madison University, does not offer much diversity. The participant sample did not offer a wide variety of ethnic backgrounds, sexuality, and gender identity. Moreover, the average age was 19 with many participants on the younger side, and included largely underclassmen (81.2%). Further research with different samples would need to be done to include students from many different backgrounds and college levels. Additionally, future research should be done to assess group differences in smartphone attachment.

The participants of the study were students completing the surveys for class, and although the researcher omitted responses from students that were under two minutes, there were still some responses that were completed relatively quickly, suggesting students rushed through the study solely to complete their class credits. The researcher omitted responses that were clearly rushed (e.g. all one answer or very short response time) but it is difficult to judge whether or not students reported their attitudes accurately. Responses that appeared to be hurried could have been genuine answers, just completed in a short time frame. Additionally, these parameters for omitting responses may not have encompassed all the rushed or inaccurate responses from students. In the future, studies may want to include "test" questions to check if students are actually reading the items. The introduction to psychology classes used for studies like these are also primarily



younger college students (e.g. first-years and sophomores) and future studies should also include participant pools that include an equal number of students in upper classes.

As previously discussed, some of the findings of this study were not as the researcher expected. Although there were some interesting relationships between the ECR-RS and YAPS, there was no relationship between the YAPS scores and the PRQC and constructs of intimacy and relationship satisfaction. The original use of this questionnaire for perceived relationship quality was worded for romantic relationships and also included subconstructs of commitment, trust, passion, and love. This may have impacted the reliability and validity of the scale, due to leaving out some constructs and applying it to relationships in general. Further research should be done, potentially using a different scale to measure general relationships, or using a scale to go with each of the domains of attachment measured using the ECR-RS. Additionally, as proposed above, students' threshold for intimacy, relationship satisfaction, and connection may have changed with the introduction and perpetual use of smartphones (Turkle, 2011). Further research should be done to tease out perceived intimacy/relationship quality and actual intimacy/relationship quality. This could be done using qualitative data, interviews with students, and case studies.

Future studies should be undertaken to further our understanding of how smartphones relate to attachment, aiming to study how humans form attachments to smartphones, as well as the impact of smartphone usage on specific social functioning and wellbeing. These studies should validate research on from both a psychological and physiological perspectives, perhaps using brain scans and measuring individuals' physiological responses to phones and other primary attachment figures. Since it has been

suggested by Fraley et al. (2011/2015) that individuals tend to vary on their attachments across domains, looking at individual as opposed to group differences may provide more insight into the relationship of these different domains, including smartphones. Although relationships may vary individually, further research must be done to see if any universal aspects of smartphone attachment, or relationship attachment, may impact each other. If aspects of smartphones and our attachments to them may alter our personal relationships and functioning, research and studies must be done to help develop technology to avoid these negative outcomes while maximizing benefits. If in fact the inverse is true, and aspects of our personal relationship functioning and attachment impact our attachment and use of smartphones, interventions should be tailored to mitigate maladaptive smartphone relationships and uses.

### **Implications for Counseling**

The benefits of secure attachment bonds are particularly relevant during college. College is a time of transition away from dependence on parents and towards the independence and increased freedom of adulthood. The ease with which students cope with this transition has been shown to be influenced by their relationships with attachment figures (Lepp et al., 2016; Kenny & Rice, 1995; Laible et al., 2000). Although smartphones can allow students freedom and security to branch out and explore colleges/opportunities they may not have without a means to stay connected to parents, these devices also allow for anxiously attached parents to potentially hinder independence and development by constantly checking in and hovering by way of the smartphone. This suggests that college students' attachment, as well as their parents', may impact how they relate to their phones, (Cundy, 2015). Counselors must keep this in

mind when working with college students and young adults. It is important to look at the big picture of what is happening in regards to students and their relationships. While previous literature has pathologized the use of smartphones and used language conceptualizing their use as an addiction, it is important for counselors to keep in mind that our relationship to smartphones and the accompanying is widespread and a normative phenomenon (Trub & Barbot, 2016). Smartphones are more quickly becoming an everyday, multisystemic tool necessary for work, school, socializing, and leisure. While there are maladaptive ways to use the smartphone and relate to them, it is important to look at various aspects of relationships and attachments to help conceptualize how students use and relate to their phones. For example, if students have insecure attachment tendencies, smartphones may be used to compensate for the anxiety they feel in one or more of their relationships, or with relationships in general (Keefer et al., 2012; Konok et al., 2016). Instead of focusing on the maladaptive behaviors introduced by smartphones, counselors should look at the attachment relationship with important figures in their lives. As Fraley et al. (2015) proposed, attachment and relationships differ on an individual basis, with different responses to external factors and different reasons for various attachments in their individual relationships. For example, having cold and unresponsive parents may lead some individuals to have insecure attachments to their parents, but lead to potential mistrust and insecure relationships with peers and/or romantic partners. However, secure relationships with peers and/or romantic partners developed in adolescence and early adulthood may be a protective factor for their general attachment and other close relationships. Additionally, individuals may have similar or different attachments to either parent for a variety of reasons. It is important to

look at the individual, differences in relationships, and individual resilience and protective factors. Counselors should look at a variety of attachments, particularly for college students whose important relationships may consist of a variety of people. These are all just a piece of the puzzle counselors should use when conceptualizing how individuals use and relate to their phone, with the potential for the phone to facilitate connection (Reed et al., 2015), hinder connection (Lepp et al., 2016), or serve as its own individual attachment figure in students' lives.

In counseling, phone use or smartphone attachment most likely will not be one's primary reason for seeking services; however, it is becoming an increasingly important piece of the puzzle for conceptualizing the context of clients' social lives. Moreover, certain individuals' maladaptive smartphone use may be explained by another mental health concern, contribute to distress, or impair functioning. Focusing on the smartphone use or attachment solely is not sufficient. Counselors should continue to work with clients towards increasing self-esteem, resilience, social reciprocity, and decreasing anxiety and depression. In sessions, healing attachment wounds of clients and helping them to develop a better sense of self may mitigate problematic phone use and help clients feel more secure in their relationships with their smartphones. If people use smartphones to compensate for insecurity in alternate relationships (Konok et al., 2016), it would be assumed that securing the attachment in other domains would impact how individuals connect to and utilize their phones. Research suggests how people use a phone differs to meet specific needs (Fullwood et al., 2017; Walsh et al., 2009; Katz et al., 1974). It also suggests that individuals may view their phones as an extension and expression of their individual self and social identity (Fullwood et al., 2017; Walsh et al., 2009). If this is the

case, counselors can use phone use as a clue into unmet needs. Additionally, we can use the individual's phone use to gain a glimpse into their personal dynamics, their identity, and their social identity. The abstract object can be used to manifest and display many aspects that go unseen and unwitnessed in the counseling room. For example, counselors can (with the invitation and consent) see messages and pictures clients may show us, outlining a script of how they communicate their needs, and pictures to help us visualize and connect with important figures in the clients' world. Showing us pictures of their family, or an award can be a tool in which we use to connect, understand, and empathize with the client's world, often inaccessible in the counseling room.

If smartphones are seen as simultaneously a burden and a useful tool, it can be assumed that it would be difficult for people to remain present and maintain a sense of being grounded. Mindfulness techniques may be effective in decreasing the potential negative impacts smartphones may have on individuals, their relationships, and their behaviors. Being too preoccupied with one's phone can impair social and cognitive functioning. Inherited from Buddhist tradition, mindfulness meditation is commonly defined as "paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (Kabat-Zinn 1994, p. 4). This practice of focusing attention on thoughts, emotions, and bodily sensations builds self-reflection and the capacity to control and regulate cognitive and emotional expression (Bishop et al. 2004). Recently, mindfulness has received increased attention from different areas of research because of its effectiveness in both clinical and non-clinical populations in increasing empathy and reducing stress, anxiety, and depression (Trub & Starks, 2017; Gu et al. 2015; Linehan 1993; Shapiro et al. 1998). In using and teaching mindfulness, counselors can help

prevent and decrease maladaptive usage of smartphones, as well as help with other mental health concern(s) likely preceding the smartphone.

In addition to individual college students, counselors working with couples and families can use this information to inform their practice. Smartphones are clearly becoming a vital part of communication between couples and families, and how different people utilize smartphones in their relationships may foster or hinder connection, depending on expectations and communication. Hertlein and Twist (2018) studied smartphone attachment as it relates to couples therapy. They used a measure for smartphone attachment akin to the questions on the ECR-RS but tailored them to smartphones. They encourage couples to look at their own patterns of technology use and determine how their attachment to technology compares to that of their partner. Based on this assumption, they also urge couples to explore their expectations of their partner in terms of support and immediacy, as this may be challenged when smartphones can be more responsive than their partner at times (Hertlein & Twist, 2018).

While smartphones may facilitate maladaptive behaviors for some, it is important for counselors to look at the positives smartphones can bring as well. Firstly, smartphones bring with them functional technology useful for counseling and mental health. Several apps have been created to track moods and positive coping, as well as provide psychoeducation and coping skills (e.g. breathing, progressive muscle relaxation, biofeedback, meditation, mindfulness). These convenient and accessible self-help tools can increase access to material to improve mental health, providing preventative and intervention tools. Widespread access to these tools provided by smartphones thus free up counseling sessions for more depth work and may provide self-help tools for subclinical

clients, lessening burden on the mental health system. Bakker, Kazantzis, Rickwood, and Rickard (2016) completed a review to provide a clear set of practical, evidence-based recommendations for mental health app developers and users. These provide a set of standards for clinicians and clients to keep in mind when choosing a mental health app, and for developers to use when creating apps in the future. They found that:

[Mental health apps] should aim to prevent emotional mental health problems by employing a wide array of CBT-based techniques that are tailored to an individual's needs and delivered via a simple, interactive design. Structures of gamification and habit formation should be used to maximize engagement in the app's interventions. The app itself should be experimentally validated, and user data should be utilized for its ongoing improvement (no page #).

The complete list of recommendations and details for such can be found in Appendix E.

As Keefer and Landau (2014) suggested, smartphones and other objects can serve as the secure base like other attachment figures, fostering growth and exploration. In their study, participants were primed to feel uncertain about the reliability of close relationships, decreasing their secure base. These participants subsequently displayed decreased motivation for growth. However, this effect was eradicated if participants thought about either a close friend or a desired object, with no statistical difference in their effect. In short, certain objects may serve as an equally secure base as close friends and loved ones. If this logic specifically is applied to the concept of smartphones, in theory, smartphones could provide students security in the absence of alternate secure attachment figures. Keeping this in mind, counselors can help use both the therapeutic relationship as well as a secure attachment to one's smartphone to help insecurely

attached or anxious individuals explore and grow. However, Turkle (2011) would argue that in using our phones as a quick fix to attain security, individuals are failing to learn how to cope with being alone, and paradoxically how to connect. "Often, our new digital connections offer the illusion of companionship without the demands of friendship. We become accustomed to connection at a distance and in amounts we can control" (Turkle, 2011b, p. 29). Smartphones give us the constant option to connect or escape real life at any time. We have this instant gratification and novel control over our lives, interactions, and level of intimacy and vulnerability. As counselors, we should attempt to foster deep, meaningful intimacy in clients and their relationships.

As Linda Cundy (2015) stated in the forward of her book *Love in the Age of the Internet: Attachment in the Digital Era*:

It is timely to consider whether we are losing touch with anything vital and essential for our wellbeing so we can keep a place for it alongside our digital lives, ensuring that technology supports what matters to us –what makes us human –rather than undermining us" (p. xiv).

Smartphone technology is not disappearing; in fact, it will most likely continue to grow and infiltrate various aspects of our lives. Instead of resisting this shift and begrudgingly reflecting on how life was prior to the introduction of this technology, we as counselors should look at this technology with an open, yet careful attitude. Socialization and connection are what make us human and are necessary for both our survival and ability to thrive. Connection and intimacy are basic needs for humans and are still present after the introduction of newer smartphones. We, as counselors and as scholars, should help empower humans and individuals to be able to use this technology to support and



enhance social connection and wellness, not weaken it. While encouraging clients to maintain face-to-face interactions, there is no reason to believe that the addition of smartphone communication and connection cannot supplement relationships. This requires us to keep up with the changing smartphone technology, understanding its features to help conceptualize how it may impact clients both positively and negatively. Conceptualizing smartphone use in the realm of attachments can help us to inform interventions for maladaptive functioning, as well as prevent problematic use of smartphones in the future. Additionally, we must consider that, like other attachments, the way individuals interact with and utilize their phones may differ from person to person, as do their motivations. The burden and/or refuge individuals experience regarding their phones may serve different purposes for different individual, as our individual experience of the world and others may shape our motivations for using smartphones, and we must keep the individual in mind when conceptualizing this normative phenomenon. Personal biases about normative use must be set aside, as it is timely for counselors to consider maladaptive smartphone use not as an isolated problem, but insecure attachments to smartphones largely as symptoms of greater mental health concerns.

**Appendix A:  
Demographic Information**

Please enter the following demographic information to the best of your knowledge.

1. What is your age? [fill in blank]
2. To which gender or gender identity do you closest identify?
  - a. Male
  - b. Female
  - c. Transgender Male
  - d. Transgender Female
  - e. Gender non-conforming
  - f. Not listed [fill in blank]
  - g. Prefer not to answer
3. What is your race?
  - a. White/Caucasian
  - b. Black or African American
  - c. Hispanic
  - d. Hispanic-White
  - e. American Indian or Alaska Native
  - f. Asian
  - g. Native Hawaiian or Pacific Islander
  - h. Other [fill in blank]
4. Please indicate your current university status.
  - a. First Year/Freshman
  - b. Sophomore
  - c. Junior
  - d. Senior
  - e. Graduate Student
  - f. Professional Student
  - g. Continuing Education Student
5. What is your current relationship status?
  - a. Single
  - b. In a relationship
  - c. Engaged
  - d. Married
  - e. Separated
  - f. Divorced
6. Which of the following best represents how you think of yourself?
  - a. Heterosexual or straight
  - b. Gay

- c. Lesbian
- d. Bisexual
- e. Not listed (please indicate) [fill in blank]

**Appendix B:**  
**Relationship Structures Questionnaire (ECR-RS)**

This questionnaire is designed to assess the way in which you mentally represent important people in your life. You'll be asked to answer questions about your parents, your romantic partners, and your friends. Please indicate the extent to which you agree or disagree with each statement by circling a number for each item.

-----  
Please answer the following questions about your **mother or a mother-like figure**  
-----

1. It helps to turn to this person in times of need.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
2. I usually discuss my problems and concerns with this person.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
3. I talk things over with this person.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
4. I find it easy to depend on this person.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
5. I don't feel comfortable opening up to this person.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
6. I prefer not to show this person how I feel deep down.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
7. I often worry that this person doesn't really care for me.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
8. I'm afraid that this person may abandon me.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
9. I worry that this person won't care about me as much as I care about him or her.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

-----  
Please answer the following questions about your **father or a father-like figure**  
-----

1. It helps to turn to this person in times of need.  
strongly disagree 1 2 3 4 5 6 7 strongly agree
2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

-----  
Please answer the following questions about your **dating or marital partner**.

Note: If you are not currently in a dating or marital relationship with someone, answer these questions with respect to a former partner or a relationship that you would like to have with someone.

-----  
1. It helps to turn to this person in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

-----  
Please answer the following questions about your **close friends**  
-----

1. It helps to turn to this person in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

-----  
Please read each of the following statements and rate the extent to which you believe each statement best describes your feelings about **close relationships in general**.  
-----

1. It helps to turn to people in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with others.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with people.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on others.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to others.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show others how I feel deep down.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that other people do not really care for me.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that other people may abandon me.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that others won't care about me as much as I care about them.  
strongly disagree 1 2 3 4 5 6 7 strongly agree

**Appendix C:**  
**Young Adult Attachment to Phone Scale (YAPS)**

Please read each of the following statements and rate the extent to which you believe each statement best describes you:

1. I feel anxious and uncomfortable when I cannot check my phone.

Does not describe me at all 1 2 3 4 5 describes me perfectly

2. Having my phone makes me feel safer

Does not describe me at all 1 2 3 4 5 describes me perfectly

3. I feel naked without my phone

Does not describe me at all 1 2 3 4 5 describes me perfectly

4. Being without my phone gives me a sense of relief

Does not describe me at all 1 2 3 4 5 describes me perfectly

5. I intentionally put my phone out of reach to enjoy an activity I'm engaged in.

Does not describe me at all 1 2 3 4 5 describes me perfectly

6. I feel better when I do not have my phone on me

Does not describe me at all 1 2 3 4 5 describes me perfectly



**Appendix D:  
Perceived Relationship Quality Component (PRQC) Inventory**

Rate your current relationships on each item. (Component categories are shown as subheadings are omitted when the scale is administered).

**Relationship Satisfaction**

1. How satisfied are you with your relationships?

Not at all 1 2 3 4 5 6 7 Extremely

2. How content are you with your relationships?

Not at all 1 2 3 4 5 6 7 Extremely

3. How happy are you with your relationships?

Not at all 1 2 3 4 5 6 7 Extremely

**Intimacy**

7. How intimate are your relationships?

Not at all 1 2 3 4 5 6 7 Extremely

8. How close are your relationships?

Not at all 1 2 3 4 5 6 7 Extremely

9. How connected are you to others?

Not at all 1 2 3 4 5 6 7 Extremely

**Appendix E:  
Recommendations for future mental health apps (Bakker et al., 2016)**

Evidence	Recommendation	Details
Demonstrably effective, but more research needed in MHapp field	1. Cognitive behavioral therapy based	Start with an evidence-based framework to maximize effectiveness
	2. Address both anxiety and low mood	Increases accessibility and addresses comorbidity between anxiety and depression. Also compatible with transdiagnostic theories of anxiety and depression
Probably effective, but more research needed in MHapp field	3. Designed for use by nonclinical populations	Avoiding diagnostic labels reduces stigma, increases accessibility, and enables preventative use
	4. Automated tailoring	Tailored interventions are more efficacious than is rigid self-help
	5. Reporting of thoughts, feelings, or behaviors	Self-monitoring and self-reflection to promote psychological growth and enable progress evaluation
	6. Recommend activities	Behavioral activation to boost self-efficacy and repertoire of coping skills
	7. Mental health information	Develop mental health literacy
	8. Real-time engagement	Allows users to use in moments in which they are experiencing distress for optimum benefits of coping behaviors and relaxation techniques
Supported by theory and indirect evidence but focused research needed	9. Activities explicitly linked to specific reported mood problems	Enhances understanding of cause-and-effect relationship between actions and emotions
	10. Encourage nontechnology-based activities	Helps to avoid potential problems with attention, increase opportunities for mindfulness, and limit time spent on devices
	11. Gamification and intrinsic motivation to engage	Encourage use of the app via rewards and internal triggers, and positive reinforcement and behavioral conditioning. Also links with flourishing

Evidence	Recommendation	Details
	12. Log of past app use	Encourage use of the app through personal investment. Internal triggers for repeated engagement
	13. Reminders to engage	External triggers for engagement
	14. Simple and intuitive interface and interactions	Reduce confusion and disengagement in users
	15. Links to crisis support services	Helps users who are in crisis to seek help
Necessary for validation of principles	16. Experimental trials to establish efficacy	It is important to establish the app's own efficacy before recommending it as an effective intervention

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