

“THANKS TO FACEBOOK, GETTING OLD ISN’T THAT BAD AND I AM NOT ALL  
ALONE IN THIS WORLD”: AN INVESTIGATION OF THE EFFECT OF FACEBOOK USE  
ON MATTERING AND LONELINESS AMONG ELDER ORPHANS

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## **ABSTRACT**

**“THANKS TO FACEBOOK, GETTING OLD ISN’T THAT BAD AND I AM NOT ALL ALONE IN THIS WORLD”: AN INVESTIGATION OF THE EFFECT OF FACEBOOK USE ON MATTERING AND LONELINESS AMONG ELDER ORPHANS**

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The number of older adults at risk for social disconnectedness, loneliness, and the negative mental and physical health outcomes associated with each will reach unprecedented size in the next decade. Elder orphans, or adults aged 65+ who live alone and are unmarried and childless, are particularly at risk for social isolation. Prior research has shown that social media use, specifically Facebook use, can provide individuals with access to social resources that promote well-being. To date, the research regarding Facebook use and its impact on loneliness is somewhat inconclusive. There have been studies with young adults, however, that suggest that Facebook use might promote the perception of mattering – a protective resource against loneliness. It is the aim of this study to assess how the modalities of Facebook can be harnessed in order to address the threat of loneliness among elder orphans through the promotion of mattering.

This study employed online survey methodology among a sample of elder orphan Facebook users (n = 517). Participants were asked to answer questions related to their perceptions of mattering, loneliness, depression, and social disconnectedness. Participants were also asked questions about their Facebook use such as experience, motivations for use, frequently performed activities, concern for privacy and level of intensity. Analyses performed in this study include frequencies, simple linear regressions, and the Hayes’ PROCESS model for mediation and moderation.

Results of this study show that Facebook activities were significantly and positively

related to mattering and significantly and negatively related to loneliness among elder orphans. Moreover, mattering was shown to fully mediate the relationship between Facebook activities and loneliness for elder orphans. Results further suggest that receiving “Likes” is the most frequent Facebook activity that elder orphans encounter, and that receiving “Likes” is also significantly related to the three sub-dimensions of mattering: attention/awareness, importance, and dependence/reliance. Further results, limitations, and implications of this research for elder orphans and the aging community at large are detailed herein.

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Dedicated with love to my Mom, Dad, Mike, and Alexa. Thank you for loving me through this and everything else.

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## **Chapter 1: INTRODUCTION**

The United States is experiencing a demographic shift that is seeing more older adults experiencing feelings of loneliness and risk of social disconnectedness – two indicators of social isolation -- due to population aging and growth (Cornwell & Waite, 2009; Hudson, 2018; Margolis & Verdery, 2017; Verdery & Margolis, 2017). This shift is partially attributed to the growing number of older adults who are either divorced or never married, a trend which is especially pronounced for black Americans who also experience double the likelihood of white Americans of having a deceased partner by the age of 60 (Verdery & Margolis, 2017). Furthermore, it is projected for white and black Americans that by the year 2060, there will be roughly 21 million adults over the age of 50 without a living partner or biological children in these racial groups (Verdery & Margolis, 2017). There are significantly more adults in their 50s and 60s who are kinless than in previous generations, indicating that in the next decade the United States will not only have more older adults than ever before, but more kinless older adults as well (Margolis & Verdery, 2017).

Some researchers refer to this specific sub-population of older adults as “elder orphans” (Carney, Fujiwara, Emmert Jr., Liberman, & Paris., 2016). The growth of the older adult community and specific needs of the elder orphan subpopulation pose contemporary problems, such as the influx of aging baby boomers facing aging alone and social isolation due to having fewer children, increase in childless marriages, and rise in divorce, that have not presented themselves as challenges for previous generations before the widespread use of networked computing technologies. It is the aim of this dissertation to assess how the modalities of information and communication technologies (ICTs) can be harnessed in order to address the threat of social isolation among elder orphans. Specifically, this dissertation looks at the

relationship between elder orphans' Facebook use and social isolation with particular focus on the promotion of perceptions of mattering.

Elder orphans, older adults who do not have available family members or caregivers and are socially and/or physically isolated, are an understudied group in gerontology and geriatrics (Carney et al., 2016). Yet, approximately 23% of the baby boomer generation are expected to become elder orphans (Ianzito, 2016). Some older adults are elder orphans by choice and some by circumstance – that is to say, some older adults have made the conscious decision to remain single and childfree out of preference while other older adults may find themselves in the same situation due to death and/or divorce. Furthermore, some older adults with partners and/or children may consider themselves to be elder orphans or feel as though they are aging alone due to estrangement from family. Regardless, older adults who identify as elder orphans may be at increased risk of social disconnectedness, loneliness, and lack of social support stemming from decreased social interaction (Carney et al., 2016). As quality of social relationships has been shown to be one of the best predictors of health and overall life expectancy (Dykstra, 2007), there is a need to understand the mechanisms that could help mitigate the negative outcomes of social isolation among older adults in general, and elder orphans in particular.

In recent years, there has been an increased focus on the impact on social isolation by academics and older adult advocacy agencies alike. For instance, in 2017, AARP launched the “Connect2Affect” initiative and website to promote awareness about the effects of social isolation as well as a digital interface for older adults to connect with others and information in order to diminish social isolation among older adults (AARP, 2017). AARP further reports that roughly half of adults aged 50 and older experience some degree of loneliness and that loneliness is more common in those who are unmarried and living alone (2017). Moreover, social

disconnectedness and loneliness may be more prevalent among older adults living in rural (Kaye, 2017) and urban areas (Portacolone, 2017) and those of lower socio-economic status and poor health (Czaja, 2017; Kaye, 2017; Portacolone, 2017). Although there are some researchers who are hesitant to advise the use of ICTs to help mitigate the threat of social disconnectedness and loneliness due to the potential deleterious effects on social relationships, many researchers still acknowledge the benefits of ICT use for autonomy and social connectedness (Czaja, 2017; Kaye, 2017).

In recent decades, the development and propagation of ICTs has provided increased opportunities and methods for maintaining communication and relationships within social networks. ICT use may be potentially beneficial for those without relatives or caregivers – elder orphans. One ICT activity of increasing popularity for older adults is social network site (SNS) use, such as Facebook use. boyd & Ellison (2008) define SNSs as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a common connection, and (3) view and traverse their list of connections and those made by others within the system” (p. 211).

According to a Pew Research Center report, 34% of older adults in the U.S. use Facebook (Anderson & Perrin, 2017). Previous research shows that the use of SNSs, such as Facebook, has been associated with reduced feelings of loneliness among older adults (Ballantyne, Trenwith, Zubrinich, & Corlis, 2010; Chopik, 2016; van Ingen, Rains, & Wright, 2017).

Currently however, there is a dearth of research regarding the potential of older adults’ Facebook use to promote the perception of mattering, a protective resource negatively associated with loneliness as well as depression, which is a byproduct of loneliness and social-disconnectedness (Bernardon, 2012; Chang, 2012; Flett, Goldstein, Pechenkov, Nepon, &

Wekerle, 2016; Kadylak, Francis, Cotten, & Rikard, 2015). One's perception of mattering refers to the belief that we are the object of awareness, importance, and reliance to others (Rosenberg & McCullough, 1981). Mattering is conceived as a powerful motivational force for social integration and cohesion across age groups but may be of particular relevance to study among older adults at risk for social isolation (Dixon, 2007; Fazio, 2007; Pearlin & LeBlanc, 2006; Rosenberg & McCullough, 1981; Schieman, Bierman & Ellison, 2010). It has been proposed that older adults, when compared to mid-life adults, tend to feel as though they matter less, which is in part due to loss of social roles and the feeling of disenfranchisement from society (Fazio, 2007; Rosenberg & McCullough, 1981). Loss of social roles has also been attributed to older adults' vulnerability for social isolation (Ferraro, 1984). Moreover, past research has shown that ICT use among older adults has the potential to increase feelings of mattering through the pathway of social connectedness (Francis, Rikard, Cotten, & Kadylak, 2017).

Although to date somewhat limited, the growing body of research empirically demonstrates the potential for ICTs, including Facebook, to affect perceptions of mattering among individuals of various situations and ages. Facebook use allows users to make their social networks visible and promote connection with latent ties (boyd & Ellison, 2008). Such modalities may be particularly beneficial to elder orphans as a means to optimize social connection to nonkin relationships and stave off social disconnectedness and feelings of loneliness through enhanced perception of mattering to others. The purpose of this study is to build off of this research foundation and, through survey methodology, examine the effect of Facebook use on loneliness and perceptions of mattering among a particular subset of the older adult population at risk of social isolation – elder orphans.

Chapter 2, the literature review, is divided into 9 sections. Throughout each section I

highlight the implications for elder orphans, in particular. Section 2.1 is an overview of elder orphans. Here I focus on what we know so far about this understudied group and implications for well-being. Section 2.2 is an overview of literature of social connectedness and social isolation among older adults. I distinguish between the perceived isolation (loneliness) and objective isolation (social disconnectedness) and discuss implications of both that might be most relevant to the elder orphan's situation.

Section 2.3 is an overview of mattering. I start with the conception of the concept from the perspective of the "self." Second, I detail the evolution of mattering measurement, and then progress into a conceptual definition that is adhered to throughout this work. Section 2.4 focuses on mattering as it relates to elder orphans. Here I review the literature on mattering, role occupancies, and older adults and connect the relevant themes to elder orphans. Section 2.5 is where I explore the implications of ICT use and Facebook use on mattering. From the limited research on this particular topic, I draw connections to implications for elder orphans.

Section 2.6 is an overview of the Facebook interface and modalities. Here I use Walther's (1996) hyperpersonal model of computer-mediated communication to illustrate the type of communication that takes place on Facebook and the psychological processes at work and how those might pertain to mattering and elder orphans. It is important to note that this dissertation does not specifically test the hyperpersonal model but rather uses it as a theoretical framework from which to understand computer-mediated communication processes. Section 2.7 focuses on older adults' motivations to adopt and use Facebook. This section examines studies that are both theoretical and exploratory. Section 2.8 explores the relationship between Facebook use and loneliness among older adults. Due to the limited research on the topic, some of the studies focus on SNS use, broadly speaking, rather than Facebook specifically. Finally, the chapter culminates

in a series of research questions and hypotheses put forth in light of the foundational literature review and with a focus on extending the knowledge on this topic.

## **Chapter 2: LITERATURE REVIEW, HYPOTHESES, & RESEARCH QUESTIONS**

Elder orphans are the focus of this dissertation. I chose to focus on this particular subpopulation as the number of older adults predicted to become elder orphans or face social isolation is set to rise to unprecedented numbers in the next decade (Cornwell & Waite, 2009; Hudson, 2018; Margolis & Verdery, 2017; Verdery & Margolis, 2017). As the effect of social isolation can lead to declines in both mental and physical health among older adults (Cornwell & Waite, 2009), it is important to develop an understanding of the mechanisms and tools that can be utilized to promote overall well-being among elder orphans who are more prone to face social isolation than the average older adult (Carney et al., 2016).

### **2.1. Elder Orphans**

In their 2016 article on elder orphans, Carney et al., found a variant of the term “elder orphan” dating back to a 1994 piece by Soniat and Pollack which appeared in the first issue of *Clinical Gerontologist* and explored the differences between family and informal support networks for those elder orphans with Alzheimer’s Disease. Here the researchers referred to this subpopulation as “elderly orphans,” (Soniat & Pollack, 1994). Following this piece however, Carney et al. note that “elder orphan” fell out of use in the academic literature until 2005 when Varner introduced “elder orphan” into the nursing community as a signifier of a subset of the aging population in need of specialized attention (Carney et al., 2016). The earliest mainstream media mentions of “elder orphans” can be found dating back to 2003 (Kunerth) and 2004 (Sherer) in the *Chicago Tribune* and *Geriatric Times*, respectively. Both articles detailed the potential struggle for elder orphans to procure care and aid through the aging process, as close kin tend to be the most consistent form of both resources for many Americans (Kunerth, 2003; Sherer, 2004; Verdery & Margolis, 2017). In the mid-1980s however researchers such as Morris

and Sherwood (1983), Davidson (1985), and Auerbach, Taylor, & Marosy (1985) identified a subset of the aging population without available close kin or family caregivers which they referred to as the “vulnerable elderly.” This marks one of the earlier points in the literature where researchers would designate a term to describe what would become known as the “elder orphan.” Although the designation of “elder orphan” did not appear in academic research for a decade following first mention, the academic community, specifically geriatrics/gerontology, nursing, and medicine, continued to focus on the specific concerns and threats faced by elder orphans (Carney et al., 2016).

Throughout the late 1990s and early 2000s terms such as “unbefriended elderly” (Freeman, 1995; Gillick, 1994; Johnstone, 2011; Karp & Wood, 2004; Pope & Sellers, 2012; Teaster, 2002), “patients without surrogates” (Castillo et al., 2011; Chichin, 2004; Crampton, 2004; Frank, 2005; Meyer, 1997; Miller, Coleman, & Cugliari, 1997; Pope & Sellers, 2011; Siegel, 2006) and “vulnerable elderly” (Billipp, 2001; Cumbler, Carter, & Kutner, 2008; Franzini & Dyer, 2008; Grundy, 2006; Morley, 2008; Rollins, 2006; Rosenberg, 2008; Shaffer & Day, 2010; Shapiro, 1998; Thomas, 1994) were used to identify older adults without available close kin or caregivers. By in large, the research regarding “patients without surrogates” and “unbefriended elderly” focuses on decision-making and patient advocacy within the realm of healthcare and how health practitioners navigate such situations for those without close kin. The literature on “vulnerable elderly” focuses more on how those without close kin may be at increased risk for age-related health issues such as medical crisis or elder mistreatment.

Billip (2001) was the first to address the potential for technology use to mitigate some age-related threats to well-being faced by isolated older adults. Upon completion of a 3-month randomized telecommunications intervention with older adults aged 65+, Billip (2001), found

that older adults who participated in interactive computer use coupled with weekly nurse visits and computer training, reported greater improvement in self-esteem and depression from pre- to posttest than those older adults in the control group who received weekly nurse visits but no computer use. The results of this study suggest that for elder orphans, face-to-face interaction is still important to overall well-being, yet ICT use may prove to bolster certain psychosocial health benefits.

Today, some elder orphans have implemented Facebook use as a means of connecting with other elder orphans to share various forms of support and interaction (Young, 2017). The Elder Orphan Facebook group is a closed group for adults aged 55+ who identify as elder orphans to contribute and receive information regarding aging alone. Currently, the group has an enrollment of over 6,700 members. In a radio interview with WBUR 90.9, Carol Marak, who is the administrator of the Elder Orphan Facebook group and elder orphan advocate, described the group as being a valuable source for support for elder orphans who may be facing health or medical related struggles and want to connect with others in similar life situations and establish a sense of community, (Young, 2017). Such connection and community may be important as elder orphans are uniquely positioned to experience the negative outcomes of social isolation due to living alone and being single and childfree (Carney et al., 2016). Cornwell & Waite (2009) argue that for older adults, social isolation can present itself in two forms: *social disconnectedness* which refers to a lack of social contact, and *perceived isolation* which refers to a perception of dissatisfaction with social resources and can be expressed by feelings of *loneliness*.

## **2.2 Risk of Social Disconnectedness & Loneliness for Elder Orphans**

Social disconnectedness does not necessarily imply that an individual is lonely and

loneliness does not only occur in socially disconnected individuals (Cornwell & Waite, 2009; de Jong Gierveld, Van Tilburg, & Dykstra, 2016; Russell, Cutrona, McRae, & Gomez, 2012).

Social disconnectedness does however put an individual at greater risk for experiencing loneliness by potentially limiting the opportunity to access desired social ties and support (Carney et al., 2016). Loneliness results from a discrepancy between actual and desired social relationships (Russell et al., 2012). Perlman and Peplau (1981) define loneliness as “the unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively” (p. 31).

Although loneliness and social disconnectedness are two distinct dimensions of social isolation with distinct effects on mental and physical health (Cornwell & Waite, 2009), they have both been demonstrated to contribute to diminished well-being. Effects of loneliness and social disconnectedness may compound and lead to diminished health (Seeman, 1996), cognitive functioning (Cacioppo & Hawkley, 2009; Dolen & Bearison, 1982), depression (Cacioppo, Hawkley, & Thisted, 2010; Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006) and early mortality (Blazer, 1982; Cacioppo, Hawkley, & Bernston, 2003; Luo, Hawkley, Waite, & Cacioppo, 2012; Perissinotto, Cenzer, & Covinsky, 2012). Furthermore, social disconnectedness and loneliness, although not exclusively linked to aging, may have more severe implications for older adults than younger age groups due to the fact that older adults are more likely to experience physical health declines and bereavement which require increased social support (Cornwell & Waite, 2009).

For elder orphans, in particular, the risk for loneliness and social disconnectedness is especially relevant due to the absence of a partner and children. Our social networks provide a valuable source for social support throughout our lives (Kahn & Antonucci, 1980; Lubben &

Gironda, 2003; 2004). Research has traditionally positioned partners or spouses as integral members of an individual's social network, providing key elements of aid and support (de Jong Gierveld, Van Tillburg, & Dykstra, 2006). Furthermore, having a partner that lives in the same home has been shown to protect against various threats to well-being for men and women (Waite & Gallagher, 2000). This may be due in part to multiple factors. First an individual living alone lacks the in-home resources an individual with a live-in partner may possess, such as readily available support for various challenges faced in everyday life (de Jong Gierveld, Van Tillburg, & Dykstra, 2006). Both divorce and widowhood have been shown to be predictors of loneliness for older adults (Dykstra & de Jong Gierveld, 2004; Lopata, 1996). Moreover, adult children have also been shown to serve as important sources of companionship and protect against loneliness more so for formerly married older adults than for married older adults (Dykstra, 1993; Pinquart, 2003).

Although the negative implications of social disconnectedness and loneliness have been well-documented (Blazer, 1982; Cacioppo & Hawkley, 2009; Cacioppo et al., 2003; 2006; 2010; Dolen & Bearison, 1982; Luo et al., 2012; Perissinotto et al., 2012; Seeman, 1996), the relationship between aging and social isolation is somewhat complex. For instance, although older adults are at risk for experiencing social isolation due to retirement, outliving family and friends, loss of role occupancies due to lifecourse changes, and declining physical health (Fazio, 2007; Ferraro, 1994; Li & Ferraro, 2006; Thoits & Hewitt, 2001; Weiss, 2005), older adults may become more socially integrated due to retirement, which leaves more opportunity to volunteer in the community (Cornwell, Laumann, & Schumm, 2008). Furthermore, older adults may be more capable than younger age groups of maximizing the benefit of relatively small social networks, thereby reporting more social satisfaction despite lower levels of social connectedness

(Schnittker, 2007). Nonkin relationships, such as those with friends, have been shown to be extremely beneficial for older adults in particular and protect against the threat of social disconnectedness and loneliness for those older adults who are childless and not partnered (Dykstra, 1993; Pinguart, 2003). This may be especially so for older women, who have been shown to socialize more actively and effectively and therefore establish more longer-standing nonkin relationships than older men (Antonucci & Akiyama, 1994). For elder orphans, in the absence of a partner and children, the ability to maximize the meaningfulness of nonkin relationships may be important to protecting against social disconnectedness and loneliness, as well as promoting their sense of mattering to others.

### **2.3 Mattering**

Rosenberg (Rosenberg & McCullough, 1981) first conceptualized mattering as the reciprocal of significance. Just as the individual can recognize the existence of significant others in their lives and the distinction from insignificant others, the individual should also be able to recognize their significance in the lives of others (Rosenberg & McCullough, 1981). Elliot, Kao, & Grant (2004) refer an individual's perception of mattering as "the perception that, to some degree and in any of a variety of ways, we are a significant part of the world around us," (p. 399). Mattering has been conceptualized as a dimension of the self-concept that operates on both an interpersonal (the perception that we are significant to others) and societal (the perception that we are a meaningful and contributing member of the community) level (Elliot, Kao, & Grant, 2004; Pearlin & LeBlanc, 2006; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Rosenberg describes the self-concept as "the totality of an individual's thoughts and feelings having reference to himself as an object" (1979, p. 7). That is to say, the self-concept is the product of the reflexive process that an individual undergoes in response to his or her social and

symbolic interactions (Gecas, 1982). According to some perspectives (Epstein, 1973; Gecas, 1982), the self-concept can be considered an ideology of who we are in interaction with others and the world around us. The self-concept is formed through self-evaluations such as self-esteem and, according to some (Elliot, Kao, & Grant, 2004; Pearlin & LeBlanc, 2006; Rosenberg & McCullough, 1981), our sense of mattering.

Mattering is not only important for an individual's self-concept, but also serves as a motivational force which compels the individual towards social integration and participation (Elliot et al., 2004; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Pearlin and LeBlanc (2006) describe mattering as a "self-fulfilling prophecy" in that the feeling that we matter to others can motivate us to form more significant relationships with others that, in turn, make us feel like we matter (p. 296). As others confide in us, give their time to us, and incorporate us into their lives, they effectively communicate that we matter. By in large, mattering can be broken down into three main dimensions: attention, importance, and dependence/reliance.

*Attention* refers to our basic need to be noticed and of interest to others (Rosenberg & McCullough, 1981). William James (1890) describes the absence of attention from others as intolerable for an individual and that even negative attention or maltreatment is preferable to going completely unnoticed (p. 293). When others recognize us at social gatherings it signals attention; on the other hand, when our presence is not acknowledged or recognized it can leave us feeling like a non-entity (Elliot et al., 2004). Not being noticed signals a lack of mattering. Individuals are motivated to gain the attention from others and will do so in both positive and negative manners. A person will behave in anti-social or unhealthy ways to obtain attention if they perceive acting in such ways is the only way to do so (Elliot et al., 2004).

*Importance* is reflective of a relationship with another individual – that we are the object of concern and relevance for others (Elliot et al., 2004; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Furthermore, recognizing that we are an ego-extension for another individual can be a powerful communication of importance, that is to say, that others experience our successes and failures as their own (Rosenberg & McCullough, 1981). Importance can be signaled by others investing in our well-being (Elliot et al., 2004). Research has shown that when we recognize that others invest in our well-being and provide us with support, we tend to engage in healthier behavior and self-care (Elliot et al., 2004; Lubben, 2017).

*Dependence/Reliance* is the extent to which we recognize that others rely on us to fulfill certain needs (Elliot et al., 2004; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Dependence can be reflective of social bonds or obligations which communicate to us that we are needed and add value (Turner, Taylor, & Van Gundy, 2004). In some instances, recognizing that others are reliant on us for their welfare can become a form of burden, as the weight of such responsibility can take a mental toll or become too inhibiting (Rosenberg & McCullough, 1981; Taylor & Turner 2001). Ultimately, however, Rosenberg & McCullough (1981) acknowledge this potential but further state that most individuals will “assume burdens happily and accept restraints freely if it gives them a feeling of significance” (p. 180).

Over the years, other researchers have built upon Rosenberg’s (Rosenberg & McCullough, 1981) conceptualization of mattering by suggesting the additional and distinct dimensions of *ego-extension*, *appreciation* (Schlossberg, 1989), and *interest* (Marcus, 1991). There is some disagreement among mattering researchers as to whether these additional dimensions are in fact distinct or simply different ways of defining the original three constructs. For example, initially *ego-extension* (if we are an ego-extension of another, that individual

recognizes and acknowledges a part of their self in us) was initially argued as a way to define importance (Elliot, et al., 2004; Rosenberg & McCullough, 1981). Other research however argues for *ego-extension* representing the fourth distinct dimension of mattering (France & Finney, 2017; Marcus, 1991; Rosenberg, 1985; Schlossberg, 1989), however further research to establish construct validity is necessary to confirm this.

The measurement and application of mattering has evolved over the course of the past few decades. In the inaugural study Rosenberg and McCullough (1981) relied on secondary data analysis with a sample of adolescents for the purpose of understanding adolescents' feelings of mattering to their parents; this research was conducted prior to the operationalization of mattering and served as the foundation for understanding the phenomena. Following this study, Taylor and Turner (2001) employed a five-item index to ascertain the impact of mattering on feelings of depression among a large sample of urban adults through longitudinal analysis. Pearlin and LeBlanc (2001) approached mattering from the perspective of deficit when they assessed the role of mattering within the parameters of caregiving to elders with Alzheimer's Disease. The Pearlin and LeBlanc (2001) measure however, was a loss of mattering assessment and thus, somewhat narrow in scope. In 2004, Elliot, Kao, and Grant, developed a more robust 24-item measure of mattering in an effort to further conceptualize and operationalize the concept of mattering by developing and validating a scale that reflected the various ways that an individual could matter to another; this study was conducted among a sample of adolescents and possesses strong discriminant validity. Items within this index of mattering reflect dimensions of social support, self-esteem, and self-consciousness, as well as the original three dimensions of attention, importance, and dependence/reliance (Elliot et al., 2004). Elliot and colleagues (2004) are proponents of the three-factor model of mattering which proposes that mattering is comprised

of attention, importance, and dependence/reliance and the additional items added to the measure serve to further define these three-factors.

Dependence/reliance, along with attention, and importance are gleaned from feedback from significant others and incorporated into our sense of self (Elliot et al., 2004; Fazio, 2007; 2009; Rosenberg & McCullough, 1981; Schieman & Taylor, 2001; Thoits, 2011). In this sense, interacting with significant others and developing relationships that are dependent on our participation and contribution communicates to us that we matter. For individuals who are socially isolated, the opportunity to develop such connections and dynamics may be limited which might ultimately lead to a reduced sense of mattering.

#### **2.4 Mattering as it Relates to Elder Orphans**

Mattering has been demonstrated as a protective resource that ameliorates the negative impact of depression (Cotten, 2008; Dixon, 2007; Francis et al., 2016; Raque-Bogdan, Ericson, Jackson, Martin, & Bryan; 2011; Rosenberg & McCullough, 1981; Taylor & Turner, 2001); this relationship may be explained by Durkheim's (1933) assertion that individuals are social beings who rely on the belief that they are relevant contributors to society – the absence of such a belief results in the loss of a reason for existence and feelings of emptiness. Mattering is also negatively related to loneliness, such that when we feel as though we matter to others, we feel that we are a significant part of those individuals' lives and we are a part of a social contract with those specific others, signaling that we are not alone (Bernardon, 2012; Chang, 2012; Flett, Goldstein, Pechenkov, Nepon, & Wekerle, 2016; Kadylak et al., 2015). Mattering may be particularly relevant to study in older adults as our sense of mattering can fluctuate over the lifecourse (Dixon, 2007; Fazio, 2007; 2009; Rosenberg & McCullough, 1981; Schieman, Bierman, & Ellison, 2010). That is not to suggest that older adults have lower levels of

matter more than younger adults, as a factor of age. On the contrary, there have been studies that show that older adults may experience higher levels of mattering than younger cohorts possibly due to the resiliency of the self (Mead, 1934; Rosenberg, 1979) and greater sense of identity accumulated with age (Myers & Degges-White, 2007). That is to say, that as we age, and accumulate relationships and interactions that help to form our self-concept over the years, we fortify a certain innate sense of who we are. Older adults are merely more at risk for the health declines, social network declines, and social role changes that affect our perceptions of mattering (Dixon, 2007; Fazio, 2007; 2009; Rosenberg & McCullough, 1981; Schieman, Bierman, & Ellison, 2010). For instance, as we age we may become more dependent on others to aid in our care and subsequently become less able to reciprocate such aid (Dixon, 2007; Fazio, 2007; 2009). Mattering is primarily derived from perceptions of social interactions and the social roles that we hold (Chew et al., 2015; Fazio; 2007; 2009; Schieman & Taylor, 2001; Thoits, 2011). Roles may be informal (i.e., spouse, parent, friend) as well as formal (i.e., occupational) (Fazio, 2009; Thoits, 1983). Social ties serve to reinforce our social roles by reflecting who we are to others and where we fit into society by the needs that we satisfy (Fazio, 2009; Thoits, 1983; 2011).

Furthermore, as individuals age, they experience multiple life transitions and role changes that can impact mattering, such as loss of a partner, retirement, and declines in functional and cognitive abilities (Fazio, 2009; Pearlin & LeBlanc, 2006). For instance, according to United States census data, roughly 66% of older adults report problems with climbing the stairs, 47% of older adults report trouble with independent living activities such as visiting the doctor or grocery shopping, 40% of older adults report trouble hearing, and 28% report cognitive difficulties such as trouble remembering and making decisions (He & Larsen,

2014). The development of such impairments or disabilities can lead older adults to rely heavily on some form of care-giving from others (either formally or informally). Older adults with cognitive and functional impairment may also be less able to aid others in their lives or be less mobile, which might diminish their social networks which can lead to decreases in mattering (Fazio, 2009). As elder orphans are at particular risk for loneliness and social disconnectedness, they are also at risk for cognitive impairment (Cacioppo & Hawkley, 2009; Dolen & Bearison, 1982). Furthermore, if they encounter age-related functional impairment they might have fewer resources to aid them in living independently. This may put them at greater risk for decreased mattering.

Similarly, older adults who retire from their careers experience a fluctuation in both the size of their social circle with whom they interact on a daily basis as well as their sense of productivity (Fazio, 2009). For example, a professor who has built their identity around their career, may experience the sense of role loss when they retire as they no longer are teaching or mentoring students. This transition to retirement can lead an individual to feel as though less people rely on them for their expertise or contribution to a company mission. Retirement can lead to a decrease in mattering, as an individual's career can provide a sense of purpose in life and connection with others that promotes a sense of mattering (Fazio, 2009). For an elder orphan, retirement can result in a drastic change in the amount of social ties encountered on a daily basis as well as the amount of individuals who depend on the elder orphan, making retirement potentially deleterious for an elder orphan's sense of mattering.

The partner role may provide an individual with one of the more meaningful sources of mattering (Fazio, 2009; Schieman & Taylor, 2001). A spouse provides an individual with a significant other that is a source of connection and social interaction, which can communicate

attention, importance, and dependency on a regular basis (Fazio, 2009; Schieman & Taylor, 2001). Taylor and Turner (2001) found that married individuals report higher levels of mattering than single individuals. Furthermore, widowhood and the resulting loss of the spousal role, can often impact one's sense of self and mattering in that through such a loss, an individual will potentially lose a relationship of importance and dependence and also a consistent source of attention (Fazio, 2009; Pearlin & LeBlanc, 2006). The role of parent may also be a prominent source of mattering for an individual – especially older adults who have potentially held such a role for a good portion of their lives, provided their children are still living (Fazio, 2009; Schieman & Taylor, 2001). Furthermore, the role of grandparent may be an extension of the parent role and increase the likelihood and interaction with adult children and grandchildren (Fazio, 2009).

Elder orphans are particularly vulnerable to decreases in mattering as they do not possess partners or children. These relationships are major sources of mattering for an individual as they represent relationships that are dependent on the individual and for who the individual is an important provider. Furthermore, live-in children and partners can provide easy-access support and communication that an individual can tap into as needed – without having to go to great lengths or distances. It is important to note that being an elder orphan does not preclude an individual from inhabiting social roles and cultivating meaningful social communication with social ties. I argue however that elder orphans who are retired and living alone may be at particular risk for low levels of mattering and the resulting negative ramifications to well-being such as loneliness as they lack the aforementioned roles and environmental conditions that promote mattering. Moreover, elder orphans who are more socially disconnected are most likely at greater risk of loneliness and lower levels of mattering than those who are more socially

connected. For elder orphans who are more socially disconnected however, ICT use may aid in connecting to more distant ties, thereby promoting social integration.

## **2.5 Mattering, ICTs, & Facebook**

Older adults' ICT use and adoption are driven by factors that are as diverse and varied as the backgrounds of the older adults themselves. ICT use and adoption can be traced to older adults' particular socio-economic status (SES), race, usability preferences and needs, demographics, and environment (Buse, 2009; Cotten et al., 2017; Czaja, Fiske, Hertzog, Charness, Nair, Rogers, & Sharit, 2006; Loos, Haddon, & Mante-Meijer, 2012; Neves et al., 2017; Selwyn et al., 2003; Selwyn, 2004; van Deursen & Helsper, 2015; Waycott, Vetere, Pedell, Morgans, Ozanne, & Kulik, 2016). For instance, 59% of younger older adults between the ages of 65 and 69 report owning a smartphone whereas only 17% of the eldest older adults, age 80 and above, report smartphone ownership (Anderson & Perrin, 2017). Furthermore, 81% of older adults with annual incomes of \$75,000 or higher report owning smartphones. Conversely, only 27% of older adults with annual incomes of \$27,000 or less report smartphone ownership. Higher education is positively associated with smartphone ownership for older adults as well (Anderson & Perrin, 2017). Likewise, regarding older adults' Internet use and broadband adoption, younger older adults are more likely to use Internet and adopt broadband than the eldest older adults; annual income and education are both positively related to Internet use and broadband adoption among older adults (Anderson & Perrin, 2017). The percentage of older adults who report using SNS such as Facebook and Twitter has risen 7 points between 2013 to 2017 from 27% to 34%, However, this number is still well below the general public.

Some older adults have expressed concern for the reliability of ICTs, specifically that ICTs will fail to work when they are needed the most (Cotten et al., 2017; Francis, Kadylak,

Makki, Rikard, & Cotten, 2017). Despite some concern about the reliability and impacts of ICT use among older adults, there has been a great deal of research detailing the benefits of ICT use. Among older adults, ICT use has been linked to decreased feelings of loneliness and depression and increased connection to social network support (Blit-Cohen & Litwin, 2004; Chopik, 2016; Cotten, Anderson & McCullough, 2013; Cotten, Ford, Ford, & Hale, 2012, 2014; Choi, Kong, & Jung, 2012; Czaja, Boot, Charness, Rogers, & Sharit, 2017; McMellon & Schiffman, 2002; Xie, 2007). In the past decade there has been increased attention focused on ICT use and mattering across somewhat diverse populations (Chew, Ilavarasan, & Levy, 2015; Cotten, 2008; Francis et al., 2016; 2017; Watulak et al., 2014). Cotten (2008) analyzed data from the College Internet Use Study, which examined the impact of Internet use on the well-being of first year college students. Mattering was positively associated with instant messaging and negatively associated with gaming. Furthermore, results showed that students' sense of mattering increased with increased use of the Internet to communicate with geographically distant social ties, strong network ties, and weak network ties. There was no significant relationship between mattering and change in contact with geographically close social networks as a result of Internet use (Cotten, 2008).

Chew, Ilavarasan, and Levy (2015) approached mattering from an ICT for development (ICT4D) perspective. Mattering was presented as a source for empowerment and agency that could push people to innovate, take chances, and push past constraints of poverty (Chew et al., 2015). From this basis, the researchers conducted a survey to assess the impact of mobile phone use on mattering among female microenterprise owners in Chennai, India. Participants' sense of mattering had a positive relationship with mobile phone use to access and maintain social

network connections and the perception that mobile phones benefitted business relationships (Chew et al., 2015).

Watulak, Wang, and McNary (2014) also focused their research on undergraduate college students but focused specifically on the relationship between Facebook activities and the three dimensions of mattering. Results of an online survey showed that students' awareness dimension was significantly and positively related to having one's content liked, receiving wall posts was significantly and positively associated with students' reliance dimension of mattering, and being tagged in a photo was positively and significantly associated with all three dimensions of students' mattering (awareness, importance, and reliance) (Watulak et al., 2014). Interestingly, certain Facebook activities were shown to have a negative association with students' sense of mattering. Liking a friend's Facebook content and receiving a private message were both negatively associated with mattering of the awareness and reliance dimensions, respectively (Watulak et al., 2014).

Recently, researchers have turned their attention to the relationship between older adults' ICT use and mattering. Francis and colleagues (2016; 2017) analyzed data that was gathered from the ICTs and Quality of Life Study, which assessed the impact of ICT use on quality of life measures of older adults living in assisted and independent living facilities. ICT use was conceptualized as various activities, including going on line, using Facebook, sending and receiving emails, and mobile phone use (Francis et al., 2016; 2017). Longitudinal survey results indicated that over time ICT use had a positive and significant relationship with perceived mattering through the pathway of social connectedness (Francis et al., 2017). Furthermore, results showed that mattering partially mediated the negative effect of ICT use on feelings of depression over time among older adults (Francis et al., 2016).

It is important to note that of these aforementioned studies, only one specifically assessed the effect of Facebook use on mattering (see Watulak et al., 2014); Francis and colleagues (2016; 2017) examined a broad range of ICT use and activities which featured Facebook use as one ICT activity and Chew et al. (2014) examined mobile phone use specifically. Furthermore, Francis and colleagues (2016; 2017) was the only study to examine older adults in particular as their population of interest. Despite the variation in the samples and approaches, what we can glean from these studies is that the social connection promoted by ICT use broadly speaking is one mechanism that promotes mattering. As elder orphans have been posited as having the potential for increased loneliness and social disconnectedness due to the absence of a partner and children, ICT use, specifically Facebook use, might bolster the efforts of the elder orphan to connect with more distant social ties. Moreover, as Facebook's platform is specifically designed to promote social contact and engagement with social ties via a variety of modalities, these studies provide a promising basis to the investigation of the potential for Facebook use to promote mattering among elder orphans.

## **2.6 Facebook Use**

Facebook is the most popular SNS as it is currently estimated that 70% of U.S. adults use Facebook, and 41% of Facebook users are 65 and older (Pew Research Center, 2017). Furthermore, it is estimated that, of those adults who use Facebook, 80% report using it daily (Pew Research Center, 2017). Adults aged 65 and over are the second fastest growing demographic on Facebook, with adults 50 years and older being the fastest growing demographic on Facebook (Casey, 2017). Due to the increasing popularity of Facebook among the older adult community, it will be the SNS examined in this study. The seeming ubiquity of Facebook use has been driven by individuals' motivations to utilize the site's unique communication activities

for establishing new and maintaining existing relationships (Ellison, Steinfield, & Lampe, 2007).

Facebook offers a variety of modalities for users to communicate with other users (Jung & Sundar, 2016). Users are able to communicate via wall post, private messages, commenting on others' photos, videos, or wall posts, "liking" others photos, videos or wall posts, sharing content with other users, and posting pictures or videos to name a few (Sundar, 2008; boyd & Ellison 2008). Just as users may initiate such activities, they may also be the recipients. The initiation and accumulation of such communication activities can serve as heuristics which affect perceptions about the quality of the relationships with other users (Sundar, 2008). For instance, Greene, Choudhry, Kilabuk, & Shrank (2010) found that when Facebook users communicate via the commenting modality, those communications more so than others enacted on Facebook, lead to increased perceptions of interpersonal support. Furthermore, Facebook's "Like" button feedback modality has been linked to increased feelings of connectedness, social support, and influence (Burke, Marlowe, & Lento, 2010a). Moreover, as Ballantyne et al. (2010) point out, SNSs like Facebook are accessible at any point of the day or night, meaning that an older user can access and engage modalities of their SNS at particular points of loneliness without having to leave their home or call someone on the phone, which is particularly useful at night when others may not be available and social establishments in the community may be closed (Ballantyne et al., 2010).

Burke, Kraut, and Marlow (2010b) identified three distinct forms of Facebook activities that users employ while navigating the site. *Directed communication* is conceptualized as one-on-one exchanges with another individual and is operationalized on Facebook as synchronous chat, direct messages, "liking" content, inline commenting, photo-tagging, and wall posts (Burke et al., 2010b). Directed communication on Facebook can be seen as more effortful and intimate,

as it tends to take place between stronger ties and evokes a form of reciprocation; because of this directed communication conveys a degree of importance (Burke et al., 2010b). Taking this into consideration, directed communication may be particularly effective at promoting a sense of mattering as importance is a dimension of mattering and reciprocation can imply a degree of reliance between two individuals which could also communicate mattering.

*Passive consumption of social news* refers to when a Facebook user reads others posts and updates, and *broadcasting* on Facebook describes user behavior of posting and updating for others but is not targeted at a specific individual (Burke et al., 2010). On Facebook, broadcasting may take the form of posting links, stories, status updates, photos, and re-posting interactions between friends for public consumption (Burke et al., 2010b). Although passive consumption and broadcasting are non-directed forms of communication, they can be conceptualized as a form of small-talk which has been shown to be valuable to the maintenance and formation of relationships (Goldsmith & Baxter; 1996). Furthermore, non-directed communication on Facebook may be useful for individuals to keep track of a larger circle of social ties, thus allowing them to feel more connected (Burke et al., 2010b). This may be especially useful means of communication for elder orphans who may not interact with close ties on a regular basis or have close ties within their homes.

Wellman and colleagues (2003) argue that computer-mediated communication (CMC) such as Facebook communication provides users with social affordances that do not replace traditional forms of communication, but rather, add new dimensions, modalities, and opportunities to connect. Walther's (1996) hyperpersonal model of CMC echoes this sentiment and sits in contrast to theories such as media richness theory (Daft, Lengel, & Trevino, 1987) and the social identity of deindividuation effects theory (SIDE; Lea & Spears, 1991) which argue that

reduced cues indicative of CMC hinder interpersonal communication and intimacy (Walther, 1996). Media theories proposed prior to the hyperpersonal model focus on what CMC lacks when compared to face-to-face (FtF) communication. Walther (1996), however, argues that although CMC does provide fewer physical cues than FtF communication, the unique affordances of CMC can provide individuals with opportunities and enhancements not available in FtF communication (Sumner & Ramirez, 2017; Walther, 1996; Walther, 2007). The hyperpersonal model posits that, in addition to being strategically impersonal and interpersonal, CMC may also, in some cases, be hyperpersonal, or exceeding the level of interpersonal connection typical for FtF communication (Walther, 1996; 2007; 2011). Specifically, “CMC may facilitate impressions and relationships online that exceed the desirability and intimacy that occur in parallel off-line interactions” (Walther, 2011, p. 460). Hyperpersonal communication is attributed to specific provisions of CMC to users that may affect cognitive processes of message construction, message delivery, and message reception (Sumner & Ramirez, 2017; Walther, 1996; Walther, 2007; Walther, 2011). There are four main focuses of the hyperpersonal model.

**Sender Processes.** CMC facilitates selective self-presentation by allowing message senders the ability to send only cues they feel are desirable, thereby portraying their best possible self (Walther, 1996; 2007; 2011). Additionally, the hyperpersonal model posits that, via CMC, individuals are less likely to send inadvertent and contrary physical and visual cues that might interfere with their intended message (Walther, 1996; 2007; 2011). Thus, an individual’s selective self-presentation may have a powerful effect on the message receiver’s perception of the message sender (Walther, 1996; 2007; 2011).

**Receiver Processes.** The lack of physical cues in CMC leads receivers to idealize the message sender (Walther, 1996; 2007; 2011). The process of idealization occurs when, in the

absence of physical cues, receivers fill in the gaps and create their own image of the message sender (Walther, 1996; 2007; 2011). CMC's affordance of asynchronicity facilitates the processes of both selective self-presentation and idealized perception.

**Channel Attributes.** CMC provides individuals with asynchronous channels for communication that allow users to take their time in constructing thoughtful messages without having to devote cognitive effort to paying attention to their communication partner in real-time (Walther, 1996; 2002; 2007; 2011). Moreover, research suggests that individuals take advantage of the ability to edit their messages before sending them in order to increase appeal (Walther, 2007). These specific channel attributes, along with sender and receiver processes combine to influence feedback effects.

**Feedback Effects.** The aforementioned processes, as presented by the hyperpersonal model (Walther, 1996), create a feedback system that may enhance or exaggerate the communicated relationship between sender and receiver (Walther, 1996; 2007; 2011). Behavioral confirmation refers to the process whereby an individual who receives a selective self-presentation, idealizes the message sender, then replies in a way that reciprocates the crafted image (Walther, 2011). Feedback of behavioral confirmation can lead to enhancement of expectations (Walther, 2011).

**Identity Shift.** With regard to selective self-presentation and feedback, studies suggest that selective self-presentations can be integrated into an individual's self-concept (Gonzales & Hancock, 2008; 2011). Specifically, the concept referred to as "identity shift" may occur especially in public digital arenas, such as social network sites, and refers to an individual's optimized self-presentation affecting the individual's attitudes about themselves, potentially leading to more positive self-concepts (Gonzales & Hancock, 2008; 2011). For example,

Gonzalez and Hancock's (2011) study shows that individuals exposed to their own Facebook profile exhibited higher levels of self-esteem, particularly so when they took the time to edit their profile with more positive information (Gonzalez & Hancock, 2011). The identity shift phenomenon (Gonzalez & Hancock, 2008; 2011; Walther, 2011), occurs when an individual's presentation of their ideal self increases the individual's awareness of their ideal self. (Gonzalez & Hancock, 2011). The identity shift results from an individual communicating via asynchronous channel, whereby they are afforded the time to carefully construct and present an image of their ideal self. (Gonzales & Hancock, 2008; 2011; Walther, 2011).

CMC research has shown that communicating frequently via CMC is linked to increased perceptions of intimacy and satisfaction in relationships (Anderson & Emmers-Sommer, 2006), interpersonal support (Greene, Choudhry, Kilabuk, & Shrank, 2010), feelings of increased connectedness, social support, and influence (Burke, Marlowe, & Lento, 2010) as well as increased self-esteem (Gonzales & Hancock, 2008). This may be due in part to the aforementioned affordances of CMC which allow users to carefully attend to the heuristics and interactions that promote their desired perceptions of themselves and others (Anderson & Emmers-Sommer, 2006; Gonzales & Hancock, 2008; 2011, Walther, 1996). As mattering has been described, like self-esteem, as a dimension of an individual's self-concept (Elliot, Kao, & Grant, 2004; Pearlin & LeBlanc, 2006; Rosenberg & McCullough, 1981; Taylor & Turner, 2001) it is logical to suggest that CMC via Facebook can affect an individual's perception of mattering. Furthermore, as Pearlin and LeBlanc (2006) have indicated that individuals are motivated to matter, it is likely that mattering would be a desired perception that an individual would desire to cultivate through CMC on Facebook and therefore attend more to such heuristics that might indicate such a perception. This may be especially true for elder orphans who, in the absence of

a partner or children, might be less likely to have ready access to the relationships and interactions that might promote mattering on a day-to-day basis. Furthermore, the ability for an individual to access Facebook at any point of the day or night could serve as a supplement for the absence of a significant other in the home (Ballantyne et al., 2010). This may be especially relevant for elder orphans as, although they may have strong nonkin ties or community integration, it is not always possible to physically access social ties outside of the home. Even if a friend is not actively on Facebook, an individual can still access photos and old correspondences, as well as send new messages or comments. The unique modalities of Facebook communication make it a particularly relevant environment for elder orphans to maintain and potentially build significant relationships that may promote perceptions of mattering and protect against loneliness and social disconnectedness.

## **2.7 Facebook Adoption among Older Adults**

Older adults' preferences and perceptions regarding general SNS and Facebook use and adoption are just as varied as their views and experiences with ICTs in general. For example, following an intervention where participants used an existing SNS, Lehtinen, Nasanen, and Sarvas (2009) conducted interviews, both group and individual, covering topics such as participants' social networks, use of communication media, and SNS experiences and perceptions. Results showed that SNS could afford expressions of reciprocity and similarity which are crucial components of friendship among older adults and serve to strengthen weak ties (Lehtinen, Nasanen, & Sarvas, 2009). Older adults expressed reticence, however, to adopt SNSs due to concerns for privacy and inability to control content. Such concerns may hinder relationship maintenance and formation on SNS as they may lead to older adults' discomfort with posting personal information and the perception of superficiality of online friendships. Xie,

Watkins, Golbeck, and Huang (2012) also found that concern for privacy was a major factor in older adults' hesitance to use SNSs. In the same vein, Luders and Gjevjon's (2017) study also provides insight into lack of enthusiasm for SNS adoption among older adults. In a qualitative study of older adults and their views and uses of online communication, specifically on Facebook, they found that older adults with less offline social support were less interested in online communication with social ties or maintaining communication with weak ties (Luders & Gjevjon, 2017).

Braun (2013) employed Technology Acceptance Model as theoretical framework for understanding SNS adoption among older adults (age 60-90). Survey results showed that perceived usefulness, trust in SNS, and frequency of internet use were significant predictors of intentions to use SNS. On the other hand, Jung and Sundar (2016) found that older adult Facebook users were motivated by more social needs. Survey results indicated that social bonding was the primary motivation for participation in various Facebook activities. Social bridging, curiosity, and responding to family requests also emerged as motivators among the older adults surveyed (Jung & Sundar, 2016). Similarly, Madden (2010) found that older adults were motivated by connecting/reconnecting with their peers, promoting intergenerational communication, and obtaining social support.

As the literature suggests, there are a multitude of factors that can encourage or discourage older adults to use SNSs and Facebook. While acknowledging the barriers to older adults' SNS use, it is important to note that older adults are also capable and willing to adapt to the communication preferences of their social networks as a means of staying connected (Yuan, Hussain, Hales, & Cotten, 2016). Furthermore, although older adults engage on Facebook at

lower rates and have fewer connections than younger users, some studies suggest they stand to gain greater benefit to quality of life (Quinn, Chen, Mulvenna, & Bond, 2016).

## **2.8 Facebook Use & Loneliness Among Older Adults**

Research on the potential impact of SNS and Facebook use on well-being has grown steadily over the past decade. Some studies have found that SNS use has the potential to increase both loneliness and isolation (Morris, 2010; Turkle, 2011), and negatively impact school, work, and meaningful relationships (Kim, LaRose, & Peng, 2009). Other researchers have found that Facebook use can benefit users through the promotion of social capital (Ellison, Steinfeld, & Lampe, 2007; Steinfeld, Ellison, & Lampe, 2008), mattering (Watulak et al., 2014), and reduced feelings of depression and anxiety, and higher life satisfaction (Grieve, Indian, Witteveen, Tolan, & Marrington, 2012).

To a lesser but increasing extent, the effect of SNS and Facebook use on well-being among older adults has also gained research interest (Hunsaker & Hargittai, 2018). Among older adults, SNS and Facebook use is related to reduced feelings of depression due to social bonding capabilities (Yoon, Lee, Beum, & Gim, 2016), increased quality of life (QoL) (Khvorostianov, Elias, & Nimrod, 2011; Quinn, Chen, Mulvenna, & Bond, 2016), increased social satisfaction (Hutto & Bell, 2014), and social network maintenance and extension (Khvorostianov, Elias, & Nimrod, 2011).

One possible overarching explanation as to how Facebook use might promote well-being among various age groups is the site's facilitation of social tie maintenance. Ellison and colleagues (2007) described how users can enact social bridging and bonding and both maintain weak ties easily due to the modalities of the Facebook interface, as well as activate latent ties to weak ties with minimal investment of time and resources. This could potentially result in more

diverse social networks, which have been shown to result in lower levels of depression, greater subjective well-being, and better physical health (Fiori, Smith, & Antonucci, 2007). Furthermore, Facebook use research with both older and younger adults has shown that the primary motivation for use is social (Ellison et. al., 2007; Jung & Sundar, 2016; Madden 2010). This could imply that those who are actively seeking to connect with others and utilize the Facebook platform for social engagement may be more receptive and more willing to acknowledge the benefits of Facebook use to wellbeing. Specifically, gerontology research has shown that older adults are adaptable to social network change and can maximize minimal ties to glean social satisfaction (Schnittker, 2007). As the Facebook interface contains a variety of modalities for users to interact with a variety of ties, there are a multitude of means and opportunities for older adults to communicate with social ties of various strengths and reap the benefits to wellbeing of those interactions. Despite the potential social affordances, the relationship between older adults' SNS and Facebook use and loneliness, however, is to this point somewhat inconclusive and bears further research (Khosravi, Rezvani, & Wiewiora, 2016).

There are relatively few studies regarding older adults' Facebook use and loneliness specifically; however there are a few that examine the impact of older adults' SNS use broadly speaking and the impact on loneliness. For instance, Brandtzaeg (2012) examined older adults' (aged 61-75) SNS use in relation to social capital and loneliness. Findings of this study showed that although older SNS users scored higher than non-users in three out of four indicators of social capital, users still reported higher levels of loneliness than non-users. Similarly, and looking at Facebook use specifically, Bell, Fausset, Farmer, Nguyen, Harley, and Fain (2013) conducted a survey which examined the relationship between Facebook use and loneliness, social satisfaction, and confidence with technology among older adults (aged 52-92). Results

showed no significant difference in loneliness between users and non-users of Facebook. Facebook users did however score higher on social satisfaction and confidence with technology than non-users. In addition, Aarts, Peek, and Wouters (2014) found no relationship between SNS use and loneliness in their panel study of older adults (aged 60+) residing in the Netherlands. Furthermore, one common trait of these studies is the relatively young cut-off ages used to define older adults. In particular, the average individual in their early 50s may have drastically different social network size, employment status, and functional mobility than an individual in their early 90s. This may imply that for a younger adult, SNS or Facebook use is not as much of a factor in promoting social connection and reducing loneliness than it would be for an older adult. Along these lines, SNS or Facebook use might hold a more prominent position in a socially disconnected elder orphan's life as they may have fewer social ties that are easily accessible; therefore communication via Facebook might have a more meaningful impact on reducing loneliness.

On the other hand, in a study designed to examine the effect of SNS use on age-related stressors, van Ingen, Rains, and Wright (2017) found that SNS use served as a buffer between physical disability and loneliness among older adults (aged 55+). Furthermore, results showed SNS use to reduce the positive effects of physical disability on well-being among older adults. However, SNS use did not have any direct effects on loneliness or well-being (van Ingen, Rains, & Wright, 2017).

Finally, in their 2010 study, Ballantyne and colleagues argued for SNSs' unique ability to reduce older adults' (aged 69-85) experience of *temporal loneliness* (Stanley et al., 2010), or loneliness that is specific to a time of day or stage in life. Results of a series of in-depth interviews following SNS training suggest that SNSs not only served to reduce loneliness among

older adults but also provided a gateway to new information and experiences (Ballentyne et al., 2010). Furthermore, respondents said that they felt that SNSs promoted a feeling of connection to the outside world as well (Ballentyne et al., 2010). Incidentally, of the aforementioned studies regarding SNS and Facebook use and loneliness among older adults, Ballentyne and colleagues' (2010) study has the oldest age cut-off for their sample at 66 years old. Moreover, by indicating that SNS use had a direct effect on temporal loneliness, this research suggests that SNS use may be particularly meaningful during specific times of the day/night when loneliness may be more salient. This may be especially relevant for elder orphans who are not able to access social connection in their own home when they feel they need it most. By in large however, the results of these studies may suggest that SNS and Facebook communication should not be viewed as a replacement for face-to-face interaction but rather as a supplement.

To this point the literature has shown that elder orphans, given their social situation, could be at unique risk for loneliness and reduced mattering due to social disconnectedness. Furthermore, we see that the growing prominence of Facebook use in the lives of older adults may have the potential to serve as a protective resource against loneliness through the promotion of the perception of mattering to social ties. It is also evident that the degree of social disconnectedness of an elder orphan will have an effect on the magnitude of the relationship between Facebook use, mattering, and loneliness. To further test these assertions, I propose a cross-sectional survey of elder orphan Facebook users.

## **2.9 Hypotheses & Research Questions**

Although results regarding the relationship between Facebook use and loneliness are somewhat mixed, in consideration of the literature regarding mattering and loneliness among

older adult Facebook users, I propose the following research questions and hypotheses (For model see Figure 1:

**RQ1:** What are elder orphans’ primary motivations for using Facebook?

**RQ2:** Which Facebook activities do elder orphans engage in most frequently?

**RQ3:** Which Facebook activities are related to which dimensions of elder orphans’ perception of mattering?

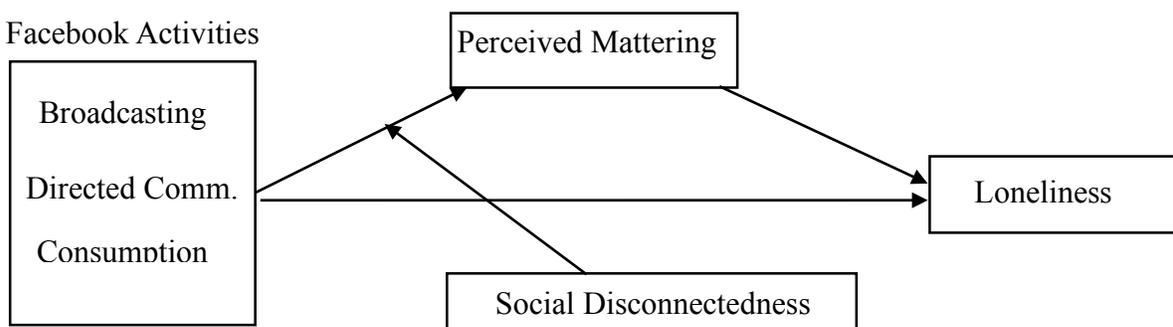
**H1:** There will be a direct and positive relationship between frequency of Facebook activities and perceived mattering among elder orphans.

**H2:** There will be a direct and negative relationship between frequency of Facebook activities and loneliness among elder orphans.

**H3:** Perceived mattering will mediate the relationship between frequency of Facebook activities and loneliness among elder orphans

**H4:** Social disconnectedness will moderate the relationship between Facebook activities and perceived mattering.

**Figure 1. Model of Hypothesized Relationships between Variables**



Controls: Age, Gender, Income, Education, Race, Employment Status, Depression, Self-Reported Health, Facebook Experience, Facebook Intensity, Facebook Privacy Concerns

## Chapter 3: METHODS & MEASURES

### 3.1 Design & Sample

Participants were recruited using a Qualtrics Panel for a cross-sectional online survey. Given the resources available, we estimated that we could collect data from 500 elder orphans. We conducted sensitivity analysis to determine the smallest possible effect size that could be found given a sample size of 500 participants. With 80% power and an alpha of .05, the smallest possible effect size we could detect is  $\rho = .12$ . With 95% power and an alpha of .05, the smallest possible effect size we could detect is  $\rho = .16$ . Recruitment ultimately yielded a sample size of 517. Participants were currently single/widowed/divorced older adult (age 65+) Facebook users from the United States, without children, who live alone in their own homes. Moreover, the requested sample was comprised of 50% male participants and 50% female participants. Although recruiting through this platform offers a relatively efficient means of accessing such a distinct subpopulation, it is important to mention here that by recruiting participants via an online survey, the sample has a degree of Internet savviness and comfort not shared by all older adults. As such, the sample is not representative of the elder orphan population at large but rather speaks to those who are currently online and who have, in some way, already acknowledged a benefit for using Facebook. The potential benefits of Facebook use might not be as accessible or easily recognized by elder orphans who are not currently on the site or even online.

Once participants gave consent to participate they filled out an online survey which lasted approximately 12 minutes and assessed their responses to various items regarding Facebook use, social disconnectedness, loneliness and mattering. They were also asked to answer questions regarding ICT use, Facebook experience, demographics, and mental and physical health.

### 3.2. Measures

**Dependent variables.** *Mattering* is assessed using Elliot, Kao, & Grant's (2004) mattering scale ( $\alpha = .93$ ) which has been used with older adult samples (Elliot, Colangelo, & Gelles, 2005). The 24-item, five-point Likert-type scale is comprised of the three dimensions of awareness/attention ( $\alpha = .87$ ), importance ( $\alpha = .89$ ), and dependence/reliance ( $\alpha = .88$ ). In developing this measure Elliot et al. (2004) created a 47-item questionnaire distributed to three samples of students. Items were assessed for both construct and discriminant validity and any offending items were dropped from the measure. The final 24-item measure contained strong construct validity and high levels of internal consistency across all three samples (Elliot et al., 2004). This study examines both the overall measure as well as the individual dimensions of mattering. Sample items included "People are usually aware of my presence" (awareness/attention), "there are people in my life who react to what happens to me in the same way that would if it had happened to them" (importance), and "quite a few people look to me for advice on issues of importance" (dependence/reliance). Participants were asked to "think about the people in general and rate your agreement to the following statements." Reverse coded items included "Most people do not seem to notice when I come or when I go", "In a social gathering, no one recognizes me", "people tend not to remember my name", "people do not care what happens to me", "When I have a problem, people usually don't want to hear about it", "Much of the time, other people are indifferent to my needs", "There is no one who really takes pride in my accomplishments", "No one would notice if one day I disappeared", "If the truth be known, no one really needs me", "I am not someone people turn to when they need something." Response options included: 1 (Strongly disagree), 2 (Somewhat disagree), 3 (Neither agree or disagree), 4 (Somewhat agree), 5 (Strongly agree). To compute this scale, reverse coded items were first

recoded then each sub scale was summed and divided by the number of items within each sub scale. To compute the full index, scores of the three subscales were summed and then divided by three. Higher scores indicate higher levels of mattering, awareness/attention, importance, and dependence/reliance.

***Loneliness*** was assessed with the short-form UCLA Loneliness Scale (ULS-8) ( $\alpha = .87$ ) developed by Hays and DiMatteo (1987) and validated by Wu & Yao, (2008) and has been used with older adult samples (Neto, 2014). The scale was validated with a sample of undergraduate students in Taiwan and supports the one-factor model of loneliness proposed by Hays and DiMatteo (1987). The 8-item, 5-point Likert-type scale is comprised of the following items: “I lack companionship”, “There is no one I can turn to”, “I feel left out”, “I feel isolated from others”, “I am unhappy being withdrawn”, “People are around me but not with me” and reverse coded items: “I am an outgoing person”, and “I can find companionship.” Participants were asked to rate their agreement with each items with the response options: 1 (Strongly disagree), 2 (Somewhat disagree) 3 (Neither agree or disagree), 4 (Somewhat agree), 5 (Strongly agree). To compute this scale reverse coded items were recoded and scores were averaged with higher scores indicating greater loneliness.

***Motivations for using Facebook*** was assessed with Jung and Sundar’s (2016) 16-item, 7-point Likert-type scale ( $\alpha = .89$ ), which has been used with older adult samples. Jung and Sundar (2016) developed a composite measure from results from Joinson (2008) and Jung, Walden, Johnson, & Sundar (2013) and administered a 22-item questionnaire to a sample of 352 older adults in the United States via an online survey. Upon exploratory factor analysis, Jung and Sundar (2016) found that 16 of the 22 items loaded onto four factors, *social bonding* ( $\alpha = .83$ ), *social bridging* ( $\alpha = .87$ ), *curiosity* ( $\alpha = .81$ ), and *family requests* ( $\alpha = .73$ ). Respondents were

asked to rate their agreement to the statement “In general, I use Facebook...” and sample items include: “To stay connected with family members” (social bonding), “To communicate with like-minded individuals” (social bridging), “Because I am just curious about Facebook” (curiosity), and “Because a family member set up a Facebook account for me” (family request). Response options for the scale included: 1 (Strongly disagree), 2 (Disagree), 3 (Somewhat disagree), 4 (Neither agree or disagree), 5 (Somewhat agree), 6 (Agree), 7 (Strongly agree). Each distinct factor was assessed separately. To compute, responses were summed with higher scores indicating greater agreement.

**Independent variables.** *Frequency of Facebook activities* was assessed by creating a composite measure of Burke, Kraut, and Marlow’s (2010b) Facebook activities scales ( $\alpha = .94$ ). Burke and colleagues (2010b) used longitudinal panel data of a sample of English speaking adults from around the world. Participants were surveyed at two points in time and only those who completed both surveys were included in the final sample of  $n = 415$ . Frequency of Facebook site activities were recorded for the 60-day period in between surveys and information was aggregated from server logs. Activities were characterized into three types of communication activities – broadcasting ( $\alpha = .80$ ), consumption ( $\alpha = .80$ ), and directed communication ( $\alpha = .92$ ). Scales for broadcasting, consumption, and directed communication were created by taking the means of the z-scores for the activity variables (Burke et al., 2010b). For this study, a composite measure of these Facebook activities was created and the item “write notes” was dropped from the broadcasting measure as there is no longer a “notes” feature on Facebook. Furthermore, this study assessed frequency of Facebook activities by self-report on a 5-point Likert-type scale, asking participants to respond to “When you are on Facebook, how frequently do you...”. Sample items included: “Update your status” (broadcasting), “Receive

wall posts from others” (directed communication – inbound), “Write messages to others” (directed communication – outbound), and “View others’ profiles” (consumption). Response options include: 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), 5 (Always). Factor analysis was conducted and verified factor loadings exhibited by Burke et al. (2010a; 2010b). Responses were summed with higher values indicating greater frequency.

**Moderating variable. *Social disconnectedness*** was assessed with the 6-item Lubben Social Network Scale (LSNS-6) ( $\alpha = .81$ ) (Lubben et al., 2006; Lubben & Girona, 2003), an abbreviated version of the Lubben Social Network Scale (Lubben, 1988). This scale was constructed from a set of three questions aimed at the evaluation of kin ties and then repeated for non-kin ties among three separate samples of older adults residing in Hamburg, Switzerland, and London. The measure was developed with the intention of identifying older adults at-risk for social isolation (Lubben et al., 2006) which is why it is used here as a measure of social disconnectedness. The LSNS-6 asks participants to first, “Consider the people to whom you are related by birth, marriage, adoption, etc.” and next “Consider all of your friends, including those who live in your neighborhood.” Participants were then asked to respond to the following three questions for both prompts – tailored specifically to each prompt: “How many relatives do you see or hear from at least once a month” (family), “How many friends do you see or hear from at least once a month” (friends), “How many relatives do you feel at ease with that you can talk about private matters” (family), “How many friends do you feel at ease with that you can talk about private matters” (friends), “How many relatives do you feel close to such that you could call on them for help” (family), and “How many friends do you feel close to such that you could call on them for help” (friends). Response options included: 0 (None), 1 (One), 2 (Two), 3

(Three or four), 4 (Five through eight), 5 (Nine or more). To compute this scale items were reverse coded and summed so that higher scores indicate greater social disconnectedness.

**Controls.** Following review of the literature it is evident that there are certain variables that should have an effect on the outcomes of interest in this study. For instance, depression has been linked to both mattering and loneliness (Elliot et al., 2004; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Furthermore, personality type has also been linked to loneliness (Victor, Scambler, Bond, & Bowling, 2000) as well as physical health (Cornwell & Waite, 2009). Moreover, various demographic factors were included as controls that have been shown to impact the outcomes of this study as demographics have been shown to influence ICT use and adoption broadly speaking (Buse, 2009; Cotten et al., 2017; Czaja, Fiske, Hertzog, Charness, Nair, Rogers, & Sharit, 2006; Loos, Haddon, & Mante-Meijer, 2012; Neves et al., 2017; Selwyn et al., 2003; Selwyn, 2004; van Deursen & Helsper, 2015; Waycott, Vetere, Pedell, Morgans, Ozanne, & Kulik, 2016). Finally, Facebook intensity, Facebook experience, and Facebook privacy concerns are included to control for the potential effects associated with more familiarity, comfort, and engagement, with the platform. Thus, I have included the following controls.

**Depression** was assessed with the 2-item depression scale (PHQ-2) ( $\alpha = .80$ ) of Lowe et al.'s (2009), 4-item Patient Health Questionnaire (PQH-4) which has been used with samples of older adults. The PQH-4 is a brief measure of depression and anxiety. Lowe and colleagues validated this measure via a "nationally representative face-to-face household survey" in Germany (Lowe et al., 2009; p. 86). Construct validity of the PHQ-2 was determined by intercorrelation with self-esteem and life satisfaction scales as well as demographic risk factors of depression (Lowe et al., 2009). The scale asks participants "Over the past month, how often

have you...” and items include “Had little interest in doing things”, and “Felt, down, depressed, or hopeless”. Response options include: 0 (Not at all), 1 (Several days), 2 (More than half the days), 3 (Nearly every day). The scale was computed by summing the items and then dividing by two.

**Facebook intensity** was assessed using Ellison, Steinfeld, and Lampe’s (2007) Facebook Intensity Scale ( $\alpha = .80$ ) which has been used with older adult samples. The response categories for the first 6 items of this scale include 1 (Strongly disagree), 2 (Somewhat disagree), 3 (Neither agree or disagree), 4 (Somewhat agree), 5 (Strongly agree). Items include: “Facebook is a part of my everyday activity,” “I am proud to tell people I’m on Facebook,” “I feel out of touch when I haven’t logged onto Facebook for a while,” “I feel I am part of the Facebook community,” and “I would be sorry if Facebook shut down.” The remaining two items of the scale required participants to fill in their responses to the questions: “Approximately how many TOTAL Facebook friends do you have?” and “In the past week, on average, approximately how much time PER DAY have you spent actively using Facebook?” The scale was computed by taking the mean of all items in the scale.

**General self-reported health status** was measured with a single item asking participants to rate their health on a 5-point scale. Response options included 1 (Poor), 2 (Fair), 3 (Average), 4 (Good), 5 (Excellent). Higher scores indicate better health. For general self-reported health statuses, single-item measures have been used extensively with older adult samples and are shown to have strong associations with mortality and are generally seen as easy to administer and interpret (DeSalvo, Bloser, Reynolds, He, Munter, 2006).

**ICT use** was assessed with a number of binary items such as “Do you use a desktop computer”, “Do you use a laptop computer (*A laptop or notebook computer is a small personal*

*computer that is self-contained – screen and keyboard combined – and can be moved around easily*”, “Do you use a tablet computer (eg. iPad, Microsoft Surface Pro, Samsung Galaxy Tab, Amazon Fire)” “Do you use a cell/mobile phone (If yes, respondents should answer next question in ICT use section. If no, skip to next section)” “Is your cell/mobile phone a smartphone”. Response options included: 0 (No) and 1 (Yes).

**Facebook experience** was assessed with a single item. Participants answered the question, “How many years have you been using Facebook”? Participants then clicked on a dropdown menu and select the amount of years they have been a Facebook user – response options range from 1-14 years.

Facebook privacy concern was assessed with a single item. Participants were asked to rate their agreement to the statement, “I am concerned for my privacy on Facebook.” Response options ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

**Demographic information** was assessed by a series of single-item measures. To assess **age**, participants responded to “How old are you?” by selecting their age from a dropdown menu. To assess **gender**, participants responded to the question “What is your gender?” by selecting 1 (Female), 2 (Male), or 3 (Other). To assess race, participants responded to the question “What is your **race** (select all that apply)?” by selecting 1 (Asian/Pacific Islander), 2 (Black or African American), 3 (White), 4 (Hispanic/Latino), 5 (Native American or American Indian), and/or 6 (Other). To assess **education**, participants responded to the question “What is the highest level of education you have completed?” by selecting 1 (Less than a high school degree), 2 (High school graduate), 3 (Some college but no degree), 4 (Associate degree), 5 (Bachelor’s degree eg., BA, BS), 6 (Master’s degree eg., MA, MS, MSW), 7 (Professional school degree eg., MD, JD, DDS), or 8 (Doctorate degree eg., PhD, EdD). To assess **relationship status**, participants

responded to the question “What is your relationship status?” by selecting 1 (Married or domestic partnership), 2 (In a relationship), 3 (Separated), 4 (Divorced), 5 (Widowed), or 6 (Single, never married). To assess *income*, participants responded to the question “What is your total household yearly income?” by selecting 1 (Less than \$10,000), 2 (\$10,000 to \$24,999), 3 (\$25,000 to \$34,999), 4 (\$35,000 to \$49,999), 5 (\$50,000 to \$74,999), 6 (\$75,000 to \$99,999), 7 (\$100,000 to \$149,999), 8 (\$150,000 to \$199,999), or 9 (\$200,000 or more). To assess *employment status*, participants responded to the question “Which employment status best describes your current situation?” by selecting 1 (Employed full-time), 2 (Employed, part-time), 3 (Unemployed), or (Retired).

### **3.3. Analytical Design**

This analysis utilized IBM’s SPSS Statistics software package to analyze all research questions and hypotheses. Following data collection, a series of diagnostic tests were conducted to determine distributions on all variables. Reverse coded items were then recoded. Next, a factor analysis was conducted on the Facebook activities measures with principle component extraction and varimax rotation in order to verify the factor structure observed by Burk et al. (2010a;b). To analyze **RQ 1** and **RQ 2** addressing elder orphans’ primary Facebook motivations and activities, respectively, means of the items which comprise the scales were compared to determine the most frequently performed Facebook activities and the most reported motivations for Facebook use among the elder orphans in the sample. To assess **RQ 3**, which Facebook activities are related to which dimensions of perceptions of mattering, a simple linear regression was conducted with Facebook activities (broadcasting, consumption, directed communication-inbound, directed communication-outbound) and the subscales of mattering (awareness/attention, importance, dependence/reliance). To assess hypotheses **H1**: There will be a direct and positive

relationship between frequency of Facebook activities and perceived mattering among elder orphans, **H2:** There will be a direct and negative relationship between frequency of Facebook activities and loneliness among elder orphans, **H3:** Perceived mattering will mediate the relationship between frequency of Facebook activities and loneliness among elder orphans and **H4:** Social disconnectedness will moderate the relationship between Facebook activities and perceived mattering, the Hayes' Process Model (Hayes, 2009) macro in SPSS was employed. PROCESS is a modeling tool for mediation and moderation analysis and thus was the most appropriate method of addressing the relationships proposed in the model. Results of these analyses are detailed in the following chapter.

## Chapter 4: ANALYSES & RESULTS

### 4.1 Diagnostics & Reliability Analyses

Following data collection and cleaning, univariate and bivariate analyses were conducted to assess distributions on all variables and to determine necessity for recoding. Next, a factor analysis was conducted on the Facebook activities measures which confirmed the factor structure observed by Burk et al. (2010a;b). Then, a composite Facebook Activities measure ( $\alpha = .94$ ) was created from the broadcasting ( $\alpha = .80$ ), consumption ( $\alpha = .80$ ), and directed communication ( $\alpha = .92$ ) measures. Next, a series of reliability analyses were conducted to determine Chronbach's alpha for each of the measures employed in this study. For a full list of measures and reliabilities see Table 1.

**Table 1. Scale Reliability Index**

Scale	<i>M (SD)</i>	Chronbach's Alpha	Min	Max	Items
Mattering	3.47 (.62)	.93	2.36	3.92	24
Attention	3.35 (.53)	.87	2.36	3.71	8
Importance	3.50 (.62)	.89	3.35	3.90	10
Dependence	3.50 (.90)	.88	3.39	3.82	6
Loneliness	2.50 (.81)	.87	2.19	2.83	8
Depression	.57 (.75)	.80	.50	.64	2
Social Disconnectedness	2.20 (.10)	.81	1.93	2.83	6
Facebook Activities	2.19 (.70)	.94	1.43	2.85	18
Broadcasting	1.73 (.70)	.80	1.42	1.89	4
Directed Communication	2.40 (.82)	.92	1.63	2.47	10
Consumption	2.19 (.80)	.80	1.78	2.61	4
Facebook Motivations	3.33 (.84)	.89	1.96	4.40	16
Facebook Intensity	3.13 (1.02)	.80	1.54	3.70	8

Note: Standard deviations (*SD*) in parentheses

### 4.2. Demographics

Ultimately, 517 participants completed the online survey in full. Participants were recruited and compensated for participation through a paid Qualtrics Panel. Participants were all older adult Facebook users (ages 65+) who lived alone, had no living children, and were currently single. Participants were asked to rate their responses on Likert-type scales for the most

part, to a series of questions regarding aspects of well-being and Facebook use. Participants were also provided a space to write in any additional information they wanted to share about their Facebook use. The average length of survey completion was 14 minutes.

Participants were predominantly white (94%) and there was a 50/50 split between male and female participants. The average age of participants was 70 years old with the youngest participant being 65 years old and the oldest 87 years old. The majority of participants (77%) reported an annual income of less than \$50,000; the majority (80%) had at least some college experience, ranging from those who attended college but did not graduate (21%) to those who had earned a PhD (3%). Participants were, for the most part, retired (80%) and 50% of participants rated their health “good” or “excellent.” See Table 2 for full demographic characteristics of the sample.

**Table 2. Demographics of Participants**

Demographic	Mean / Percent
Age	70 years (4.23)
Gender (Male)	50%
Race (White)	92%
Income	
<i>Less than \$10,000</i>	5%
<i>\$10,000 to \$24,999</i>	38%
<i>\$25,000 to \$34,999</i>	20%
<i>\$35,000 to \$49,999</i>	13%
<i>\$50,000 to \$74,999</i>	14%
<i>\$75,000 to \$99,999</i>	5%
<i>\$100,000 to \$149,999</i>	3%
<i>\$150,000 to \$199,999</i>	1%
<i>\$200,000 or more</i>	.4%
Education	
<i>Less than a high school degree</i>	2%
<i>High school graduate</i>	18%
<i>Some college but no degree</i>	21%
<i>Associate degree</i>	11%
<i>Bachelor's degree (eg. BA, BS)</i>	28%
<i>Master's degree (eg. MA, MS, MSW),</i>	16%
<i>Professional school degree (eg., MD, JD)</i>	2%
<i>Doctorate degree (eg., PhD, EdD).</i>	3%
Employment (Retired)	82%

**Table 2. (cont'd.)**

Self-rated Health	
<i>Poor</i>	3%
<i>Fair</i>	25%
<i>Average</i>	21%
<i>Good</i>	44%
<i>Excellent</i>	6%
Pets at Home (No)	60%

Note:  $N = 517$ ; Standard deviation in parentheses

### 4.3. Facebook and ICT Use Statistics

Participants were also asked a series of single item questions regarding their ICT and Facebook use in order to establish some context for their attitudes towards technology and social media. Email (96%) and mobile phones (90%) were the two most predominantly used ICTs, with 68% of mobile phone users using a smartphone. Non-smartphones (21%) and tablets (46%) received the least amount of use. See Table 3 for complete percentages.

**Table 3. ICT Use**

ICT	Percent
Email	96%
YouTube	64%
Desktop Computer	59%
Laptop Computer	65%
Mobile Phone	90%
<i>Non-smartphone</i>	21%
<i>Smartphone</i>	69%
Tablet	46%

Note:  $N = 517$

Regarding other social media use, all participants were Facebook users, as condition of their recruitment. YouTube (64%) was the most predominant form of social media used by participants. The least commonly used social media was Instagram (13%). See Table 4 for complete findings.

**Table 4. Social Media Use**

Social Media	Percent
Facebook	100%
Twitter	31%
Instagram	13%
YouTube	64%

Note:  $N = 517$

#### 4.4. Research Question 1: Elder Orphans' Motivations for Facebook Use

The research questions and hypotheses were analyzed using IBM's SPSS Statistics software package. To analyze **RQ 1** addressing elder orphans' motivations for using Facebook, a series of frequencies were run on each of the items in the measure. Due to an error in the response options for the Facebook Motivations measure, it was not possible to conclusively determine the most motivating factors for Facebook use. Instead of participants being presented with the response options "Strongly disagree," "Disagree," "Neither disagree or agree," "Agree," "Strongly agree," participants saw "Strongly disagree," "Disagree," "Neither disagree or agree," "Neither disagree or agree," and "Somewhat Agree." Therefore, determining the higher two values within the 5-item scale is not possible. Instead, the least motivating factors were assessed from the measure and short answer write-in responses were used to determine the greatest motivations. Items with a mean score of 1-1.49 roughly equate to "Strongly disagree", scores of 1.5-2.49 roughly equate to "Disagree", scores of 2.5-3.49 roughly equate to "Neither disagree nor agree", scores of 3.5-4.49 roughly equate to "Agree", and scores of 4.5 to 5 roughly equate to "Strongly agree". Following comparisons of the means, results suggest that for elder orphans, items "because my family members requested that I join Facebook" ( $M= 2.34$ ;  $SD=1.48$ ) and "because a family member set up a Facebook account for me" ( $M= 1.97$ ;  $SD = 1.26$ ) were the least motivating factors for Facebook use. For a full list of mean scores for Facebook motivations see Table 5.

**Table 5. Elder Orphans' Motivations for Using Facebook**

Facebook Motivations	"In general, I use Facebook..."	Mean (SD)
<i>Social Bonding</i>	to view photos	4.37 (1.09)
	to maintain relationships with people I do not see very often	4.34 (1.71)
	to keep in touch with old friends	4.31 (1.18)
	to browse family members and friends' statuses	4.07 (1.27)
	to stay connected with family members	3.99 (1.46)
	because it allows me to connect with younger family members	3.59 (1.53)
<i>Social Bridging</i>	to get information about family events	3.55 (1.50)
	to communicate with like-minded individuals	3.58 (1.44)
	to join groups	3.13 (1.47)
	to organize or join events	2.68 (1.43)
<i>Curiosity</i>	to look at the profiles of people I do not know	2.64 (1.48)
	because I am just curious about Facebook	3.20 (1.48)
	because I am interested in new communication technology	3.16 (1.44)
<i>Family Request</i>	because I am afraid of what is going on in my social networks	2.40 (1.28)
	because my family members requested that I join Facebook	2.34 (1.48)
	because a family member set up a Facebook account for me	1.97 (1.26)
<b>Response Options</b>	<b>1 (Strongly Disagree) - 5 (Strongly Agree)</b>	

Note:  $N = 517$

Participant write-in responses indicate that for many, Facebook allows them a relatively easy way to stay in contact with others and know what is going on in the lives of their social networks. For instance, one male participant, aged 66, said, "I've reconnected with old friends from neighborhoods I've lived in and people I went to school with via Facebook." Other participants stated similar sentiments such as "It's a great way to stay in touch with family and friends" and "One of my friends was on Facebook so I signed up to communicate with him."

#### 4.5. Research Question 2: Frequency of Facebook Activities

To assess RQ 2 regarding elder orphans' most frequently performed or encountered Facebook activities. A series of frequencies were calculated on each in the Facebook activities

measures. Items with a mean score of 1-1.49 roughly equate to “Never”, scores of 1.5-2.49 roughly equate to “Sometimes”, scores of 2.5-3.49 roughly equate to “About half the time”, scores of 3.5-4.49 roughly equate to “Most of the time”, and scores of 4.5 to 5 roughly equate to “Always”. Upon mean comparison, results show that giving ( $M = 2.85$ ;  $SD = 1.16$ ) and receiving ( $M = 2.80$ ;  $SD = 1.21$ ) “Likes” are the most frequently occurring Facebook activities, followed closely by receiving comments ( $M = 2.72$ ;  $SD = 1.15$ ) and messages ( $M = 2.71$ ;  $SD = 1.12$ ) from others. Alternatively, the two least frequently occurring Facebook activities reported by elder orphans were tagging others in photos ( $M = 1.63$ ;  $SD = .89$ ) and posting photos ( $M = 1.77$ ;  $SD = .79$ ). Due to the relatively low mean scores for each item, I have also reported the percentage of participants who selected “Never.” For full results, see Table 6.

**Table 6. Results for Frequencies of Facebook Activities**

Frequency of Facebook Activities	“When you are on Facebook, how frequently do you...”	<i>M(SD)</i>	“Never”
<i>Broadcasting</i> ( $\alpha = .80$ )	post other items on your wall?	1.88 (.97)	40%
	update your status?	1.83 (.89)	39%
	post photos?	1.77 (.79)	38.9%
<i>Directed communication</i> ( $\alpha = .92$ )	give “Likes” to others?	2.85 (1.16)	8%
	receive “Likes” from others?	2.80 (1.21)	12%
	receive comments from others?	2.72 (1.15)	10%
	receive messages from others?	2.71 (1.12)	6%
	receive wall posts from others?	2.47 (1.14)	17%
	write comments to others?	2.41 (1.03)	13%
	write messages to others?	2.32 (.99)	14%
	get tagged in photos by others?	2.01 (.92)	28%
	write wall posts?	1.90 (.93)	36%
	tag friends in photos?	1.63 (.89)	57%
<i>Content consumed</i> ( $\alpha = .80$ )	view others photos?	2.61 (1.04)	7%
	view others profiles?	2.23 (.91)	14%
	click on friends’ newsfeed stories?	2.15 (1.03)	27%
	reload your newsfeed?	1.78 (1.05)	53%
<b>Response Options</b>	<b><i>1 (Never) to 5 (Always)</i></b>		

#### 4.6 Research Question 3: Relationship Between Facebook Activities and Mattering

To assess **RQ 3**, which Facebook activities are related to which dimensions of perceptions of mattering, a series of regressions were conducted with each of the Facebook activities as predictors of the subscales of mattering (awareness/attention, importance, dependence/reliance). The significant predictors of attention/awareness were receiving “Likes” from others ( $p = .000$ ) and writing messages to others ( $p = .016$ ). Significant predictors of importance include receiving “Likes” from others ( $p = .001$ ) and getting tagged in photos by others ( $p = .02$ ). Finally, significant predictors of dependence/reliance were receiving “Likes” from others ( $p = .000$ ) and getting tagged in photos by others ( $p = .049$ ).

**Table 7. Regression Coefficients: Mattering Regressed on Facebook Activities**

	Mattering		
	Attention/Awareness	Importance	Dependence/Reliance
update your status?	-.06	-.05	-.06
post photos?	.001	-.009	-.02
post application stories?	.06	.04	.10
post other items on your wall?	-.03	-.05	-.12
receive wall posts from others?	.005	.007	-.7.0
receive messages from others?	-.04	-.06	-.03
receive comments from others?	-.06	-.03	-.10
receive “Likes” from others?	.16***	.15**	.25***
get tagged in photos by others?	.05	.10*	.11*
write wall posts?	-.02	-.03	-.08
write messages to others?	.11*	.08	.12
write comments to others?	-.06	-.05	-.05
give “Likes” to others?	-.06	-.03	-.04
tag friends in photos?	.05	-.01	.01
click on friends’ newsfeed stories?	.006	.06	.10
view others profiles?	.01	.01	.10
view others photos?	-.002	.02	-.10
reload your newsfeed?	.01	.00	.03
<i>F</i>	2.82	2.60	3.22
Adjusted R-squared	.06	.05	.07

Note:  $N = 517$

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

#### 4.7. Hypotheses 1 & 2: Regressions of Facebook Activities, Mattering, and Loneliness

To assess hypotheses **H1**: There will be a direct and positive relationship between frequency of Facebook activities and perceived mattering among elder orphans, and **H2**: There will be a direct and negative relationship between frequency of Facebook activities and loneliness among elder orphans, two separate regressions were conducted. The first, **H1**, assessing the effect of frequency of Facebook activities on mattering while controlling for age, gender, income, employment, education, race, self-rated health, depression, Facebook intensity, Facebook experience, and Facebook privacy concerns. Results for this analysis showed that frequency of Facebook activities significantly predicted mattering scores ( $b = .15, t(3.10), p = .002$ ). The model also accounted for 26% of the variance in mattering scores (Adjusted R-squared) = .26,  $F(1,503) = 9.62, p < .01$ ). Similarly, results showed a significant and negative relationship ( $b = -.05, t(-1.95), p = .05$ ) between frequency of Facebook activities and loneliness (**H2**) while controlling for age, gender, income, employment, education, race, self-rated health, depression, Facebook intensity, Facebook experience, and Facebook privacy concerns. The model accounted for 34% of the variance (Adjusted R-squared = .34,  $F(1, 503) = 3.81, p < .05$ ). See Table 8 for full results. **Therefore, H1 and H2 were supported.**

**Table 8. Regression Analyses: Mattering and Loneliness Regressed on Facebook Activities and Control Variables**

	Mattering		Loneliness	
	Model 1	Model 2	Model 1	Model 2
Facebook Activities		.15** (.04)		-.05* (.05)
Age	.08* (.01)	.08* (.01)	-.09* (.01)	-.09* (.01)
Gender (1 = F)	-.16*** (.05)	-.16*** (.05)	.05 (.06)	.05 (.06)
Income	.14** (.02)	.14** (.02)	.004 (.02)	.003 (.02)
Employment	-.04 (.03)	-.03 (.03)	.03 (.03)	.03 (.03)
Education	.06 (.02)	.06 (.02)	-.03 (.02)	-.03 (.02)
Race	-.005 (.03)	-.003 (.03)	.03 (.03)	.03 (.03)
Self-Rated Health	-.04 (.03)	-.04 (.03)	.04 (.03)	.04 (.03)
Depression	-.39*** (.03)	-.39*** (.03)	.59*** (.04)	.59*** (.04)
Facebook Intensity	.21*** (.03)	.12* (.03)	-.05 (.03)	.003 (.04)

**Table 8. (cont'd.)**

Facebook Experience	-.03 (.03)	-.05 (.01)	.03 (.01)	.03 (.01)
Facebook Privacy	.01 (.02)	.10 (.02)	.02 (.03)	.02 (.03)
<i>F</i>	14.77***	9.62**	22.28***	3.80*
Adjusted R-squared	.24	.26	.33	.34

Note:  $N = 517$ ; Standardized coefficients reported; Standard error in parentheses.

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

#### 4.8. Hypotheses 3 & 4: PROCESS Analysis

To assess the mediating effect of perceived mattering on the relationship between frequency of Facebook activities and loneliness (**H3**), PROCESS analysis was employed (Hayes, 2017; Model 4). Covariates in the model included depression, age, gender, income, employment, education, self-rated health, Facebook intensity, Facebook experience and Facebook privacy concerns. Bootstrapping methods were also employed (5000 samples). Analysis revealed a significant mediation effect which showed that frequency of performing Facebook activities was positively related to participants' perceptions of mattering ( $b = .18, p = .000$ ), which in turn was negatively related to loneliness ( $b = -.70, p = .000$ ). The indirect effect of frequency of Facebook activities on loneliness was significant at the .000 level. The direct relationship between frequency of Facebook activities and loneliness was not significant, which indicates complete mediation by perceived mattering. **Thus, H3 was supported.** See Table 9.

**Table 9. PROCESS Mediation Analysis**

Mattering as a Mediator (n=517)	<i>b</i>	se	t	P	LLCI	ULCI
Facebook Activities → Loneliness	-.10	.05	-2.22	.026*	-.19	-.01
Facebook Activities → Mattering	.13	.04	4.92	.000***	.11	.25
Direct Effect	.03	.04	.70	.48	-.05	.10
Indirect Effect	-.70	.04	-15.65	.000***	-.78	-.61

Note: LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval

To assess the moderating effect of social disconnectedness on the relationship between frequency of Facebook activities and perceived mattering (**H4**), PROCESS analysis was

employed (Hayes, 2017; Model 1). Covariates in the model included Depression, Age, Gender, Income, Employment, Education, Self-rated Health, Facebook intensity, Facebook experience and Facebook use frequency. Bootstrapping methods were also employed (5000 samples). Analysis revealed that although there was a significant and negative relationship between social disconnectedness and perceived mattering ( $b = -.25, p = .000$ ), social disconnectedness did not significantly moderate the relationship between frequency of Facebook activities and perceived mattering ( $b = .03, p = .27$ ). **Therefore, H4 was not supported.** See Table 10.

**Table 10. PROCESS Moderation Analysis**

Social Disconnectedness as a Moderator (n=517)	<i>b</i>	se	t	P	LLCI	ULCI
Facebook Activities → Mattering	.07	.04	1.71	.09	-.01	.14
Social Disconnectedness → Mattering	-.25	.03	-10.21	.000***	-.30	-.20
Interaction → Mattering	.03	.03	1.06	.27	-.03	-.09

Note: LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval

## Chapter 5: DISCUSSION

This study sought to better understand the impact of Facebook use on the well-being of elder orphans by examining the effect of frequency of Facebook activities on perceptions of mattering and loneliness among elder orphans. Prior research has demonstrated that ICT use, broadly speaking, is positively related to mattering (Francis et al., 2017) and negatively associated to loneliness (Cotten et al., 2013) among older adults and that SNS use (not specifically Facebook) is negatively associated with loneliness among older adults (Ballantyne et al., 2010). Furthermore, prior research has shown Facebook use to be positively related to mattering among younger adults (Watulak et al., 2014); however, no published work to date has focused specifically on the relationship between Facebook use and mattering among older adults. Similarly, this is the first study of its kind to focus on elder orphans in particular when it comes to mattering, loneliness, and Facebook use. Based on past research this study asserts that the frequency of Facebook activities should be positively related to elder orphans' perceptions of mattering, negatively related to loneliness, and that the degree of social disconnectedness should impact the magnitude of the effect of Facebook activities on mattering.

In addition to these assertions, a series of three research questions and four hypotheses were put forth. First, this study examined the primary motivations of elder orphans regarding Facebook use. Second, I examined which Facebook activities elder orphans engage in most frequently. Finally, this study explored which Facebook activities were related to which specific dimensions of mattering (ie. attention/awareness, importance, and dependence/reliance).

This chapter first provides an overview of each of the findings of this study. From that basis, this chapter examines each research question and hypothesis in order to explore the implications of the results within the framework of prior research regarding elder orphans,

Facebook, mattering, and loneliness. Finally, a summary of how the results of each research question and hypothesis culminate to address the overarching questions driving this study. I also review the limitations of this study.

## **5.1 Overview of Findings**

The research questions in this study are aimed at understanding why elder orphans use Facebook, what activities elder orphans most frequently perform and encounter, and what impact these activities have on perceptions of mattering. The item enquiring about elder orphans' motivations for using Facebook contained repeated response options and no options for "Agree" and "Strongly agree"; as such, the least prominent motivations can be ascertained, from which the more motivating items can be deduced and speculated but not concluded at this point. Results suggest that for elder orphans, the least motivating factors to use Facebook are "because a family member set up a Facebook account for me" and "because my family members requested that I join Facebook."

The second research question explores the most frequently observed Facebook activities among elder orphans. The most frequently performed or encountered activities among elder orphans are giving and receiving "Likes." Conversely, the least performed activities among elder orphans are posting photos and tagging friends in photos.

The third research question explores Facebook activities in relation to the different dimensions of mattering. Giving "Likes" and writing messages to others are positively related to attention/awareness. Giving "Likes," is also positively related to importance and dependence/reliance and is the only item to be significant across all dimensions of mattering. In addition, viewing others' profiles is also positively related to dependence/reliance.

The first two hypotheses posit that frequency of Facebook activities will be positively related to perceptions of mattering and negatively related to loneliness, respectively. Results of the regressions demonstrate that frequency of Facebook activities is indeed positively related to mattering and negatively related to loneliness. In both regressions covariates include, age, education, employment, race, gender, income, self-rated health, depression, Facebook experience, Facebook privacy concern, and Facebook intensity. For H1, age, income, Facebook intensity, and being female are also significantly associated with higher levels of mattering. Mattering is negatively related to depression. For H2, loneliness is also negatively related to age and positively related to depression. For both the regression and PROCESS analyses, the overall mattering measure was used as opposed to the sub-measures of attention/awareness, importance, and dependence/reliance in order to form a more comprehensive argument as the sub-measures on their own do not imply mattering overall.

The last two hypotheses explore mediation and moderation of the relationship between Facebook activities, mattering, social disconnectedness, and loneliness among elder orphans using the Hayes' PROCESS Model macro (Hayes' 2017, Model 4; Model 1). Results for H3 suggest that mattering fully mediates the relationship between frequency of Facebook activities and loneliness among elder orphans, being positively related to frequency of Facebook activities and negatively related to loneliness. There is no significant direct effect of frequency of Facebook activities and loneliness in this model. For H4 moderation analysis of social disconnectedness on the relationship between frequency of Facebook activities and mattering reveals no significant moderation. For a complete synopsis of the hypotheses in this study, see Table 11.

**Table 11. Results of Hypotheses Tests**

Hypotheses	Results
<b>H1:</b> There will be a direct and positive relationship between frequency of Facebook activities and perceived mattering among elder orphans.	<b>Supported</b>
<b>H2:</b> There will be a direct and negative relationship between frequency of Facebook activities and loneliness among elder orphans.	<b>Supported</b>
<b>H3:</b> Perceived mattering will mediate the relationship between frequency of Facebook activities and loneliness among elder orphans	<b>Supported</b>
<b>H4:</b> Social disconnectedness will moderate the relationship between Facebook activities and perceived mattering.	<b>Not Supported</b>

## 5.2 Summary of Facebook Use Motivations Findings

The first two research questions of this study seek to create a basis for understanding elder orphans' Facebook use. The findings related to motivations for Facebook use echo prior literature related to older adults' motivations for using Facebook. Jung and Sundar (2016) created four categories of Facebook use motivations for older adults, social bonding, social bridging, curiosity, and responding to family member requests. In their 2016 study Jung and Sundar found that of the four categories, responding to family requests was the least motivating. The results of this study concur with those of Jung and Sundar (2016).

The family request category consists of two items: "because a family member set up a Facebook account for me" and "because my family members requested that I join Facebook." These are the only two items in the instrument that specifically detail some degree of family involvement or intervention relating to Facebook use. Other items related to family refer to the older adult, or in this case, elder orphan taking the initiative to reach out or stay informed with family happenings. Prior research has suggested that older adults seek out assistance with ICTs

from family and gain social benefit from such interactions (Francis et al., 2018; Selwyn et al., 2003). Jung and Sundar (2016) demonstrated that older adults are primarily motivated to use Facebook to reach out and stay in touch with family and friends (social bonding), as such, the low levels of motivation related to family requests and involvement in both their 2016 study and the present study, raise questions. Specifically, the results beg the questions of whether family members are simply not reaching out to their elder orphans to get them connected on Facebook or if elder orphans (and older adults in general) are more internally motivated and proactive when it comes to Facebook use. In the present context, the answer may be the latter. As elder orphans live alone and are unattached, their need to rely on others to perform daily tasks may not be that apparent when compared to older adults with partners and/or children. It is possible that elder orphans may have developed an independence and autonomy out of necessity of their living situation. Furthermore, elder orphans may be more inclined to reach out to friends in these situations, rather than family. This is an area for future research to better understand the relationship between older adults and Facebook use as well as develop a better understanding of elder orphans in general.

### **5.3 Summary of Facebook Activity Frequency Findings and the Relationship to Mattering**

Findings for the frequency of Facebook activities performed by elder orphans show that giving and receiving “Likes” are the two most frequent activities. This finding echoes the findings of Burk, Marlow, and Lento (2010), and their assertion that the “Like” feature could enhance positive feelings and sense of connectedness and support. Interestingly, receiving “Likes” was the only Facebook activity to be significant across all three sub-dimensions of mattering. This finding ties in well with the mattering literature that argues that mattering is a motivating force (Rosenberg & McCullough, 1981). Those who feel like they matter will

continue to behave in ways that make them feel as such, and those who do not feel like they matter will behave in ways to receive a response that makes them feel as if they do. These findings potentially support that notion as, essentially, the elder orphan receives more “Likes” they feel as though they matter more and, in turn, they send more “Likes” to connect with others and perpetuate the feeling of mattering. Further longitudinal testing is necessary to confirm these findings.

This finding also supports the hyperpersonal argument of the feedback loop. The feedback that we receive in computer-mediated communication environments leads us to tailor our responses to align with the feedback and ultimately, the way in which we self-present and see ourselves (Walther, 2007). The hyperpersonal model argues that the affordances of various technologies can create a perception of intimacy and connectedness with others that exceeds that of the face-to-face environment (Walther, 1997). As Jung & Sundar (2016) argue that the “Like” function is a powerful heuristic and Burke, Marlow, and Lento (2010) argue that it signifies social support from others, it is not a leap to suggest that the “Like” function can also communicate a degree of mattering to others that they would not experience in their face-to-face environment. This effect may be especially true for elder orphans as their living environment can limit the amount and frequency of communication they receive on a daily basis, making Facebook communication that much more important. For instance, one participant stated, “Weeks go by with the people on Facebook being my ONLY contact with anyone!”

The two least frequently performed Facebook activities were posting photos and tagging others in photos. This is interesting in that being tagged in photos was significant at the importance and dependence/reliance sub-dimensions. The hyperpersonal argument would be that if being tagged in photos made us feel important and that others depended on us, we would in

turn post more photos and tag others more in order to encourage the behavior that made us feel important and relied upon (Walther, 1997). In this particular instance however, it is possible that the elder orphans in this sample lacked the knowledge and comfort to post photos or despite the fact that elder orphans feel important and relied upon when they are tagged in photos, they may have concerns for privacy that deter them from posting photos or tagging others. As noted earlier, the majority of participants “strongly agreed” that they are concerned for their privacy on Facebook. Furthermore a few participants indicated that by not posting photos, they were protecting their information and privacy. Additionally, for elder orphans in particular, there may be reasons beyond concerns for privacy that lead them to not post photos and tag others as frequently. As one participant stated, “I don't consider it vital to my life. I am older, my daughter has passed away so I feel like I don't want to see milestones that I can no longer have and family/kid pictures a lot.” To better understand this, future research should focus on distinctions in behavior and preferences between elder orphans who have chosen to remain unattached and elder orphans who are so because of death or divorce as the autonomy of choice can drastically change how an individual feels about their situation.

#### **5.4 Summary of Relationship between Facebook Activities, Mattering, Loneliness, and Social Disconnectedness**

Results from the PROCESS analysis show that the frequency of Facebook activities has a significant and positive relationship with mattering and a significant and negative relationship with loneliness for elder orphans. Moreover, mattering fully mediates the relationship between frequency of Facebook activities and loneliness, indicating that it is through the promotion of mattering that Facebook activities may combat loneliness for elder orphans. Although these

findings can be meaningful for older adults in general, they are particularly important for elder orphans as illustrated by one male participant, aged 67:

To evaluate my answers properly, you should know that I am handicapped and homebound without a car. My close family all died by 1990 due to heart or cancer. I moved to a town where I am not known to be close to a good heart hospital. So Facebook is the only contact I have with anyone I am close to.

As Facebook is designed to be a tool for social connection it may be a tool of particular value to the elder orphan or any older adult facing the threat of social isolation. Older adults dealing with limited mobility, health issues, geographic barriers to care and family may not have many social resources that they can utilize on a daily basis. In this case, Facebook plays a prominent role in connecting these individuals to social network support and the world at large.

In this study it was predicted that social disconnectedness would moderate the relationship between frequency of Facebook activities and mattering however there was no significant moderation. This could be reflective of prior research regarding older adults and social networks. Research has shown that despite dwindling social networks, older adults are better suited than younger adults to adapt and maximize the benefit of fewer social ties (Schnittker, 2007). That is to say, that older adults can find more social satisfaction with smaller social networks than younger adults. These findings coupled with the assertions of the hyperpersonal model (Walther, 1996), that CMC can enhance our perceptions of our relationships with others and ourselves, may have essentially phased out the moderating effect of social disconnectedness on the relationship between frequency of Facebook activities and mattering among elder orphans.

## 5.5 Summary of Discussion

In sum, the findings of this study speak to the potential for Facebook use to promote particular aspects of well-being among elder orphans. This is the first study of its kind to demonstrate that certain Facebook activities, receiving “Likes” and being tagged in photos in particular, have direct correlations to perceptions of mattering among elder orphans.

Furthermore, this study adds to the research asserting that Facebook use may help to combat feelings of loneliness, which is meaningful in that this relationship has been somewhat inconclusive in prior research (Khosravi et al., 2016).

Results also demonstrate that elder orphans are not overly motivated by family requests to use Facebook. This may not be surprising considering that elder orphans are defined by their lack of immediate family. The absence of a moderating effect of social disconnectedness on the relationship between frequency of Facebook activities and mattering however suggests that elder orphans may be able to tap into meaningful relationships through Facebook use that may nullify the need for immediate family or large social networks when it comes to feeling as though they matter to others.

Finally, this study adds to the literature on elder orphans and provides some insight into their motivations, behaviors, and ultimately feelings about themselves and their social standing through the lens of Facebook use. Although further research is needed to claim that Facebook use is definitively beneficial for elder orphans, this study is the first step towards understanding the impact and potential benefit that Facebook use has on perceptions of mattering, loneliness and SNS communication among elder orphans. As one male participant, aged 83, noted, “Thanks to Facebook, getting old isn’t that bad and I’m not all alone in this world.”

## 5.6 Limitations

There were several limitations with this study that should be taken into consideration to better understand the results. First, this study is cross-sectional and, as such, is simply a snapshot and can only speak to correlation rather than causation. To gain a deeper insight into the effect of Facebook activities on the well-being of elder orphans, a longitudinal study would allow an understanding of the effects over time.

Second, participants were all Facebook users. This indicates both a comfort with the platform and technology that may not be indicative of the greater elder orphan population in general. Specifically, this group may be more attuned to reap the potential benefits of Facebook use than those who are unfamiliar with Facebook or perhaps do not even have wifi access. At this point, the elder orphans that are socially disconnected from others and technology are vulnerable to the deleterious effects of isolation and future research should focus on connecting with this sub-population and conducting needs assessments.

Third, the sample for this study was predominantly white and educated. As detailed in the literature review, demographic factors influence technology access, use, and benefit. Future research should pursue a more diverse sample and compare results from distinct racial, educational, and socio-economic backgrounds in order to paint a more comprehensive picture of the elder orphan population.

Fourth, the survey did not inquire about participants' degree of knowledge or training related to ICT or Facebook use. As prior research has indicated that ICT training and education can promote ICT use among older adults, it stands to reason that the degree of knowledge would have an impact on the frequency of Facebook activities that elder orphans performed. Future studies should address the issue of Facebook knowledge.

Fifth, due to a technical glitch with the survey software, it was not possible to assess participants' primary motivations for using Facebook. Although the short answer write-ins provided insight that was in line with past research findings, this was not a statistically significant sample to pull from and therefore limits the amount of inference that can be drawn. Future research should explore the motivations for use more thoroughly and perhaps bolster with qualitative interviews as well to form a deeper understanding of what drives elder orphans to log in to Facebook.

Finally, the literature on elder orphans and their social media or ICT use is extremely limited. Therefore, this study was exploratory in nature in order to build a foundation of knowledge in this realm. This also means however, that the questions had to assess breadth of information in order to create such a foundation. For instance, this study focused on elder orphans exclusively. Future studies could compare elder orphans' Facebook use to that of non-elder orphaned older adults. Additionally, this study focused on only Facebook users. Future studies might compare mattering and loneliness levels of those elder orphans on Facebook to those elder orphans not on Facebook, as well as those elder orphans who are offline.

## Chapter 6: CONCLUSION

This exploratory study of elder orphans' Facebook use and the impact on well-being focuses primarily on how Facebook use might affect perceptions of mattering and loneliness and whether degree of social disconnectedness had an impact on the magnitude of that effect. The frequency of Facebook activities does have a significant and positive relationship with mattering and a significant and negative relationship with loneliness. Moreover, mattering fully mediates the relationship between Facebook activities and loneliness. Additionally, this study also shows that specific Facebook activities, such as receiving "Likes" and being tagged in photos were related to the attention/awareness, importance, and dependence/reliance sub-dimensions of mattering. This study also asked a series of research questions related to elder orphans' Facebook use that show that elder orphans are least motivated to use Facebook by family requests and that their most frequently performed Facebook activities are giving and receiving "Likes." The findings of this study have both theoretical and practical implications and make contributions to the literature regarding elder orphans and Facebook use.

First, this is the first study of its kind to explore the relationship between elder orphan's Facebook use and perceptions of mattering and loneliness. Previous literature has looked at older adults' use of ICTs and SNS in general to promote mattering (Francis et al., 2018), and reduce loneliness (Bell et al., 2013). This study is the first to demonstrate that Facebook use is positively related to mattering and negatively related to loneliness among the specific sub-population of elder orphans. This is significant in that the amount of elder orphans and adults facing social isolation is increasing dramatically as the population ages (Carney et al., 2016; Verdery & Margolis, 2017). As Facebook is the most ubiquitous social media site in the world, it is important to understand the impact of using Facebook on the well-being of this growing

population as well as the full potential for the effective implementation of Facebook or similar SNS platforms and modalities into interventions, programs, and training aimed at reducing loneliness among elder orphans.

Theoretically speaking, this study supports the arguments of the hyperpersonal model (Walther, 1996) as findings suggest elder orphans engage predominantly in giving and receiving “Likes” and that receiving “Likes” has a significant relationship with mattering and all of its sub-dimensions. This finding could indeed be indicative of the relationship between the feedback loop and self-presentation (Walther, 1996), and possibly the identity shift (Gonzalez & Hancock, 2008) if receiving “Likes” in fact causes an increase in perceptions of mattering, although further longitudinal research is necessary to support this argument. Although many hyperpersonal studies have focused on how CMC can influence how we communicate and ultimately feel about our relationship to others (Anderson & Emmers-Sommer, 2006; Gonzales & Hancock, 2008; 2011; Greene et al., 2010; Walther, 1996), this is one of a few studies (see Gonzales & Hancock, 2008) that use the hyperpersonal model as framework for understanding how CMC might affect how we see ourselves. Furthermore, this study extends hyperpersonal research by introducing the idea that degree of social disconnectedness in the face-to-face environment might influence the impact of CMC on how we see our relationships to others and ourselves as well as the importance of CMC in promoting access to social ties.

Practically speaking, the results of this study can be used to provide pilot data for a scalable intervention targeted to elder orphans or simply older adults at risk for social isolation in order to promote access to social network ties and reduce loneliness and disparities in access to connection through the effective use of social media. Organizations such as AARP can incorporate some of the findings of this study to their “Connect2Affect” program in order to

increase the effectiveness of the program and communicate with older adults in a way that makes them truly feel as though they matter. This study is a first step in developing an evidence-based understanding of the unique health needs of the elder orphan population and designing interventions that harness the benefits of technology use and translate to behaviors that lead to improvement in quality of life for the elder orphan population in particular and the older adult population at large.

## **APPENDICES**

## APPENDIX A: VARIABLES

### Independent Variables

<b>Facebook Activities</b>	<b><i>“When you are on Facebook, how frequently do you...”</i></b>
<i>Broadcasting</i> ( $\alpha = .69$ )	a. update your status? b. post photos? c. post application stories? d. post other items on your wall?
<i>Directed communication</i> ( $\alpha = .94$ )	e. receive wall posts from others?
<i>Inbound</i> ( $\alpha = .90$ )	f. receive messages from others? g. receive comments from others? h. receive “Likes” from others? i. get tagged in photos by others?
<i>Outbound</i> ( $\alpha = .88$ )	j. write wall posts? k. write messages to others? l. write comments to others? m. give “Likes” to others? n. tag friends in photos?
<b>Content consumed</b> ( $\alpha = .86$ )	o. click on friends’ newsfeed stories? p. view others profiles? q. view others photos? r. reload your newsfeed?
<b>Response Options</b>	<i>1 (Never) to 5 (Always)</i>
<b>Facebook Intensity</b> ( $\alpha = .88$ )	<b><i>“Please rate your agreement with the following statements.”</i></b>
	Facebook is a part of my everyday activity. I am proud to tell people I’m on Facebook. Facebook has become a part of my daily routine. I feel out of touch when I haven’t logged onto Facebook for a while. I feel I am part of the Facebook community. I would be sorry if Facebook shut down.
<b>Response Options</b>	<i>1 (Strongly disagree), 2 (Disagree), 3 (Neither agree or disagree), 4 (Agree), 5 (Strongly agree)</i>
<b>Response Options</b>	<b><i>“About how many Facebook friends do you have?”</i></b>
	<i>0 (10 or less), 1 (11-50), 2 (51-100), 3 (101-150), 4 (151-200), 5 (201-250), 6 (251-300), 7 (301-400), 8 (more than 400)</i>
	<b><i>“In the past week, on average, approximately how many minutes per day have you spent on Facebook?”</i></b>

<b>Response Options</b>	<i>0 (less than 10), 1 (10-30), 2 (31-60), 3 (1-2 hours), 4 (2-3 hours), 5 (more than 3 hours)</i>
<b>Social Disconnectedness (<math>\alpha = .83</math>)</b>	<b><i>“Considering the people to whom you are related by birth, marriage, adoption, etc...”</i></b>
<i>Family</i>	How many relatives do you see or hear from at least once a month? How many relatives do you feel at ease with that you can talk about private matters? How many relatives do you feel close to such that you could call on them for help?
	<b><i>“Considering all of your friends including those who live in your neighborhood...”</i></b>
<i>Friends</i>	How many of your friends do you see or hear from at least once a month? How many friends do you feel at ease with that you can talk to about private matters? How many friends do you feel close to such that you could call on them for help?
<b>Response Options</b>	<i>0 (None), 1 (One), 2 (Two), 3 (Three or four), 4 (Five through eight), 5 (Nine or more)</i>

Dependent Variables

<b>Motivations for using Facebook</b>	<b><i>“In general, I use Facebook...”</i></b>
<i>Social Bonding</i> ( $\alpha = .83$ )	to stay connected with family members to keep in touch with old friends to maintain relationships with people I do not see very often to browse family members and friends’ statuses to get information about family events to view photos
<i>Social Bridging</i> ( $\alpha = .87$ )	because it allows me to connect with younger family members to join groups to organize or join events to communicate with like-minded individuals to look at the profiles of people I do not know
<i>Curiosity</i> ( $\alpha = .81$ )	because I am just curious about Facebook because I am interested in new communication technology because I am afraid of what is going on in my social networks
<i>Family Request</i> ( $\alpha = .73$ )	because a family member set up a Facebook account for me because my family members requested that I join Facebook
<b>Response Options</b>	<i>1 (Strongly Disagree), 2 (Disagree), 3 (Somewhat disagree), 4 (Neither agree or disagree), 5 (Somewhat agree), 6 (Agree), to 7 (Strongly Agree)</i>

<b>Mattering</b>	<i>“Thinking about people in general, I feel...”</i>
Overall ( $\alpha = .93$ )	
<i>Awareness/Attention</i> ( $\alpha = .87$ )	a. most people do not seem to notice when I come or when I go* b. in a social gathering, no one recognizes me* c. people are usually aware of my presence d. for whatever reason, it is hard for me to get others’ attention e. whatever else may happen, people do not ignore me f. for better or worse, people generally know when I am around
<i>Importance</i> ( $\alpha = .84$ )	g. people tend not to remember my name* h. people do not care what happens to me* i. there are people in my life who react to what happens to me in the same way they would if it had happened to them j. my successes are a source of pride to people in my life k. I have noticed that people will sometimes inconvenience themselves to help me out l. when I have a problem, people usually don’t want to hear about it* m. much of the time, other people are indifferent to my needs* n. there are people in my life to care enough about me to criticize me when I need it o. there is no one who really takes pride in my accomplishments* p. no one would notice if one day I disappeared* q. if the truth be known, no one really needs me*
<i>Dependence / Reliance</i> ( $\alpha = .75$ )	r. quite a few people look to me for advice on issues of importance s. I am not someone people turn to when they need something* t. people tend to rely on me for support u. when people need help, they come to me v. people count on me to be there in times of need w. often people trust me with things that are important to them
<b>Response options</b>	<i>1 (Strongly disagree), 2 (Disagree), 3 (Neither agree or disagree), 4 (Agree), 5 (Strongly agree)</i>
* = reverse coded item	

<b>Loneliness</b> ( $\alpha = .82$ )	<b><i>“Please rate your level of agreement with the following statements.”</i></b>
	I lack companionship. There is no one I can turn to. I am an outgoing person. * I feel left out. I feel isolated from others. I can find companionship. * I am unhappy being withdrawn. People are around me but not with me.
<b>Response Options</b>	<i>1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), 5 (Always)</i>
* = reverse coded item	

Controls

<b>Depression</b> ( $\alpha = .78$ )	<b><i>“Over the last month, how often have you...”</i></b>
	had little interest in doing things? felt down, depressed, or hopeless?
<b>Response Options</b>	<i>0 (Not at all), 1 (Several days), 2 (More than half the days), 3 (Nearly every day)</i>
<b>Social Support</b> ( $\alpha = .97$ )	<b><i>“How often do you feel you have...”</i></b>
<i>Emotional / Informational Support</i>	someone you can count on to listen to you when you need to talk? someone to give you information to help you understand a situation? someone to give you good advice about a crisis? someone to confide in or talk to about yourself or your problems? someone whose advice you really want? someone to share your most private worries and fears with?
<i>Tangible Support</i>	someone to turn to for suggestions about how to deal with a personal problem? someone who understands your problems? someone to help you if you were confined to bed? someone to take you to the doctor if you needed it? someone to prepare your meals if you were unable to do it yourself? someone to help with daily chores if you were sick?
<i>Affectionate Support</i>	someone who shows you love and affection? someone to love and make you feel wanted? someone who hugs you?
<i>Positive Social Interaction</i>	someone to have a good time with? someone to get together with for relaxation? someone to do something enjoyable with?
<i>Additional Item</i>	someone to do things with to help you get your mind of things?
<b>Response Options</b>	<i>1 (None of the time), 2 (Rarely), 3 (Some of the time) 4 (Often), 5 (All of the time)</i>

<b>ICT Use</b>	<b><i>“Please answer the following questions related to your ICT use.”</i></b>
	<p>Do you use a desktop computer?</p> <p>Do you use a laptop or notebook computer (<i>A laptop or notebook computer is a small personal computer that is self-contained – screen and keyboard combined – and can be moved around easily</i>)</p> <p>Do you use a tablet computer (<i>eg. iPad, Microsoft Surface Pro, Samsung Galaxy Tab, Amazon Fire</i>)?</p> <p>Do you use a cell/mobile phone? (<i>If yes, respondents should answer next question in ICT use section. If no, skip to next section.</i>)</p> <p>Is your cell/mobile phone a smartphone? (<i>A smartphone is a mobile phone that has many of the same functions as a computer, typically having a touchscreen interface Internet access, an operating system capable of downloading applications as well as text messaging features - for example an Apple iPhone or Samsung Galaxy</i>)</p>
<b>Response Options</b>	<i>0 (No), 1 (Yes)</i>
<b>General Self-reported Health Status</b>	<b><i>“In general, how would you rate your health?”</i></b>
<b>Response Options</b>	<i>1 (Poor), 2 (Fair), 3 (Average), 4 (Good), 5 (Excellent)</i>
<b>Personality Type</b>	<b><i>“I see myself as...”</i></b>
<i>Extraversion</i>	Extraverted, enthusiastic
<i>Agreeableness</i>	Critical, quarrelsome *
<i>Conscientiousness</i>	Dependable, self-disciplined
<i>Emotional Stability</i>	Anxious, easily upset *
<i>Openness to Experience</i>	Open to new experiences, complex
<i>Extraversion</i>	Reserved, quiet *
<i>Agreeableness</i>	Sympathetic, warm
<i>Conscientiousness</i>	Disorganized, careless *
<i>Emotional Stability</i>	Calm, emotionally stable
<i>Openness to Experience</i>	Conventional uncreative *
<b>Response Options</b>	<i>1 (Strongly disagree), 2 (Moderately disagree), 3 (Disagree a little), 4 (Neither agree or disagree), 5 (Agree a little), 6 (Moderately agree), 7 (Strongly agree)</i>
<i>* = reverse coded items</i>	

<b>Age</b>	<b>“How old are you?”</b>
<b>Response Options</b>	<i>Dropdown Menu</i>
<b>Gender</b>	<b>“What is your gender”</b>
<b>Response Options</b>	<i>1 (Female), 2 (Male), 3 (Other)</i>
<b>Race</b>	<b>“What is your race? (Select all that apply)”</b>
<b>Response Options</b>	<i>1 (Asian / Pacific Islander), 2 (Black or African American), 3 (White), 4 (Hispanic / Latino), 5 (Native American or American Indian), 6 (Other)</i>
<b>Education</b>	<b>“What is the highest level of education you have completed?”</b>
<b>Response Options</b>	<i>1 (Less than a high school degree), 2 (High school graduate), 3 (Some college but no degree), 4 (Associate degree), 5 (Bachelor’s degree eg. BA, BS), 6 (Master’s degree eg. MA, MS, MSW), 7 (Professional school degree eg., MD, JD, DDS), 8 (Doctorate degree eg., PhD, EdD).</i>
<b>Relationship Status</b>	<b>“What is your relationship status?”</b>
<b>Response Options</b>	<i>1 (Married or domestic partnership), 2 (In a relationship), 3 (Separated), 4 (Divorced), 5 (Widowed), 6 (Single, never married)</i>
<b>Income</b>	<b>“What is your total household yearly income?”</b>
<b>Response Options</b>	<i>1 (Less than \$10,000), 2 (\$10,000 to \$24,999), 3 (\$25,000 to \$34,999), 4 (\$35,000 to \$49,999), 5 (\$50,000 to \$74,999), 6 (\$75,000 to \$99,999), 7 (\$100,000 to \$149,999), 8 (\$150,000 to \$199,999), 9 (\$200,000 or more)</i>
<b>Employment Status</b>	<b>“Which employment status best describes your current situation?”</b>
<b>Response Options</b>	<i>1 (Employed full-time), 2 (Employed part-time), 3 (Unemployed), 4 (Retired)</i>

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<b>Facebook Experience</b>	<i>“How many years have you been using Facebook</i>
<b>Response Options</b>	<i>Dropdown Menu (1-14)</i>

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## APPENDIX B: MEASURES

### Dependent Variables

<i>Measure</i>	<i>Response Options</i>	<i>Reliability</i>	<i>Items</i>	<i>Evaluation</i>
<b>Mattering</b>  <i>Elliott, G., Kao, S., &amp; Grant, A. M. (2004)</i>	1 (Strongly disagree) to 5 (Strongly agree)	Overall ( $\alpha = .93$ ) Attention ( $\alpha = .87$ ) Importance ( $\alpha = .84$ ) Dependence/reliance ( $\alpha = .75$ )	24	To compute, recode reverse code items.  To compute the overall index, sum the three subscales and divide by three.
<b>Loneliness</b>  <i>Wu, C. H., &amp; Yao, G. (2008)</i>	1(Never) to 5(Always)	( $\alpha = .82$ )	8	To compute scale reverse code items then take the average. Higher scores = greater loneliness.
<b>Motivations for Using Facebook</b>  <i>Jung, E. H. &amp; Sundar, S. S. (2016)</i>	1 (Strongly Disagree) to 5 (Strongly Agree)	Social bonding ( $\alpha = .83$ ) Social bridging ( $\alpha = .87$ ) Curiosity ( $\alpha = .81$ ) Family request ( $\alpha = .73$ )	19	Responses are summed. Higher scores = greater agreement.

### Independent Variables

<i>Measure</i>	<i>Response Options</i>	<i>Reliability</i>	<i>Items</i>	<i>Evaluation</i>
<b>Facebook Activities</b>  <i>Burke, Marlow, &amp; Lento (2010)</i>	1 (Never) to 5 (Always)	Content Produced ( $\alpha = .69$ ) Directed Comm. ( $\alpha = .94$ ) Content Consumption ( $\alpha = .86$ )	19	Responses are summed with higher scores indicating greater frequency.
<b>Social Disconnectedness</b>	0 (none) to 5 (nine or more)	( $\alpha = .83$ )	6	To compute, reverse code then sum the 6 items. Scores

Lubben, J., Blozik, E., Gillmann, G., Iliffe, S., von Rentein Kruse, W., Beck, J.C., & Stuck, A.E. (2006)				range from 0-30. Higher scores equal greater disconnectedness
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Control Variables

<i>Measure</i>	<i>Response Options</i>	<i>Reliability</i>	<i>Items</i>	<i>Evaluation</i>
<b>Depression</b>  Lowe B, Wahl I, Rose M, et al. (2009)	0 (Not at all) to 3 (Nearly every day)	( $\alpha = .78$ )	2	To compute scale sum items 1 and 2 then divide by 2.
<b>Social Support</b>  Sherbourne, C. D., & Stewart, A. L. (1991)	None of the time (1) to All of the Time (5)	( $\alpha = .97$ )	19	A higher score indicates more support.  To obtain an overall support index, calculate the average of the scores for all 19 items

Control Variables cont'd.

<b>Personality Type</b>  Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003)	1 (Disagree Strongly) to 5 (Agree Strongly)	Extraversion ( $\alpha = .68$ ) Agreeable ( $\alpha = .40$ ) Conscience ( $\alpha = .50$ ) Emotional Stab. ( $\alpha = .73$ ) Open to Exp. ( $\alpha = .45$ )	10	Recode reverse coded items. Take average of the two items within each sub scale.
<b>Facebook Intensity</b>  Ellison, N. B., Steinfield, C.,	1 (Strongly disagree) to 5 (Strongly agree)	( $\alpha = .88$ )	8	The open-ended items in the scale will be log transformed prior to

Lampe, C. (2007)	Open-ended - Total Friends - Minutes per day on Facebook.			averaging across all scale items.  The scale is computed by taking the mean of all items
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## REFERENCES

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