

**Existential Dilemma on Facebook:
Social Networking as Tool for Anxiety Mitigation**

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THESIS

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LIST OF ABBREVIATIONS

DTA	Death-Thought Accessibility
ICD	Informed Consent Document
PANAS-X	Positive and Negative Affect Schedule-Extended Version
SNS	Social Networking Sites
SSE	State Self-Esteem
TMT	Terror Management Theory
TM	Terror Management

SUMMARY

Terror management theory (TMT) posits that humans mitigate mortality-related anxieties through the dual systems of cultural worldview and self-esteem. Additional research has shown connections between body awareness and symbolic immortality in regards to alleviating this anxiety. The current thesis seeks to integrate the body of literature on TMT and research on social networking sites (SNS) in order to lay foundation for the claim that Facebook may serve a complex role in the mitigation of existential anxiety. Because research has shown that SNS use varies with individual personality characteristics, the role of Facebook is likely moderated by personality.

By using a quasi-experimental design, two main research questions are addressed: *RQ1: Does FB use affect existential anxiety and state self-esteem? RQ2: Does Neuroticism moderate these effects?* Based on a review of relevant research I hypothesized that Facebook exposure would play a differential role in death thought accessibility (a measure of existential anxiety) for neurotic versus emotional stable individuals. For emotionally stable individuals I predicted that Facebook exposure would decrease existential anxiety (H1) and State Self-Esteem (SSE) would increase (H2). Inversely, I predicted that after Facebook exposure existential anxiety would increase (H3) and SSE would decrease among neurotic individuals (H4).

Contrary to what was expected the first three hypotheses did not reach significance and the last was moderately supported by a trending find. Interesting relationships were uncovered after calculating bivariate correlations on account of age, self-esteem and personality traits. Additionally a significant robust three-way interaction between Facebook use, relationship status and neuroticism is discussed in depth.

I. INTRODUCTION

The objective of this thesis is to examine the relationship between Facebook use and implicit measures of existential anxiety. Previous research suggests that humans are plagued with existential anxieties that are inherent in the human condition (Solomon, Greenberg, & Pyszczynski, 2004). These anxieties stem from our unique awareness of possessing intellect and consciousness, yet at the same time being confined to bodies that are ephemeral, decay and develop disease. Although seemingly morbid, this awareness does not prevent us from living our lives and continuing on a quotidian path; rather, it is the motivating force behind some of our most complex meaning systems. Terror management theorists suggest that humans have, necessarily, developed a system of mitigation in order to defend against mortality-related anxieties and live relatively peaceful, and most importantly, meaningful, lives. This system is primarily comprised of cultural worldviews and self-esteem (Solomon, Greenberg, & Pyszczynski, 1998; 2004; Rosenblatt, Greenberg, Solomon, Pyszczynski & Lyon, 1989).

Researchers have explored the ways existential anxiety is affected; however they have yet to thoroughly explore the roles that contemporary communication and social networking play in its mitigation process. Social networking sites such as Facebook should be considered because they have been empirically connected to levels of self-esteem. These sites offer individuals an opportunity to engage in anxiety defense mechanisms by allowing them to selectively expose themselves to a variety of cultural worldviews, including their own. Facebook also allows individuals to transcend traditional boundaries of space, time, and body. Stated differently, part of the mitigation process can take place in the use of social networking sites themselves (maintaining self-esteem and self-selecting exposure to cultural worldview), while the remainder is implicit in the medium's restructuring/reorienting of what is "social," what is "life," and in its

reconceptualizing of key concepts like space, time and body. Both research tracks, the specific use patterns of Facebook and the reorientation brought about by the medium itself, are of equal interest and importance.

By integrating the bodies of literature on terror management theory and on social networking sites, I present a case for the role of Facebook use in alleviating existential anxiety. I provide the limited existing empirical evidence for this phenomenon and I investigate some of the more enigmatic motives behind our online social networking and allow us to consider how our use of this medium fits into the larger transitional period we find ourselves in. First, however, I explore the roots of this anxiety, the unique ability humans have to concern over, and dread, death.

Our conceptualization of death has been considered closely in a variety of research across disciplines. Online, researchers have discussed controversies over social network memorialization, the perceived permanence of digital traces, and online support groups for kin both pre- and post-mortem. In this thesis I investigate how one's active participation on SNS may serve to mitigate death-related anxiety while simultaneously offering a symbolic immortality— both of which are recognized as effective means of terror management (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). According to terror management theorists, symbolic immortality is

conferred by cultural institutions that enable people to feel part of something larger, more significant, and more eternal than their own individual lives through connections and contributions to their families, nations, professions, and ideologies (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004).

Symbolic immortality can best be understood as a mechanism that allows individuals to extend beyond their personal reach (literally and metaphorically) and to feel a part of something

more permanent than themselves. Moreover, through the reorientation of space, time, and body online, individuals are reminded of their best quality: their superior intellect. Accordingly, I argue, that individuals begin to feel more like gods than mortals on these sites (for similar claims see e.g. Becker, 1962, 1973; Turkle, 2011; Ess 2012; Sullivan et al., 2013). This reorientation is not novel. It is inherent in all humanly constructed tools, perhaps because of what TMT has identified as “heroism” or our drive to attain a symbolic immortality (Sullivan, Kosloff, & Greenberg, 2013, Cohen, Sullivan, Solomon, Greenberg, & Ogilvie, 2011), as I will discuss.

For the purposes of better understanding symbolic immortality, as it is used in this thesis, it may be helpful to view at Facebook as a modern-day text and apply the central tenets of Walter Ong’s “Text as Monument” (1977). In this piece Ong suggests that any text can be viewed as a monument, in that a “monument says not ‘death is coming,’ but ‘death has come. I exist within death. I shall not change” (1977, p. 238). Ong’s paradoxical phrase, “I exist within death. I shall not change,” alludes to immortality. Ong also asserts that the way in which texts absorb death make it less threatening (1977, p. 238). These insights recur across literature from different disciplines. For example, Barney writes that, “the very appeal of network technology for most of its users is precisely that, despite the brilliance of its communication and information capacities, it still manages to leave darkened the tangible reality of just how it appropriates the world” (2004, p. 61). This suggests that like religion or love, the allure of social networking sites, like Ong’s texts, is in their ability to conceal the human condition. Virtual social networking sites may then temporarily “disburden its possessor of the material difficulties of being in the world” (Barney, 2004, p. 61).

Existing literature concerning death and Internet technologies has primarily focused upon how individuals construe and cope with the “digital dead” (Jones, 2004; Duggan, 2013; Landfair,

2013). Findings range from online grieving and mourning methods, to the growing presence of digital memorials, and, lastly, evolving privacy and ownership policies (Walter, Hourizi, Moncur & Pitsillides, 2012). Both academic and popular sources have noted the importance, and impact, of modifications on Facebook that allow family members to “memorialize” deceased relatives’ profiles (Landfair, 2013). These memorials, like their material world counterparts, serve as places where friends and family gather to recount, or simply revisit, the past. The Facebook memorial was a noteworthy development because it perpetually extended the life of tenants’ profiles, by remaining active, after they died. More recently, Facebook introduced the “legacy contact,” an heir to a deceased member’s memorialized profile. Facebook reports that these contacts can post a final message, add profile pictures, and respond to friend requests (www.facebook.com). In effect, these contacts can maintain, and breathe life back into, an otherwise stagnant page. Today as the socio-technical landscape of this site, and sites like it, continue to evolve, the human condition (both life and death) is recognized and reflected in their design and use-patterns.

The impact of death’s online presence leads to meditations on how we conceptualize mortality (Walter, Hourizi, Moncur & Pitsellides, 2012). Some scholars question if mortality is made more visible or is further sequestered in this online realm. Others ask if memorialized profiles amount to ‘identities’ that survive the death of their bearers (Walter, Hourizi, Moncur & Pitsellides, 2012, p. 366). Lastly, and perhaps most importantly, researchers examine what impact, if any, do these sites have on our daily lives (Walter, Hourizi, Moncur & Pitsellides, 2012). All of these inquiries are relevant to the current discussion surrounding Facebook’s ability to alleviate the anxiety brought about by our awareness of our innate mortality.

A. **The Human Problem and Guiding Theory**

Mortality is a fixed aspect of the human condition. Entire disciplines (e.g. philosophy, thanatology) have concerned themselves with existential dread and grief. Themes that arise on account of these disciplines often raise edgy or uncomfortable questions regarding how to define and conceptualize the human condition. Their insights, however, are rarely investigated by social scientists.

Terror management theory (TMT) is an exception in that its founding theorists dared to integrate complex constructs from philosophy, anthropology and social psychology, thus transcending the traditional boundary of “soft” and “hard” sciences. They did this not by simply quantifying something that wasn’t previously quantifiable but, rather, by addressing an occurrence in a way that speaks to, and respects, both sides. A truly interdisciplinary theory, TMT empirically investigates how our experience of life and death change with shifts in our social environment and socially-constructed tools. Social networking sites (SNS) represent one of these significant tools.

A number of variables have been found to mitigate existential anxiety, including self-esteem, emotional stability, and cultural worldview. The increase in online activity has arguably made these variables more accessible within the metaphorical walls of social networking sites.

B. **Research Questions**

The central aim of this thesis is to better understand how existential anxieties are negotiated on the Internet by directing attention to ways in which SNS can fulfill what we need for the proper alleviation of anxiety. In order to elucidate what effect SNS have on existential anxiety I ask two research questions:

RQ 1: Does Facebook use affect existential anxiety and State Self-Esteem?

RQ 2: Does Emotional Stability moderate these effects?

Through these specific research questions I hope to further clarify how existential anxiety fluctuates based on Facebook use as well as self-esteem and the emotional stability—two traits that were selected due to their association with higher death-thought accessibility (the empirical measure of existential anxiety). This thesis adds to the body of literature on media effects as well as provides novel empirical evidence for something that has been speculated about for decades, but never fully explored. To understand the process we are undertaking, it will first be important to examine relevant literature.

II. LITERATURE REVIEW

Two bodies of literature substantiate this inquiry. First, communication and media scholars have empirically linked social networking sites to measures of self-esteem, personality differences, identity management, and emotional wellbeing (Gonzales & Hancock, 2011; Ryan & Xenos, 2011; Karl, Peluchette, & Schlaegel, 2010; Ljepava, Orr, Locke, & Ross, 2013). For example, research demonstrates that when individuals are made self-aware by accessing their Facebook profile their self-esteem is enhanced (Gonzales & Hancock, 2011). When individuals are directed away from their personal profile (e.g. researchers asked them to complete tasks on other parts of the website), however, they report lower levels of self-esteem, suggesting that Facebook use is quite nuanced (Gonzales & Hancock, 2011). Additionally, research finds differences in personality assessed by the Big Five Inventory between Facebook users and non-users. For example, Facebook users are more likely to be extraverted and narcissistic than non-users (Ryan & Xenos, 2011, p. 1662). Ljepava et al. also found that users were differentiated from non-users on measures of narcissism, self-disclosure, intimate friendship, and peer usage (Ljepava et al., 2013, p. 1606). While much has been said about the specific effects within each of these characteristics (e.g., individuals report higher self-esteem after viewing their own profile page), little has been done to explore more complex affordances of online social-networking (Gonzales & Hancock, 2011).

A second body of literature explores the same measures of self-esteem, personality, identity management through cultural worldview and emotional wellbeing as they relate to existential anxiety. This literature, largely from social psychology, and terror management theory specifically, asserts that individuals experience normal existential anxiety as part of the human

condition and that this anxiety must be managed (Solomon, Greenberg, & Pyszczynski, 2004). We will begin with the latter.

A. Terror Management Theory

Death is the ultimate demise of the human species. Existentialists have long ruminated on this dim side of the human condition; philosophers and theologians have sought to find peace in it; and psychologists have undertaken research in hopes of understanding how we cope with, and alleviate, the resulting anxieties. No matter the time or discipline, it is difficult to dispute Becker's claim that, "the human animal is characterized by two great fears that other animals are protected from: the fear of life and the fear of death" (Becker, 1973, p. 53). It is through this unique awareness that the greatest paradox of the human condition is revealed. Our lives are ephemeral because we are confined to physical bodies that decay just as animals, yet our superior intellect moves us to function beyond our inherent physical limitations. Freud (1918) asserted that we are "psychologically living beyond our means" (Freud, 1918). This dilemma is at the heart of terror management theory.

Terror management theory is an interdisciplinary framework concerned with elucidating the human pursuits of meaning and self-worth (Sullivan, Kosloff, & Greenberg, 2013, p. 21). The theory offers a functional account of the vital roles culture and self-esteem occupy in human affairs (p. 477). Terror management theory asserts that humans seek to buffer existential anxieties that arise on account of our impermanence and struggle with corporeality (Strachen et al., 2007; Solomon, Greenberg, & Pyszczynski, 2004). It is important to note, however that this process is not explicit. On this Pyszczynski and colleagues argue that knowledge of the inevitability of death persists, much like the knowledge of one's identity and social norms,

whether one is consciously thinking about the problem or not (2004, p. 438). To this end, research has demonstrated that many behaviors are influenced by mortality salience (the extent to which we are aware of our mortality) even when they have no obvious connection to death. This suggests that death-anxiety is part of our subconscious (Strachan et al. 2007; Williams, Schimel, Hayes, & Martens, 2009).

One of the reasons for our overwhelming discomfort with death is that “it confronts and challenges any claim to ultimate meaning,” and without meaning life becomes impossible to bear (Anton, 2010, p. 13). Terror management theorists would add that life is endurable because humans have managed to develop meaning systems and complex defense mechanisms to guard against the threat of death anxiety.

1. **Defense Mechanisms**

Terror management theory claims that anxiety is managed first and foremost through the socialization process, which consists of the development of cultural worldviews, the pursuit of personal significance, and the maintenance of self-esteem (Strachen et al., 2007). While little can be said of the precise extent to which these mechanisms mitigate anxiety in comparison to one another, over three hundred studies have supported the general tenets of TMT (Cox, Goldenberg, Pyszczynski, & Weise, 2007, p. 496; for a review see Solomon, Greenberg, & Pyszczynski, 2004).

Terror management research is based on two main hypotheses: 1) the anxiety-buffer hypothesis and 2) the mortality salience hypothesis. The anxiety-buffer hypothesis states that if “a psychological structure functions to provide protection against anxiety, then strengthening that structure should make one less prone to exhibit anxiety and anxiety-related behavior in response

to threats” (Pyszczynski et al., 1997, p. 2). Conversely, if that structure is weakened, one should experience more anxiety. Evidence shows that when self-esteem is experimentally increased, self-reports of anxiety in response to a wide range of threatening situations are reduced (Pyszczynski et al., 1997, p. 2). This is to say that an increase in self-esteem provides individuals with a protective shield against threats that may otherwise cause individuals to feel existentially insecure.

The second hypothesis of mortality salience states that “if a psychological structure provides protection against anxiety, then reminding people of the source of this anxiety should increase the need for that structure” (Pyszczynski et al., 1997, p. 3). It follows that if one’s worldview is threatened, one is motivated to reaffirm it. In this vein, studies have shown that when reminded of death individuals evaluate similar others (those that share their cultural worldview) more favorably than those who maintain contrasting cultural worldviews (Florian & Mikulincer, 1997; Greenberg et al., 1990). By expressing more positive feelings for, or associating positive attributes to, members of their cultural in-group, individuals implicitly remind themselves that their choice of worldview is valid, thus worthy, and subsequently their anxiety is alleviated. In early stages of TMT research scholars debated whether these claims could be specific to mortality-related anxiety. Since then, research has shown that the anxiety experienced is indeed limited to our issue with mortality. In experimental conditions where an individual was induced to think about other anxiety-provoking situations (giving a speech, physical pain etc.) rather than death itself, significant effects were not reproduced (Greenberg et al., 2000; e.g., Baldwin & Wesley, 1996; Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994; Rosenblatt et al., 1989). Both the anxiety-buffer hypothesis and the mortality salience

hypothesis suggest that the development of strong cultural worldviews and self-esteem serve to buffer threats that may otherwise lead to an onslaught of existential anxiety.

2. Cultural Worldviews

Cultural worldviews are perhaps the most complex humanly constructed systems. They can be defined as “shared symbolic conceptions of reality that give meaning, order, and permanence to existence” (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, p. 436). These systems “provide a set of standards for what is valuable; and promise of some form of either literal or symbolic immortality to those who believe in the cultural worldview and live up to its standards of value” (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, p. 436). These systems include organized religion, beliefs, community membership, kin, and romantic relationships. Research shows that the most important role cultural worldviews play in the mitigation of existential dread is to imbue life with larger meaning. Cultural worldviews are best understood as means to answer questions of universal meaning and permanence. They “give hope of symbolic or literal immortality” (Solomon, Greenberg, & Pyszczynski, 1998, p. 13).

All worldviews are fundamentally religious because there is no way to confirm their veracity and that individuals must rely on faith to support them (Solomon, Greenberg, & Pyszczynski, 1998, p. 13; Wheelis 1989; cf. Hofstadter 1985, 57). When devout Christians who believe in a literal translation of the Bible encounter a Shaman who believes in the healing power of animals and the earth, someone who has very different ritualistic practices than their own, they are inclined to behave in ways that restore confidence in their worldview (Solomon, Greenberg, & Pyszczynski, 1998, p. 16). They may respond, for example, by delegitimizing the Shaman as someone who is savage or entirely different from them, contrasting the “phony”

Shamanistic belief system with their own and thereby reclaim what is perceived as good and valid. As previously noted, research has demonstrated that when confronted with the realities of death, by exposure to mortality salience primes, individuals react by actively reinforcing their worldviews. Thus reaffirmed, their lives are infused with their “meaning” and they strengthen their sense of belonging to a community (Pyszczynski, Greenberg, & Solomon, 1999). It follows that people who are surrounded by like-minded others are less vulnerable to this anxiety.

Another function of cultural worldview is to provide a literal or symbolic immortality. A promise of literal immortality is best embodied in religions that prescribe afterlives for moral followers. Symbolic immortality, however, is a more complex concept that involves being a part of something larger and more eternal than oneself (e.g. a profession, an ideology). In some interpretations of symbolic immortality it could also include leaving behind meaningful artifacts that represent one’s self (as is the case with novels) and surpassing human limitations (medically altering the body to live longer etc.). Social networking sites, a current life tracking technology, seems to be of new relevance in this respect. All of these means to achieving symbolic immortality are abstract and/or metaphysical. By this I mean that their symbolic nature requires us to have faith in their eternality. This is even the case for SNS as the Internet has been likened to the metaphysical for decades (Heim, 1993). In sum, these symbolic systems, like cultural worldviews, make reality more bearable.

3. **Self-Esteem**

Self-esteem is the second vital component in warding off existential anxiety. Whereas cultural worldview is primarily concerned with the meaning of life, self-esteem is concerned with one’s meaningful role in life. For TM theorists self-esteem is ultimately defined as a

“culturally-based construction that consists of viewing oneself as living up to specific contingencies of value” (Crocker & Wolfe, 2001). Self-esteem is derived from one’s culture and is ultimately integrated into one’s own personal worldview. One’s social environment, therefore, is an important component in maintaining stable self-esteem (Crocker & Wolfe, 2001). Ernest Becker, the author whose work originally inspired TM theorists, wrote that

It doesn’t matter whether the cultural hero-system is frankly magical, religious, primitive, or secular, scientific and civilized. It is still a mythical hero system in which people serve to earn a feeling of primary value, of cosmic specialness, of ultimate usefulness to creation, of unshakable meaning (1973, p. 5).

The cultural hero-system is maintained by an individual attaining a sense of personal significance within the world. This significance can be acquired in many ways (e.g. by feeling like an important member of a larger community or creating something of value for the community). Essentially, an individual must feel like their personal role is meaningful. As Becker states, it doesn’t matter whether one’s self-esteem is built on something that is universally “valid”. It is only important that one feels important and connected to a larger community one can share in, and thereby validate the faith they have invested. When self-esteem is weak, however, individuals may experience a “leakage” of this anxiety and engage in compensatory defensive behaviors (i.e., bolstering self-esteem and reaffirming their worldview) (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, p. 437). Self-esteem is most accessible and most vulnerable in the presence of others, and social validation is vital to self-esteem maintenance (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, p. 437).

Theorists have described the inclination to defend against threats of self-esteem and worldview as shields against the deeply rooted fear of mortality. As such, self-esteem is a result of living in accordance, or exceeding, the standards associated with one’s social role within that

worldview (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). When self-esteem is strong, anxiety is mitigated and one can go about their daily life without the troubling fear of mortality.

Terror management theory has shown that a) self-esteem provides a buffer against anxiety and b) threats to terror management defenses increase death-thought accessibility (DTA) (Landau et al., 2004). Death-thought accessibility is an implicit measure of existential anxiety typical in TMT research. For example, when individuals are confronted with adverse information that threaten their worldviews or close relationships, measures of DTA increase (Florian, Mikulincer, & Hirschberger, 2002). When subjects have elevated levels of self-esteem, however, they report less unease following the experimentally induced reminders and depictions of death (Solomon, Greenberg, & Pyszczynski, 1998, p. 22; Harmon-Jones et al. 1997). These findings suggest that high levels of self-esteem allay anxiety that arises on account of a threatening situation or death reminders (Solomon, Greenberg, & Pyszczynski, 1998, Greenberg et al., 1993; Greenberg et al., 1992).

In similar studies individuals have been found to use self-serving attributions in order to reduce death-thought accessibility (Mikulincer & Florian, 2002). For example, in a study by Mikulincer and Florian participants were asked to ponder their death (mortality salient prime) and then review a series of hypothetical achievement events (Metalsky et al., 1987). Researchers found that participants more often associated negative outcomes (such as “you fail to prepare a paper in the scheduled time”) with less internal, stable and global causes than positive outcomes (p. 264). In order to self-serve, these participants attributed failures to external factors and successes (such as “you succeed in an important exam”) to internal and consistent abilities that temporarily elevated their self-worth. In sum, self-esteem plays a vital role in our defenses

against anxiety (Pyszczynski et al., 2004, p. 436). It is important for individuals to feel that they are living up to culturally acceptable standards and that they perceive their role in this world to be meaningful. It is through both self-esteem and our cultural worldview that we mitigate existential unease. In addition to what has been noted previously, scholars recognize that other traits impact one's propensity to respond to, and be affected by, towards existential anxiety.

4. **Related Research**

a. **Personality**

Terror management theorists have noted that personality traits mediate how one responds to mortality salience. For the purpose of this review I focus on just one of the five factors of the Big Five Personality Inventory—Emotional Stability¹ (Neuroticism). I choose this measure for my thesis research because neuroticism is empirically linked to high DTA. In a study exploring existential anxiety and discomfort with corporeality researchers hypothesized that activities that bring the physical body into awareness may cause anxiety and guilt. In fact, researchers found that participants with high neuroticism avoided body-oriented behavior (even pleasant bodily sensations such as a foot massage) when mortality was salient and that after performing the behavior in conjunction with mortality salience they experienced a marginal increase in guilt. Those low in neuroticism (i.e. emotionally stable) did not experience the same discomfort with the body nor did they report associated guilt (Goldenberg et al., 2006).

¹ Emotional Stability refers to how emotionally secure an individual is. At the opposite end of the spectrum is Neuroticism. Both terms are used in context in this thesis and it is important to note that they refer to the same measure.

b. **The Body**

How can one exist on a symbolic plane when one's physical body provides a constant reminder that we are made up of corporeal matter, prone to deterioration and death? (Goldenberg et al., 2006, p. 1266)

Other relevant TMT research has focused on ambivalence towards the human body.

Becker claims that the body is a constant reminder of our vulnerability and that our intellect cannot help us avert our demising fate. Theorists posit that “motivation to distance ourselves from the rest of the natural world is ultimately rooted in a core human fear of death” (Goldenberg et al., 2006, p. 1264).

Research to date has only tested this hypothesis in the domains of disgust-eliciting stimuli and sexuality (Goldenberg et al., 2006, p. 1264). In one such study participants who were exposed to mortality salience primes reported finding physical aspects of sex less appealing. In a follow-up study, thoughts of the physical nature of sex increased levels of DTA. When participants were primed to associate sex with love, however, this reduced participants' accessibility of death-related thoughts (Goldenberg et al., 1999). The underlying explanation for this is that the reminder of physicality rather than the sexual act itself increases levels of DTA, which reflects an increase in existential anxiety. Focus on an individual's body reminds them of their physical vulnerability and likeness to animals. When these thoughts are more salient than culturally constructed meanings, like love, or in this case “making love,” individuals experience more existential anxieties. Accordingly, TM theorists hypothesize that we divorce ourselves from our animalistic nature by living in a culturally constructed world of symbols and meaning (Goldenberg et al, 2006, p. 1273).

While these studies have been relatively limited, one can imagine the theory extending to any reminders of one's corporeality. Interestingly, virtual worlds or online "selves" have not yet been addressed in this discussion. Logic suggests that in distancing oneself from one's flesh, by participating as a digital disembodied version of the self, one would experience less existential anxiety, though this remains to be explored.

B. Social Networking Sites- Facebook

Social networking sites have become increasingly popular over the past decade. Individuals gravitate towards these online spaces with the promise of sharing information and building connections (Levy, 2007). In 2008 Facebook was reported the most popular of online social networks and its popularity has remained relatively stable since then, despite changes in site design and privacy laws (Eldon, 2008). Recent research finds that 71 percent of online adults use Facebook (Pew Research Center, 2015). Like most social networking sites, Facebook allows members to present themselves through online profiles. There is a considerable amount of flexibility in what members can share; including uploading images, quotes, videos and revealing information about themselves anywhere along the private/public continuum.

Early SNS research primarily focused on the communal aspect of the sites by comparing these new spaces to the traditional concept of the public sphere (Habermas, 1962). One of the reasons for this comparison was that social networking sites, and technologies more generally, were seen as a way to counter vertical power structures and allow "individuals to propose new space, upon which newer, potentially more empowering habits and relations may be cultivated" (Papacharissi, 2011, p. 11). Researchers theorize that SNS has the potential to engage members in civic activity and "reinforce [their] beliefs and attitudes" (Papacharissi, 2011, p. 9). Many

studies have confirmed that SNS are indeed an important means by which we connect with community today, especially when communities are no longer necessarily geographically localized (Barney, 2004, p. 54; Wellman & Gulia, 1999, p. 186). While community is more conveniently accessible on SNS for many, scholars remain divided on its ability to provide us with the substance and meaning that are a necessary part of human life (Barney, 2004, p. 54).

When one analyzes research on SNS, it is easy to see that early work explored the macro-level big picture, while later work focused on the more subtle aspects of site design and user interaction. One reason for this evolution may be that in the dawn of SNS use, researchers felt more comfortable assessing these sites from a distance – as an observer of Facebook’s platform and its people, for example. Additionally, it was important to recognize descriptive and general patterns before moving onto the processes of fine-tuning theory. After years of SNS research, scholars have realized that one’s interactions on, and use of, Facebook are actually much more nuanced than originally anticipated. Researchers recognize that the differences in site use patterns are largely dependent on more subtle factors such as the mix of personality and self-esteem levels as well as answers to the questions of *how* and *why* these individuals are on social networking sites in the first place.

Recent work on social networking sites explores the individual implications of site use with respect to identity management, personality, self-esteem, and emotional well-being. Second to community, self-expression and identity management are the most studied areas of research. Many studies have shown that individuals use Facebook to engage in self-presentation behaviors and thereby influence the impression formation of others (Dominick, 1999; Papacharissi, 2002, Trammell & Keshelashvili, 2005; Walker, 2000, cf. Karl, 2010, p. 175). Individuals are concerned with others’ perception of themselves because it is an achievable means for attaining

self-affirmation. Toma and Hancock (2013), for instance, found that Facebook users who are actively engaged in creating or editing their own personal profile report more self-affirmation than those who navigated away from their page. Additionally, Leary and Kowalski (1990) found that individuals engage in impression management to maximize material rewards, maintain self-esteem, and create a desired self-identity (cited in Karl, 2010, p. 175). In theory, by designing one's public profile and asynchronously communicating with others, individuals can selectively present themselves upon a stage and connect with others who give them positive feedback. This positive experience on Facebook represents an ideal, however, and is certainly not the case for all active members on the site. The darker side of Facebook became painfully evident in the increased public recognition of cyberbullying.

In sum, social networking site research continues to evolve as the platforms themselves take on different shapes and cause different challenges for their users and researchers. One of the large areas of SNS research is on its relationship to self-esteem.

1. **Self-Esteem**

It is unsurprising that as venues for “performing self,” social networking sites are linked to levels of self-esteem (Goffman, 1959). While there has been an abundance of research on the relationship between SNS use and self-esteem, the results remain mixed, suggesting, again, that it is ultimately the difference in one's site composition— connections and “likes” —that affect measures like self-esteem rather than its simple structure alone.

Previous research has shown, for example, that self-esteem moderates the relationship between SNS use and social capital (Burke, Kraut, & Marlow, 2011, p. 574). Social capital, while not synonymous with self-esteem, provides people with one component that heightens

their self-regard. Similarly, Ellison et al. (2007) found that Facebook may help compensate for low self-esteem by allowing individuals to gain social capital. Moreover, Gonzales and Hancock (2011) found that selective self-presentation on social networking sites has a positive impact on individual self-esteem. Additionally, individuals with low self-esteem use and check Facebook more frequently (Mehdizadeh, 2010)

By contrast, other research has unveiled a negative correlation between Facebook use and self-esteem. While this work seemingly contradicts the research cited above, it is in line with past research that has shown the Internet's asociality to be associated with depression and stress (Kraut et al., 1998). Herein lies an important distinction. Facebook itself, like the Internet at large, can be used to varying degrees of sociality. While Facebook was originally a model site for social connection, today individuals can use the site without being very social at all. For example, individuals who spend time playing single player games hosted through Facebook and passively consuming social news may report lower self-esteem than those who are in constant contact with social others. Scholars explain that non-social Internet applications such as single player games and online movies pose a greater threat to users' well-being than other social applications on Facebook (Kraut et al., 1998).

Despite the inconclusive evidence for the direct role Facebook plays in one's self-esteem, the two are indeed linked and vary amongst different personality types and among perhaps other intervening variables. Facebook has the potential to enhance one's self esteem because it provides opportunities for individuals to reaffirm their ideologies and worldview while being reminded of presumably good times from the past. The difference in Facebook's effect on self-esteem may be due to a moderating factor like personality.

2. **Personality**

Several personality characteristics have been associated with the way individuals interact and maintain their social relationships. As our social world is increasingly managed online, SNS use has become widely studied by personality scholars. Several studies have shown that the content of Facebook profiles differ across personality types (Ryan & Xenos, 2011). Research also finds that “personality components such as extraversion and neuroticism have been shown to affect one’s choice of Internet activities and moderate the effect of those activities on affect, depression, and loneliness” (cf. Burke, Kraut, & Marlow, 2011, p. 573). Individuals who are highly extraverted use social networking sites primarily to extend their social reach through such functions as the chat and Wall communicative features of Facebook (Ryan & Xenos, 2011, p. 1662). Additionally, in work that has compared Facebook users directly to non-users, users report less “social loneliness” (Ryan & Xenos, 2011, p. 1663). This suggests that those on Facebook feel less isolated socially, even if they report higher levels of other loneliness factors within their family or profession (Ryan & Xenos, 2011, p. 1663).

In sum, like self-esteem, personality traits appear to be moderating variables in social networking use— though there is not enough evidence to suggest a clear directionality in this work.

3. **The Body**

Psychological research on the relationship between SNS and the body has been limited because there is no clear way to determine if individuals feel “disembodied,” nor do we really know how to define the term. Communications scholars, however, have been theorizing the body and technology for decades. I will use theory from the notorious media scholar, Marshall

McLuhan (1964). McLuhan (and later, Sherry Turkle) wrote about the gap between one's online and material self. McLuhan was primarily interested in how we conceptualize our technologies, what they are doing to the way we think about the human condition, but he does so through imagining what it does to our concept of the body.

It might be helpful to think of Internet use in terms borrowed from Marshall McLuhan and Heidegger's work on technology. McLuhan asserted that any technology was an extension of mankind. He writes, "whereas all previous technology had, in effect, extended some part of our bodies, electricity may be said to have outered [*sic*] the central nervous system itself, including the brain" (1964, p. 247). In a sense, technology was our way to overcome our corporeal limitations. Other researchers have referred to similar notions in discussions of avatars' "ghost limbs," which refer to the extension of the player's body into the virtual world (Pearce & Artemesia, 2009). While we continue to use the term body, in this literature it is reconceptualized. Its form significantly changes and it is less associated with flesh and physicality and more closely resembles the self, an identity, or a personhood. This changing association itself, directing attention on one's self as distinct from a body, may serve to alleviate some existential anxieties. In other words, instead of thinking of oneself primarily in terms of a body with a spirit, social networking sites allow us to exist in a world of keystrokes and digital images. The complications associated with one's body can be avoided.

Along with extension, McLuhan also wrote of amputation. He asserted that once a medium was fully, or overly, extended, it amputated and numbed us from our body (Strate, 2010, p. 75). By redefining the body and amputating the body, "technology is the art of never having to experience the world" (Frish, 1959, p. 178). While there is plenty of work theorizing the body and new technologies, there has been limited work examining how we conceptualize our bodies

or our selves in online social networking sites. The closest work in this vein focuses on avatars in online games, or game worlds, which may significantly differ from the sense of “presence” found in social networking sites.

C. **Summary**

Social networking sites are platforms on which the socialization process increasingly occurs in the modern-age. Members are exposed to cultural worldviews and offered new opportunities to reflect on identity and thereby manage self-esteem. Because of this, research on SNSs in relation to the management of existential anxiety proves exigent. As previously noted, research has shown individuals with high self-esteem report less existential anxiety than their counterparts even when induced with mortality salient primes (Solomon, Greenberg, & Pyszczynski, 2004). This anxiety can also be mitigated by the esteem people maintain when they are reminded of close positive relationships— also accessible on SNS (Florian, Mikulincer, & Hirschberger, 2002). The purpose of my thesis is to utilize these two bodies of literature in order to empirically test the differential role social networking sites play in the modern-day mitigation of existential anxiety. Given prior research on existential anxiety and social networking use, I specifically explore the effect Facebook exposure has on individuals’ self-esteem (State Self-Esteem) and existential anxiety (Death-Thought Accessibility). By filling this gap in research and by providing evidence for this interaction, we can begin to better grasp the range of motives behind online lives and online social networking.

Terror management theorists believe that “symbolic culture transforms nature and provides a means through which people can feel that they are transcending it” (Goldenberg et al., 2006). So too, online platforms allow us to transcend the physicality of life and exist in a space

rich with visual representations of community, places, and events. In addition to the social and communal affordances of social-networking sites, and the way that culture is communicated, propagated, or transformed in these spaces, the perceived physical transcendence or avoidance, makes SNS even more apt than the existing systems to mitigate our existential anxiety.

After exploring the literature cited above I have derived four predictive hypotheses that will help address the guiding research questions. These hypothesis address DTA and SSE. I chose State Self-Esteem (Heatherton & Plivy, 1991) rather than other measures of self-esteem because it is an indicator of how existentially stable (mentally and emotionally) individuals are. State Self-Esteem measures “short-lived” changes in self-esteem, which are the type I expect to be impacted most immediately following Facebook exposure.

First, I expect that Facebook exposure should decrease DTA and increase SSE among individuals with normal to high emotional stability. The reason I expect this relationship is because these individuals would presumably be using Facebook as it was initially intended, for social networking--to connect with others and to curate their own individual profiles. Because research has shown that emotionally stable individuals are less prone to cognitive self-focus, I expect them to be less likely to participate in direct social comparisons on these sites and experience less negative affect (Mor & Winquist, 2002). If this is so, these individuals should feel more self-esteem after logging onto Facebook and being reminded of their connections and their self as it is presented. This boost in self-esteem would decrease levels of DTA.

RQ1: Does FB use affect existential anxiety and state self-esteem?

H1: After exposure to Facebook DTA will decrease among those with normal to high emotional stability.

H2: After exposure to Facebook SSE will increase among those with normal to high emotional stability.

These predictions are informed by the observations in the literature review. Specifically, the observation that Facebook use has an affect on self-esteem (Ryan & Xenos, 2011; Mehdizadeh, 2010) and that DTA may be mitigated by many of the components that Facebook offers.

Secondly, I would expect neuroticism to moderate these effects. Neurotics may experience more DTA and less SSE after being on Facebook because they are more likely to engage in negative comparisons of themselves.

RQ2: Does Neuroticism moderate these effects?

H3: After exposure to Facebook DTA will increase among neurotic individuals.

H4: After exposure to Facebook SSE will decrease among neurotic individuals.

Noting that highly neurotic individuals typically possess higher levels of DTA and react differently to mortality salience, I predict above that they will also differ in their reaction to Facebook exposure (Goldenberg et al, 2002, 2006).

Highly neurotic individuals have relatively higher DTA and lower SSE than emotionally stable individuals. Rather than alleviating DTA and boosting SSE, exposure to Facebook may exacerbate these measures if neurotic individuals use Facebook differently — or certain aspects of Facebook are more salient to them — in comparison to emotionally stable individuals. This prediction is based on research suggesting that neurotics are typically more self-conscious, experience more guilt and envy, and are more depressive than emotionally stable individuals

(Goldenberg et al. 2006). Additionally, individuals with high levels of neuroticism typically have a greater predisposition to negative affect and have higher levels of self-focus/self-consciousness (Fetterman & Robinson, 2012). This lends these individuals to ruminate more than those with high emotional stability (Fetterman & Robinson, 2012). Given that an individual's outlook on life is colored by their personality in this way, I feel this trait may serve an important role in how one uses Facebook.

In addition to the primary research questions I have included an exploratory research question:

Exploratory RQ3: Do different personality types engage in different types of FB usage?

Exploratory research questions differ from formal hypotheses in that they aim to gather information about an area in order to make an educated hypothesis and test at a later date.

This exploratory research question (RQ3) begins to address the nuances that I anticipate uncovering in this study in that there are likely to be effect differences depending on the composition of one's personal Facebook use. In order to address this, I administer a Facebook questionnaire immediately after the visit to Facebook in both the control and experimental conditions. This will inform the exploratory hypothesis by providing me with an idea of how these measures vary on account of different Facebook use.

The hypothesized predictions are displayed in the following factorials based on a Likert scale that ranges from 1-5 (1= low, 3= moderate, 5= high)

	Before	After
Neurotic	4	5
Emotionally Stable	3	1
	DV=DTA	

Figure 1. Hypotheses for DTA

	Before	After
Neurotic	2	1
Emotionally Stable	3	5
	DV=SSE	

Figure 2. Hypotheses for SSE

III. METHODS

To address the primary research questions, and fill the gap in existing literature on the affordances of social networking sites, I performed a quasi-experiment. The design and measures will be discussed below.

A. **Design**

In order to assess the research questions I used a quasi-experimental design that examined the Emotional Stability component of the Big-Five Inventory of Personality in relation to Facebook usage and existential anxiety. Quasi-experiments differ from traditional experiments in that one or more variables are not randomly assigned (Sansone, Morf & Panter, 2004). In the case of this thesis, I did not randomly assign the personality variables. These designs are most limited by the potential contamination of confounding variables and potential threats to internal validity. Noting these limitations, I employed a quasi-experiment for this thesis because it allowed me to assess personality characteristics, self-esteem and DTA within the constraints imposed by time and available resources.

Specifically this thesis used a 2 (Emotional Stability: High vs. Low) X 2 (Facebook Use: Before vs. After) between subjects design. The only significant difference between the two groups was the order in which the surveys were administered. Group 1 completed the dependent measures (DTA and SSE) before subjects spent 8 minutes on Facebook. This condition served as a control and provided a base read on existential anxiety. Group 2 completed the dependent measures (DTA and SSE) after being on Facebook. This served as the experimental condition and provided a measure of DTA after subjects have been exposed to their Facebook page. The latter condition is the one in which I am most interested. Assuming normality across groups, this

between-groups design allowed me to capture a “normal” measure of DTA as well the experimental measure of DTA after Facebook participation.

The main research question: *Does Facebook impact DTA?* was examined, as well as how emotional stability relates to the two dependent variables (DTA and SSE). As previously mentioned, emotional stability was chosen because past research shows that individuals on the low end of the spectrum (neurotics) are characteristic of high DTA (Goldenberg et al., 2006). Though emotional stability is of primary interest, I collected all 5 traits of the Big Five Inventory. Additionally, all measures used in this thesis research have been validated in previous studies (see Measures).

B. **Subject Enrollment**

Subjects were recruited via Amazon’s Mechanical Turk (MTurk) crowdsourcing service. MTurk has become a popular source for recruiting participants and gathering experimental data among social science researchers. On this site a researcher can build Human Intelligence Tasks (HITs) for individuals (workers) to complete in exchange for a small monetary compensation (\$1). Upon entering the HIT subjects are redirected to a survey hosted on the Qualtrics system. Upon arrival subjects complete a brief eligibility check (see Appendix A) and consent to the study (See Appendix C) by clicking the “I Agree” button found at the bottom of a screen describing the nature of the study and any foreseen benefits or risks.

MTurk has been a reliable means of broadening the validity of studies beyond the typical undergraduate populations used by many researchers (Mason & Suri, 2012). MTurk’s subject pool is amongst the largest in crowdsourcing sites and in 2014 was composed of more than a half million individuals from 190 countries (Mason & Suri, 2012; Paolacci & Chandler, 2014). MTurk workers come from diverse backgrounds and different cultures, spanning age, SES, and

ethnicity (Mason and Suri, 2012). With this breadth there is a possibility of inaccurate or more diverse responses than any one population generally, however. MTurk allows researchers to control for this by requesting participants from one country, one culture, or specifying other relevant criteria. Research has shown that workers' behaviors are comparable to that of subjects in a laboratory setting (Mason & Suri, 2012). For example, research has shown that MTurk workers exhibit the same logical fallacies, cognitive biases, and behavior in economic games as traditional participants (Amir, Rand, & Gal, 2012; Goodman et al. 2013; Horton, Rand & Zeckhauser, 2011). Additionally, yield rates are quite good with very little attrition.

After consulting with scholars through the Association for Internet Research listserv I expected to have nearly 150 participants in a timeframe of one to three days. That said, based on their advice I piloted my survey for one day prior to initiating the actual dataset (please see the pilot's follow-up questionnaire in Appendix E). The purpose of this pilot was to determine if the pay rate was sufficient and to reveal any ambiguities in the survey questions. Minor adjustments in survey wording were made.

C. Measures

1. *Death-Thought Accessibility Word Completion Task (Appendix B.1)*

Death-Thought Accessibility is most often measured with a word-fragment completion task (Greenberg et al., 1994; Harmon-Jones et al., 1997). In this task participants are presented with 20 word fragments and asked to complete the fragments with the first word that comes to mind. Six fragments can either be completed with a neutral or death word. For example, a fragment consisting of the letters COFF__ and could be completed as COFFEE or as the death-related COFFIN. The possible death-related word completions are *buried*, *dead*,

grave, killed, skull, and coffin. The remaining fragments have no death-related option and can only be completed as neutral words (Schimel, Hayes, Williams, & Jahrig, 2007).

2. *State Self-Esteem (Appendix B.2)*

State Self-Esteem was chosen because it is an indicator of how existentially stable people are. State Self-Esteem, unlike other measures of Self-Esteem, is able to measure “short-lived” changes in self-esteem. This is the type of change that I would expect to see after someone is exposed to Facebook. The State-Self Esteem (SSES) consists of 20 items modified from a widely used Janis-Field Feelings of Inadequacy Scale (Janis & Field, 1959). This measure is appropriate because it has notably been used as a valid manipulation check index (Heatherton & Piliavsky, 1991). In my thesis I intend to measure the change in self-esteem after a subject is on Facebook. Again, because I am using a between-subjects design, we can assume normality across groups and can infer how much self-esteem has raised or declined based on the control group.

3. *The Big Five Inventory (Appendix B.3)*

The Big Five Inventory has been used in research on both social networking sites and terror management. The BFI is a 44-item self-report measure comprised of items assessing the Big Five personality factors. Subjects respond to items on a 5-point scale ranging from “strongly disagree” to “strongly agree.” This scale has been proven valid and reliable (John et al., 1999).

4. *Positive and Negative Affect Scale- Expanded Form (PANAS-X) (Appendix B.4)*

The Positive and Negative Affect Scale (PANAS-X) is the most commonly used filler item in TMT studies because it allows one to eliminate mood as an alternative explanation to the usual 'existential anxiety' claim that is made. It consists of subjects rating the extent to which they have felt a number of specific, distinguishable affective emotional states within a given time frame. This is based on a 1-5 Likert Scale with 1 being “very slightly or not at all” and 5 being “extremely” (Watson & Clark, 1994).

D. **Participants**

The current study included 182 individuals (61% female) recruited from the online crowdsourcing network, MTurk. Eleven individuals were eliminated because they did not abide by the restrictions laid out in the consent document (e.g., age, time-frame). In turn, the full sample was comprised of 171 participants. The mean age of participants was 36.44 ($SD = 12.21$). The majority of participants identified as Christian (42.9%), while 7.4% indicated that they were Spiritual, 6.8% Atheist, 15.9% Agnostic, and 25.5% identified as Other, which included Muslim, Jewish, Mormon, Hindu, Buddhist (i.e., religious categories were collapsed due to low, overall percentages). Additionally, 58.8% of the participants had full-time employment, 14.8% worked part-time and 19.8% indicated that they did not work outside of the home.

IV. RESULTS

In order to address the two main research questions independent samples t-tests were conducted in SPSS version 22 for the dependent variables, DTA (i.e., existential anxiety) and SSE.

A. Main Research Questions

The first research question explored whether exposure to Facebook had an effect on existential anxiety and state self-esteem. The analysis showed that participants who visited Facebook before they received the dependent measures (the experimental condition- 1) did not report significantly lower DTA scores ($M = 2.03$, $SD = 1.24$) than those who received the dependent measures before visiting Facebook (the control condition- 0) ($M = 2.15$, $SD = 1.17$), $t(180) = 0.66$, $p = .52$, *ns*. Contrary to what I expected, Facebook did not have significantly affect existential anxiety.

Similarly, a second independent samples t-test was conducted to assess the relation between Facebook use and SSE. Likewise, Facebook exposure was not associated with participants' SSE. In other words, participants in the experimental condition did not have significantly higher SSE ($M = 66.42$, $SD = 18.51$) than those in the control condition ($M = 69.95$, $SD = 16.64$), $t(180) = 1.35$, $p = .18$, *ns*. Thus it appears that Facebook does not affect state self-esteem.

While the first two analyses assessed DTA and SSE generally, my hypotheses following RQ1 specifically addressed the effect of Facebook on those with normal to high emotional stability as indicated below:

H1: After exposure to Facebook DTA will decrease among those with normal to high emotional stability.

H2: After exposure to Facebook SSE will increase among those with normal to high emotional stability.

In turn, a median split was used for the variable indexing neuroticism such that participants with a BFI-Neuroticism score below the median were considered low in neuroticism and of normal to high emotional stability and participants at or above the median were considered high in neuroticism and low in emotional stability.

An independent samples t-test was conducted to assess hypothesis 1 and hypothesis 2. Contrary to my hypothesis, emotionally stable individuals in the experimental condition did not experience less DTA ($M = 2.08, SD = 1.20$) than those in the control condition ($M = 1.91, SD = .97$), $t(82) = -.70, p = .49, ns$. Nor did emotionally stable participants in the experimental condition experience more SSE ($M = 76.28, SD = 20.21$) than those participants in the control condition ($M = 76.67, SD = 16.93$), $t(82) = .10, p = .92, ns$.

The second research question explored whether the measure of neuroticism moderated the effects of Facebook on the two dependent variables was significant among the neurotic sample. Accordingly, the remaining hypotheses addressed neurotic, rather than emotionally stable, individuals.

H3: After exposure to Facebook DTA will increase among neurotic individuals.

H4: After exposure to Facebook SSE will decrease among neurotic individuals.

I ran two independent samples t-tests, comparing the link between Facebook exposure and DTA or SSE among the neurotic sample. Contrary to the hypothesis 3, Facebook did not have a significant effect on DTA for neurotic individuals ($M = 2.38, SD = 1.30$), $t(96) = 1.44, p = .15, ns$. However, a trend finding was revealed for hypothesis 4, in that individuals with greater neuroticism had greater SSE ($M = 63.65, SD = 13.79$) in the control condition, compared to those

who were in the experimental condition ($M = 58.72$, $SD = 12.79$), $t(96)=1.83$, $p = .07$. In line with my prediction (H4), this finding suggests that Facebook may slightly decrease SSE among neurotic individuals..

Lastly, an exploratory research question was posed to address the relationship between how individuals use Facebook and their personality types. After assessing the data, however, I noted that the majority (63 percent) of the sample of interest (participants in the experimental condition) indicated that they were “browsing the newsfeed” during their time on Facebook. Accordingly, I created a simple dichotomous variable (1 = “browsing the newsfeed”, 0 = all other categories) in order to conduct an independent samples t-test. The analysis did not reveal differences based on the type of Facebook use alone. Because of this null finding and the lack of variance across Facebook use categories, it was determined that running an OLS Regression with dummy coding was no longer appropriate. Instead, I created a dichotomous variable by dividing the multiple categories into two: those who browsed the newsfeed and all other categories. This was done to assess whether there was a pattern among those who browsed the newsfeed. However, there were no significant differences in SSE or DTA between those participants who browsed the newsfeed and those who reported other Facebook activities. In particular, there were not significant differences in DTA among those who browsed the newsfeed ($M = 1.96$, $SD = 1.33$) and those who participated in other activities ($M = 2.15$, $SD = 1.09$) $t(86)=-.68$, $p = .50$, *ns*. There was also no a significant differences between those who browsed the Newsfeed ($M = 65.56$, $SD = 19.61$) and those who participated in other activities ($M = 67.73$, $SD = 17.02$), $t(86) = -.53$ $p = .60$, *ns*.

Given that the hypotheses were largely unsupported by my data I explored patterns among participants based on background characteristics (demographics). This investigation led

to finding a significant bivariate correlation between age and SSE: older individuals reported higher SSE in general. This was an interesting but not entirely unexpected finding in that trait self-esteem theories suggest that older people (those that fall between 35-60 and are not yet elderly) have greater self-esteem, in part, due to their more stable position in life and accomplishments (Orth, Robins, Trzeniewski, 2010). Because of this notable difference I chose to further explore differences based on age. In this process I uncovered several interesting and important findings that I address below.

B. Additional Hypotheses

1. Age

In general, there was a wide range in participants' age within my sample (Min=18, Max=69, $M = 36.44$, $SD = 12.21$). After conducting the original independent samples t-test depicting differences by age, I calculated a bivariate correlation between age and SSE and found that it was significant at the .003 level, $r(171) = .26$, $p < .01$. I performed a median split to assess differences in age. The median (33) was used to create age groups for participants who were younger (18-32 years) and those who were older (33-69 years). I felt that this was an appropriate division because it closely reflected the two main groups discussed in current communication literature, Generation X (35-65 years of age) and Generation Y, or Digital Natives (15-35 years of age). Next, a series of bivariate correlations were conducted separately for these groups, younger ($n=83$) and older ($n=88$).

Because I was interested in analyzing various kinds of SSE across age, I also examined several sub-categories of SSE (i.e., Social Self-Esteem, Appearance Self-Esteem, and Performance Self-Esteem) to detect differences in self-esteem depending on age. Correlation

coefficients were computed among these three measures of self-esteem for each group, which were further analyzed by their condition (experimental or control).

Among the younger participants, a bivariate correlation revealed that younger participants who reported greater social self-esteem generally had higher levels of DTA, $r(83) = .23, p < .05$. This unexpected finding suggests that having greater social self-esteem is associated with greater existential anxiety among young adults.

Additionally, a trending inverse association was found for both young adults in the control group and older adults in the control group: participants with lower appearance self-esteem (*e.g.* “I feel satisfied with the way my body looks right now,” and “I feel that others respect and admire me”) had greater levels of DTA; young: $r(38) = -.36, p < .05$; older: $r(46) = -.36, p < .05$. There were no significant effects, however, in the experimental condition across age groups; young: $r(38) = .11, p = .47, ns$; older: $r(46) = .01, p = .97, ns$. Specifically those with low appearance self-esteem in the experimental condition did not report significantly high levels of DTA as compared to their control condition comrades. This finding suggests that Facebook exposure weakens the inverse relationship between appearance self-esteem and existential anxiety.

2. **Personality**

Personality measures were also collected due to their likely association with the dependent measures. Among the Big Five Personality measures, there was a significant effect for neuroticism ($p = .011$) and extraversion ($p = .001$). There were no significant effects for openness, conscientiousness or agreeableness, however. To explore the relationship between SSE and neuroticism a bivariate correlation between SSE and the neurotic aspect of personality was conducted. A slightly larger portion of this study’s population ($n = 182$) was used because all

participants who were eligible and completed the SSE and BFI before dropping out of the study were included. This correlation yielded a significant inverse relationship: those with lower SSE had higher neuroticism $r(182) = -.41, p < .05$. Additionally, a bivariate correlation revealed that extraversion was positively linked to both performance self-esteem $r(83) = .22, p < .05$ and appearance self-esteem $r(83) = .43, p < .01$ for young adults but not social self-esteem. Interestingly, younger adults also had an inverse association between extraversion and DTA, such that those who had lower extraversion experienced more DTA $r(83) = -.22, p < .05$ regardless of condition. In sum, the data suggests that younger adults (men and women) are reliably more neurotic, more extraverted, and have lower self-esteem.

C. Interaction

Lastly, to assess whether Facebook use, relationship status and neuroticism affect levels of DTA, I regressed these variables and their respective interaction terms on DTA. Facebook use (0 = before, 1 = after) and relationship status² (0 = single, 1 = in a relationship) were dummy coded and neuroticism was mean centered. This analysis revealed a significant main effect of neuroticism, $B = .39, SE = .19, t(150) = 2.12, p < .001$, a significant Facebook \times neuroticism interaction, $B = -.63, SE = .25, t(150) = -2.45, p < .015$, and a significant relationship status \times neuroticism interaction, $B = -1.75, SE = .53, t(150) = -3.40, p < .001$. These effects were qualified by a significant Facebook \times relationship status \times neuroticism interaction, $B = 2.51, SE = .62, t(150) = 4.08, p < .001, R^2 = .11$.

² Participants who were widowed or divorced were excluded from this analysis because they made up a very small portion of the sample. Additionally, individuals who were married were excluded because they remained relatively stable across conditions, which led to a leveling out effect.

To examine this interaction in further detail, I examined Facebook use \times neuroticism interactions among individuals who were single and in relationships respectively³. Among single individuals, there was a main effect of neuroticism, $B = .39$, $SE = .19$, $t(125) = 2.07$, $p < .05$, that was qualified by the Facebook use \times neuroticism interaction, $B = -.63$, $SE = .26$, $t(125) = -2.40$, $p < .05$ (see Figure 3). While the simple effect of neuroticism among individuals who were in the experimental group was not significant, $p > .19$, the simple effect of neuroticism among individuals in the control condition was significant, $B = .39$, $SE = .19$, $t(125) = 2.07$, $p < .05$, such that higher levels of neuroticism lead to increased DTA. The differences between Facebook use condition at 1 standard deviation above and below the mean level of neuroticism showed that individuals who were low in neuroticism did not differ between Facebook conditions, $p > .26$. However, for individuals high in neuroticism, those who were in the experimental condition ($M = 2.48$) showed higher DTA than those who were in the control condition ($M = 1.80$; $B = .68$, $SE = .30$, $t(125) = 2.28$, $p < .05$).

³ Due to the low numbers of participants in relationships ($n=25$) the results for this condition and the three-way interaction must be interpreted with caution.

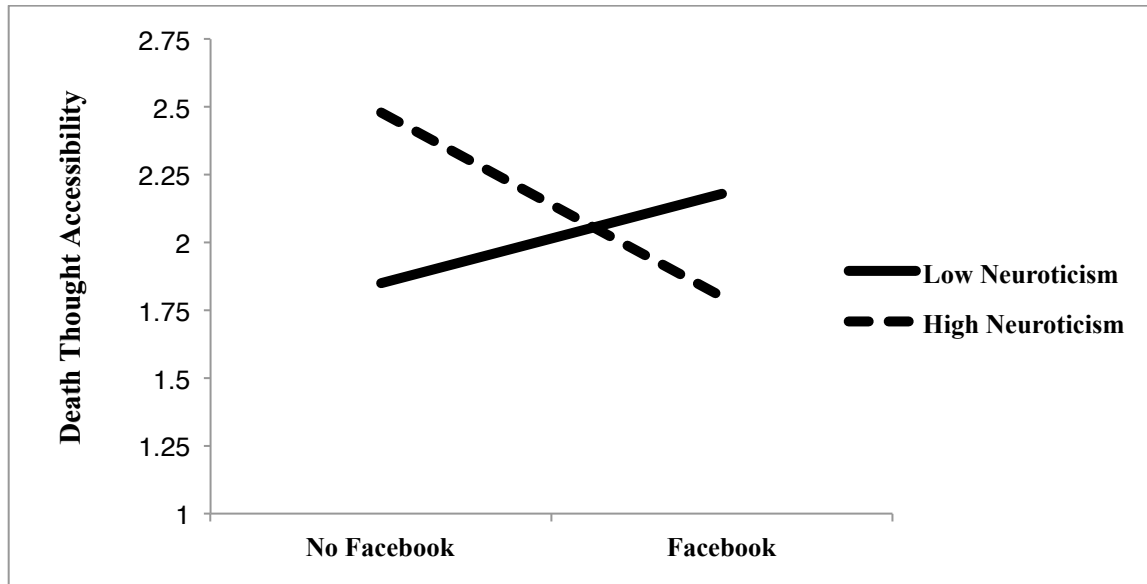


Figure 3. Interaction for single participants

Among individuals who were in a relationship, there was a main effect of neuroticism, $B = .53$, $SE = .25$, $t(25) = 2.11$, $p < .05$, that was qualified by the Facebook use \times neuroticism interaction, $B = -1.89$, $SE = .49$, $t(25) = -3.85$, $p < .001$ (see Figure 4). The simple effect of neuroticism among individuals in a relationship in the experimental group indicated that higher levels of neuroticism lead to increased DTA, $B = .53$, $SE = .25$, $t(25) = 2.11$, $p < .05$ whereas for participants in the control group (before) increased neuroticism was associated with lower DTA, $B = -1.36$, $SE = .42$, $t(25) = -3.23$, $p < .01$. The differences between Facebook use condition at 1 standard deviation above and below the mean level of neuroticism showed that individuals who were low in neuroticism showed increased DTA ($M = 3.52$). However, for individuals high in neuroticism, those who were in the experimental condition (after) showed higher DTA than those who were in the control condition, $M = 1.94$; $B = -1.58$, $SE = .61$, $t(25) = -2.58$, $p < .05$. This pattern was reversed for individuals who were high in neuroticism, where those who were in the control condition had lower levels of DTA ($M = 1.10$), $B = .87$, $SE = .55$, $t(25) = 3.28$, $p < .01$.

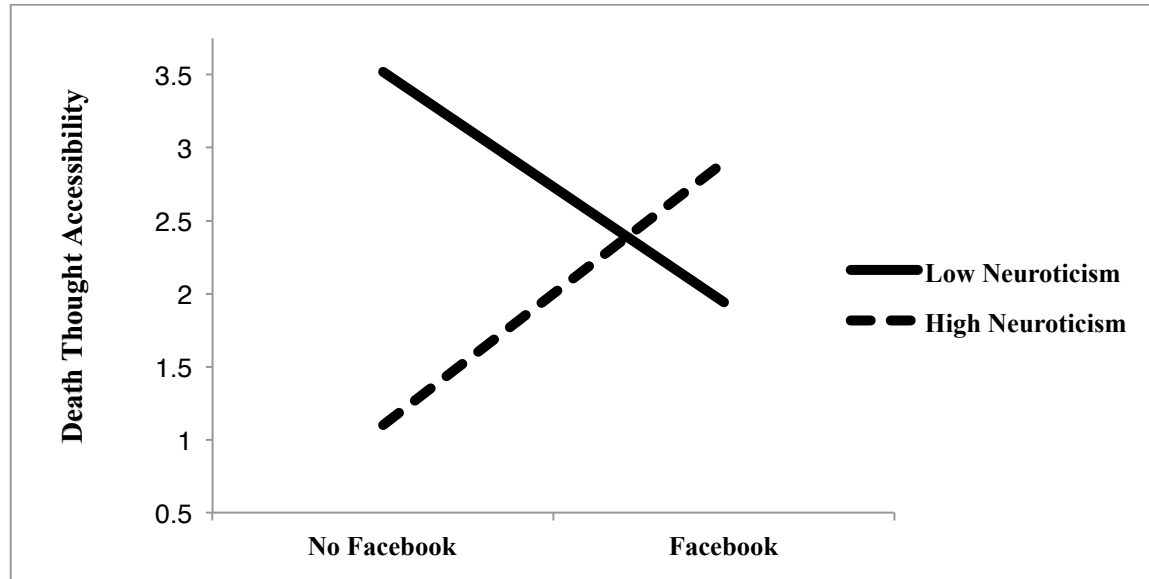


Figure 4. Interaction for participants in a relationship.

As noted some interesting trends surfaced in this study. While findings did not support my original hypotheses, it may have been largely on account of the methodology rather than the theoretical framework upon which the hypotheses were derived. This will be addressed at depth in the discussion.

V. DISCUSSION

Due to these largely insignificant results three background relations were explored further: age, the subcategories of state self-esteem (social, performance and appearance) and personality.

A. Main Effects of Age

Although I did not make predictions regarding the dependent measure with respect to age, it is not entirely surprising that generational differences were uncovered. Previous research suggests that motivations for social media use vary across younger and older populations (Kang & Chasteen, 2009). One reason for this variance is that group belonging is particularly important for young people (Williams & Thurlow, 2005). Secondly, the strong desire for belonging and recognition amongst young people is due to their as yet unstable, evolving self-concepts (Paul & Brier, 2001). Lastly, there is evidence that social identity among older individuals may not carry as much existential weight or operate in quite the same way as for young people (Kang & Chasteen, 2009). Accordingly, a Generation X participant (roughly those 35-55 years of age) is likely to use a social networking site differently than a Generation Y participant (15-35 years of age).

The finding that originally led to this deeper exploration of age differences was that the older group of participants (33-69) had greater state self-esteem than those in the younger group. This finding is consistent with past research in that young adults typically have lower self-esteem than middle-aged adults (c.f. Orth, Robins, Trzeniewski, 2010, Galambos, Barker, & Krahn, 2006; Gove et al., 1989; Jaquish & Ripple, 1981; Lall, Jain, & Johnson, 1996). Orth and colleagues conducted a study and found that self-esteem steadily increases across young

adulthood and peaks around the age of 60 (Orth, Robins, Trzeniewski, 2010). Researchers explain that this pattern of self-esteem is likely due to the fact that “change can occur in response to important transitions or major life events” (c.f. Orth, Robins, Trzeniewski, 2010, e.g., Trzeniewski, Robins, Roberts, & Caspi, 2004). This finding was replicated in the current study such that older adults, regardless of condition, reported higher levels of self-esteem.

B. Social Self-Esteem

My research revealed that high social self-esteem is associated with greater existential anxiety among young participants. I speculate that this difference can, in part, be explained by the nature of this the SSE measure. Social self-esteem focuses on other’s evaluations and perceptions of the individual. For example, items for social self-esteem are worded “I am worried about whether I am regarded as a success or failure” and “I feel self-conscious.” Whereas performance and appearance self-esteem are largely dependent on an individual’s own evaluation of themselves. For example, performance self-esteem measures include “I feel confident about my abilities,” “I feel frustrated about my performance” and appearance self-esteem measures include “I feel satisfied with the way my body looks right now” and “I feel that others respect and admire me.” In sum, the locus of control is placed on, and judgment comes from, others for social self-esteem (e.g. one’s peer group and Facebook friends) and predominately on the individual for both performance and appearance self-esteem.

Because previous research suggests that young persons are more concerned with group belonging it is not entirely surprising that they have higher social self-esteem than older participants despite the fact that older participants have higher overall self-esteem. Opportunities for social appraisal have become undoubtedly more accessible over the past two decades as the

use of online activities have increased dramatically. It may be that attaining self-esteem predominantly from social feedback, as the data suggests (young persons have relatively high social self-esteem and relatively low levels of other self-esteem), makes individuals particularly vulnerable to threats to existential security.

In line with this finding it may be that younger individuals rely more heavily on the feedback of their social community to create their self-esteem (self-concept). It would follow that when this is not constantly validated these individuals are more susceptible to DTA. Older people perhaps rely more on their own opinions and self-concept which would explain why they have higher performance and appearance self-esteem. In this vein Pew data show that “baby-boomers overwhelmingly use SNSs to connect to existing family and friends as well as to reconnect with former friends” (Barker, 2012, p. 170). By contrast, research has shown that younger individuals are motivated in large part by social capital and typically seek to maintain connections with friends, check on relationship statuses, and show the world who they are (Barker, 2012, p. 165). In sum, it could be that the younger population’s emphasis on group belonging, and others’ appraisals, could lead to high levels of DTA despite higher levels of social self-esteem, particularly if they are not validated frequently on Facebook or are more prone to upward comparisons (Festinger, 1954). Additional research is necessary to investigate this relationship further.

C. **Appearance Self-Esteem**

Lower appearance self-esteem is associated with greater existential anxiety among young and older persons in the control condition. This finding, for the control condition in particular, suggests that Facebook weakens the inverse relationship between low appearance self-esteem

and high DTA such that those who have low appearance self-esteem in the experimental condition do not report particularly high levels of existential anxiety. This provides evidence for the differential role Facebook plays in subtly improving existential security for those with low appearance self-esteem.

While I am surprised that significant findings were not uncovered for the experimental condition (participants who viewed Facebook before completing the dependent measures), it is important to note that appearance self-esteem is also referred to as physical self-esteem. This component of self-esteem is comprised of “how people view their physical bodies, and includes such things as athletic skills, physical attractiveness, body image, as well as physical stigmas and feelings about race and ethnicity” (Heatherton & Wyland, 2003). In line with research that addresses the body in online contexts, the focus on the physical may help reveal why Facebook exposure actually weakens the inverse relationship between DTA and appearance self-esteem. On social networking sites an individual’s appearance is no longer restricted to the physical—but rather the embodied-self individuals present in images and text. Facebook is largely an appearance-based medium because it is comprised of images (e.g. photographs, videos, text-based gifs) posted by individuals to present themselves. On Facebook, individuals are evaluated based on their self-presented images. The dissociation from the body may in of itself diminish one’s preoccupation, or lack of esteem, with appearance.

These findings may also be explained by a combination of presentation and comparison patterns. For example, individuals with low appearance self-esteem may feel more compelled to present themselves on Facebook due to insecurities that surface in other interactions. This new asynchronous venue for self-presentation and identity construction may allow these individuals to portray themselves in a more favorable light. This would, in theory, compensate for or

improve their appearance self-esteem—which would, in turn, lead to lower levels of existential insecurity. This is the effect I found in the present study.

By contrast, individuals with high appearance self-esteem may be less compelled to craft their appearance on Facebook and may instead notice how they are relatively equal in comparison to their online friends and acquaintances. If this is the case, going on Facebook may be a threat to these individuals in particular because in presenting themselves, they may compare themselves to those who are perceived to be more attractive. This threat could lead to existential insecurity and higher DTA. In other words, these individuals may not be in search of validation to the same extent that individuals with low appearance self-esteem are. While on Facebook, their attention may instead be drawn to the increasing pool of others that are attractive subsequently making them question their high esteem. The resulting doubt would likely lead to increased DTA.

In either of these cases social comparison theory (Festinger, 1954) and social comparison orientation, (Gibbons & Buunk, 1999) become relevant sources of explanation. As is evident in the findings, the relationship between Facebook use and self-esteem is nuanced. The effect of Facebook exposure on self-esteem and DTA may depend largely on whether an individual engages in upward or downward comparisons. In the case that an individual feels better after being exposed to different others they may be engaging in downward social comparison. In the event that an individual feels more insecurity about their self-esteem or appearance after being online they may be engaging in upward social comparison. These orientations towards upward or downward comparisons likely vary based on personality traits. Research suggests, for example, that neurotics generally gravitate towards negative emotional states so they may engage in upward social comparison (Reed & Derryberry, 1995). Though I did not have adequate data to

fully examine this relationship in the current thesis, it seems reasonable to suggest that this orientation towards comparing may also differ depending on the composition of one's self-esteem. In any case future research would need to explore these complex relationships.

D. Main Effects of Personality

As anticipated there were several significant findings related to personality, specifically Extraversion and Neuroticism. An inverse relationship was found in that participants with lower SSE generally had higher levels of neuroticism. Research supporting this finding shows that neurotic individuals who suffer from negative self-focus and have lower self-esteem (Goldenberg et al. 2006; Fetterman & Robinson, 2012).

Additionally, higher extraversion was related to higher performance and appearance self-esteem. This may be explained again by the nature of these measures. An individual that is comfortable presenting themselves in social situations (i.e. an extraverted individual) may feel a sense of control over performance and appearance self-esteem because they are more easily manipulated and dependent on one's own competence and attractiveness. If this is so, these individuals may be more comfortable opening up on social networking sites.

E. Two-way Interactions

A significant main effect for neuroticism was found in that higher levels of neuroticism led to increased DTA. For those in the experimental condition, high levels of neuroticism was associated with higher DTA than those in the control condition. Literature on neuroticism notes that neurotics are "more responsive to negative information about themselves because it is consistent with their self-image" (Reed & Derryberry, 1995). These individuals also find it easier

to recall negative information about themselves (e.g., Bradley, Mogg, Galbraith, & Perrett, 1993; Martin, Ward, & Clark, 1983). This propensity to reflect on the self in a negative way interferes with an individual's two-part defense against existential anxiety (self-esteem and cultural worldview). Because self-esteem is likely to be lower in these individuals they would indeed be more susceptible to existential anxieties.

In addition, I noted a simple effect of neurotics among individuals who were in the experimental group such that those with high neuroticism had high levels of DTA. For participants in the control condition, however, high neuroticism was associated with low levels of DTA. This interesting finding suggests that among high neurotics, the act of going on Facebook heightens existential anxiety, which is indeed what I hypothesized. This may also be explained by the theories aforementioned, in particular, social comparison orientation and neurotics being prone to compare themselves unfavorably. If neurotics engage in negative comparisons on Facebook, they would, in turn, feel worse about their condition and feel less existentially secure.

F. **Three-way Interaction**

The interactions discussed above were qualified by a significant Facebook x Relationship Status x Neuroticism interaction. Specifically, higher levels of neuroticism led to increased DTA for individuals who were in the control condition and single. The experimental condition, however, was not significant, which suggests that Facebook exposure does not significantly impact the relationship between neuroticism and DTA for single individuals. In general, however, individuals who were high in neuroticism, single and in the experimental condition had higher DTA levels than those in the control condition suggesting that neurotics in the

experimental condition experienced the most DTA. In other words among individuals who were single, those with low neuroticism levels experienced significantly more DTA when exposed to Facebook. For single individuals with high neuroticism, significantly less DTA was reported after being on Facebook.

These findings suggest that relatively emotionally stable, single individuals are in some way threatened by material they come across on Facebook. This threat needs to be explored in future research. One testable hypothesis is that viewing profiles of others who are in seemingly stable relationships causes single individuals to feel doubt about themselves, and their relative loneliness, thus making them less existentially secure. This hypothesis is in line with previous research suggesting that relationships (particularly relationship security) can play an important role in managing existential threats (Florian et al., 2002).

By contrast, for participants in a relationship, higher levels of neuroticism led to increased DTA in the experimental condition. This is not unexpected because neuroticism is characteristic of high DTA, and on a social networking site these individuals have ready access to negative feelings about themselves (and to engage in negative comparisons). This relationship was reversed in the control condition. Here higher levels of neuroticism were associated with relatively low DTA. The fact that those in the control condition had low DTA makes me confident in saying that Facebook had an effect on DTA among neurotic individuals.

These findings suggest that relatively emotionally stable individuals in a relationship feel more existentially secure after being on Facebook. This implies that Facebook exposure increases existential security and weakens threat, making DTA less salient, among individuals in a relationship.

It becomes evident, after examining the findings of this interaction together that Facebook's role in mitigating existential anxiety depends on whether someone is in a relationship. Previous research suggests that relationships play an important role in both acquiring and maintaining self-esteem- a key component in the two-part anxiety buffer- (Felson, 1989; Leary & Baumeister, 2000) though findings as to the directionality of this relationship are not entirely consistent (Keefe & Berndt, 1996). To elucidate the effects of self-esteem, relationship status and DTA on one another, researchers would need a more precise measure and a design in which each element can be controlled. One such measure to use in future research is relationship satisfaction rather than status.

In sum, addressing the main research questions has proven more nuanced than originally noted. There are a number of variables to consider, some which may be confounding in the current study. In moving forward one would need to disentangle them further to infer what relationships exist and the directionality of these relationships.

VI. LIMITATIONS AND FUTURE RESEARCH

Based on the results of this thesis, future research may benefit from several modifications. First, a morality salience manipulation (Rosenblatt et. al, 1989) could be added making four, rather than two, main conditions. In the current rendition of this experiment I assumed that participants would have a high enough base level of existential anxiety to capture through the DTA measure without priming. Contrary to my expectation, the level of existential anxiety in these individuals may not have been strong enough. Thus the method of testing may not have been capable of assessing the subtle differences between the control group's natural occurring existential anxiety and the experimental group. In other words, the base level of existential anxiety may have been too low to detect differences. By adding a mortality salience manipulation, like those in past TMT experiments, primed individuals will have higher DTA and data can be more conclusive.

Secondly, it is important to recognize the limitations of using online crowdsourcing for social scientific research. While Mturk has proven reliable on many online surveys in the past (e.g. Chandler, Meuller & Paolacci, 2012; Buhrmester et. al, 2011), the time span when participants were asked to self navigate to their own Facebook pages left too much room for deviation. A more carefully controlled study could be administered in a laboratory session to ensure that participants follow instructions and reduce the amount of error on account of deviation alone. Additionally, a laboratory session would allow researchers to account for participants' interactions during a given time frame before and after the manipulation. In the current study, for example, I cannot be entirely certain if participants were on Facebook, or another social networking site, right before they clicked in the HIT so I needed to rely on self-

report. If individuals were active on social media just before entering the HIT the effect of that interaction may have shown up residually in the current data.

Another consideration for future research is compliance. In the current study there was a two-part filter for compliance. First, participants needed to complete the entire survey, meaning that they should have arrived at the demographic questionnaires at the end. Second, participants who spent less than 17 minutes completing the survey were eliminated and their answers were not considered in the data analyses. Keeping in mind that the Facebook period should last 8 minutes and it is near impossible to finish all of the answers and read the required consent document in less than 9 minutes, 17 minutes seemed to be an appropriate minimum time of completion. A pilot study confirmed that those who spent less than 17 minutes on the entire survey often had missing data or did not complete the demographic questions at the end.

Although compliance (as in the number of completed surveys) did not seem to be an issue in this study future research might consider adding additional incentives such as course credit, or score and report info from the PANAS-X and Big Five Inventory in order to increase the confidence in, and the quality of, data. Research suggests that participants evaluate surveys based on the attractiveness of inherent activities. What this means is that they evaluate whether or not to take the survey based on things like interest value and personal relevance (Groves, Cialdini, & Couper, 1992). The promise of receiving knowledge about oneself (in the PANAS-X and BFI) upon completion of the survey may be beneficial. In sum, research on motivation shows that offering incentives such as these may increase compliance and leave participants feeling more fulfilled (i.e. human capital advancement) (Kaufmann, Schultz, & Veit, 2011).

Additionally, the current study suffered from low group numbers once participants were analyzed in groups broken down by age and experimental conditions.

Lastly, this study was perhaps overly ambitious in that it tried to simplify factors that may be too nuanced to attack in one fell swoop. Due to its relative newness, research methods for social networking sites and social media, are still developing and in a stage of refinement. A measure to detect the subtleties involved in how, and why, one uses Facebook should be considered as this study, and many others, would benefit from a valid measure. It would, for instance, be particularly interesting to explore where individuals are looking while on Facebook. It could be that those in a relationship generally self-select certain viewing material that might be deemed as “non-threatening” or visa versa.

In hindsight, other measures that may be useful in future renditions of this work include social comparison orientation and relationship satisfaction. One can imagine the number of important relationships to be revealed, for example, if young people may rely more heavily on social aspects to create the individual esteem whereas older people may rely on their own impressions to create individual esteem. Both of these outcomes may depend on one’s social comparison orientation. Moreover, previous research has suggested that the process of social comparison has an evolutionary basis, which means that it is likely connected to survival and existential anxieties (Buunk & Gibbons, 2006).

In conclusion, though the results of this exploratory study are inconclusive, they serve as an initial probe or rumination in this nascent research area. It is my hope that future research can benefit from these clarifying results and perhaps take direction from what relationships proved interesting and what methodological instruments may be suitable. Though the results did not reflect my original hypotheses I will not abandon these main research questions. Instead, I will implement the above modifications in an attempt to more accurately assess one’s existential anxiety pre- and post- Facebook use.

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APPENDIX A

Eligibility Survey:

Thank you for choosing this HIT! Before participating in this study please answer the following questions honestly to determine eligibility:

Are you 18 years of age or older?

Yes

No

Do you have a current Facebook account?

Yes

No

APPENDIX B.1

DTA Word Completion Task

Please complete the following by filling letters in the blanks to create words. Please fill in the blanks with the first word that comes to mind. Type one letter per blank. Some words may be plural. Thank you.

1. BUR __ _ D

11. CHA __ _

2. PLA __ _

12. KI __ _ ED

3. WAT __ _

13. TAB __ _

4. DE __ _

14. __ _ MB

5. MU __ _

15. SK __ _ L

6. __ _ ING

16. TR __ _

7. B __ _ T __ _ LE

17. P __ _ P __ _ R

8. M __ _ J __ _ R

18. COFF __ _

9. __ _ EA __ _

19. POST __ _

10. GRA __ _

20. R __ _ DE __ _

Scoring:

DTA: Items 1, 4, 6, 9, 10, 12, 14, 15, 18

APPENDIX B.2

State-Self Esteem

This is a questionnaire designed to measure what you are thinking at this moment. There is of course, no right answer for any statement. The best answer is what you feel is true of yourself at the moment. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you **RIGHT NOW**.

1. I feel confident about my abilities.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

2. I am worried about whether I am regarded as a success or failure.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

3. I feel satisfied with the way my body looks right now.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

4. I feel frustrated or rattled about my performance.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

5. I feel that I am having trouble understanding things that I read.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

6. I feel that others respect and admire me.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

7. I am dissatisfied with my weight.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

8. I feel self-conscious.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

9. I feel as smart as others.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

10. I feel displeased with myself.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

11. I feel good about myself.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

12. I am pleased with my appearance right now.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

13. I am worried about what other people think of me.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

14. I feel confident that I understand things.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

15. I feel inferior to others at this moment.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

16. I feel unattractive.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

17. I feel concerned about the impression I am making.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

18. I feel that I have less scholastic ability right now than others.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

19. I feel like I'm not doing well.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

20. I am worried about looking foolish.

(1) Not at All (2) A Little Bit (3) Somewhat (4) Very Much (5) Extremely

Scoring:

Items 2, 4, 5, 7, 8, 10, 13, 15, 16, 17, 18, 19, 20 are reverse-scored.

Sum scores from all items and keep scale as a continuous measure of state self-esteem. The subcomponents are scored as follows:

Performance Self-esteem items: 1, 4, 5, 9, 14, 18, 19. Social Self-esteem items: 2, 8, 10, 13, 15, 17, 20.

Appearance Self-esteem items: 3, 6, 7, 11, 12, 16.

APPENDIX B.3

The Big Five Inventory (BFI)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. The scale is as follows:

1 = strongly disagree, 2= disagree a little, 3=neither agree nor disagree, 4= agree a little, 5= strongly agree

I see Myself as Someone Who...

- ___ 1. Is talkative
- ___ 2. Tends to find fault with others
- ___ 3. Does a thorough job
- ___ 4. Is depressed, blue
- ___ 5. Is original, comes up with new ideas

- ___ 6. Is reserved
- ___ 7. Is helpful and unselfish with others

- ___ 8. Can be somewhat careless
- ___ 9. Is relaxed, handles stress well
- ___ 10. Is curious about many different things

- ___ 11. Is full of energy
- ___ 12. Starts quarrels with others

- ___ 13. Is a reliable worker
- ___ 14. Can be tense
- ___ 15. Is ingenious, a deep thinker

- ___ 16. Generates a lot of enthusiasm

- ___ 17. Has a forgiving nature

- ___ 18. Tends to be disorganized

- ___ 19. Worries a lot

- ___ 20. Has an active imagination

- ___ 21. Tends to be quiet
- ___ 22. Is generally trusting

- ___ 23. Tends to be lazy

- ___ 24. Is emotionally stable, not easily upset

- ___ 25. Is inventive

- ___ 26. Has an assertive personality

APPENDIX B.3 (continued)

- ___ 27. Can be cold and aloof
- ___ 28. Perseveres until the task is finished
- ___ 29. Can be moody
- ___ 30. Values artistic, aesthetic experiences
- ___ 31. Is sometimes shy, inhibited
- ___ 32. Is considerate and kind to almost everyone
- ___ 33. Does things efficiently
- ___ 34. Remains calm in tense situations
- ___ 35. Prefers work that is routine
- ___ 36. Is outgoing, sociable
- ___ 37. Is sometimes rude to others
- ___ 38. Makes plans and follows through with them
- ___ 39. Gets nervous easily
- ___ 40. Likes to reflect, play with ideas
- ___ 41. Has few artistic interests
- ___ 42. Likes to cooperate with others
- ___ 43. Is easily distracted
- ___ 44. Is sophisticated in art, music, or literature

Scoring:

BFI scale scoring (“R” denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

APPENDIX B.4

PANAS-X

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the past few weeks. Use the following scale to record your answers:

1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
_____ cheerful	_____ sad	_____ active	_____ angry at self	
_____ disgusted	_____ calm	_____ guilty	_____ enthusiastic	
_____ attentive	_____ afraid	_____ joyful	_____ downhearted	
_____ bashful	_____ tired	_____ nervous	_____ sheepish	
_____ sluggish	_____ amazed	_____ lonely	_____ distressed	
_____ daring	_____ shaky	_____ sleepy	_____ blameworthy	
_____ surprised	_____ happy	_____ excited	_____ determined	
_____ strong	_____ timid	_____ hostile	_____ frightened	
_____ scornful	_____ alone	_____ proud	_____ astonished	
_____ relaxed	_____ alert	_____ jittery	_____ interested	
_____ irritable	_____ upset	_____ lively	_____ loathing	
_____ delighted	_____ angry	_____ ashamed	_____ confident	
_____ inspired	_____ bold	_____ at ease	_____ energetic	
_____ fearless	_____ blue	_____ scared	_____ concentrating	
_____ disgusted	_____ shy	_____ drowsy	_____ dissatisfied	

APPENDIX B.4 (continued)

Scoring For PANAS-X: General Dimension Scales

Negative Affect (10) afraid, scared, nervous, jittery, irritable, hostile, guilty, ashamed, upset, distressed

Positive Affect (10) active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, strong

Basic Negative Emotion Scales

Fear (6) afraid, scared, frightened, nervous, jittery, shaky

Hostility (6) angry, hostile, irritable, scornful, disgusted, loathing

Guilt (6) guilty, ashamed, blameworthy, angry at self, disgusted with self, dissatisfied with self

Sadness (5) sad, blue, downhearted, alone, lonely

Basic Positive Emotion Scales

Joviality (8) happy, joyful, delighted, cheerful, excited, enthusiastic, lively, energetic

Self-Assurance (6) proud, strong, confident, bold, daring, fearless

Attentiveness (4) alert, attentive, concentrating, determined

Other Affective States

Shyness (4) shy, bashful, sheepish, timid

Fatigue (4) sleepy, tired, sluggish, drowsy

Serenity (3) drowsy calm, relaxed, at ease

Surprise (3) amazed, surprised, astonished

Note. The number of terms comprising each scale is shown in parentheses.

To score a scale, sum the responses to the items in that scale.

APPENDIX C

University of Illinois at Chicago Research Information and Consent for Participation in Social Behavioral Research

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision.

Principal Investigator Name and Title: K. Kruzan, Graduate Student
Department and Institution: Communication, University of Illinois-Chicago
Contact Information: kkruza2@uic.edu

Why am I being asked?

You are being asked to be a subject in a research study about Facebook use and personality traits.

You have been asked to participate in the research because you've stated that you are 18 year of age or older and have an active Facebook account.

Your participation in this research is voluntary. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

What is the purpose of this research?

The purpose of this study is to better understand the relation between Facebook use and personality.

What procedures are involved?

After clicking "I Agree" below you will proceed to the first questionnaire. There are a total of five questionnaires and at some point you will be asked to open a second tab on your internet-capable device and spend a total of ten minutes browsing your Facebook account. Please note that you must complete all questionnaires and spend the requested amount of time on Facebook in order to get compensation.

Your participation in this study will last about 20 minutes.

You should have access to a computer that allows you to toggle two webpages.

What are the potential risks and discomforts?

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life.

There is a small risk of a breach of privacy and confidentiality in that although investigators will not receive any identifiable information, MTurk, Facebook, and other online platforms may track, retain, and share subject data generated during this research, as per the subject's user agreement with the sites and the settings on these accounts.

(Page 1 of 2)

Are there benefits to taking part in the research?

This study is not designed to benefit you directly. This study is designed to learn more about social networking sites and personality. The study results may be used to help other people in the future.

Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will receive \$ 1.00 via Amazon's Mechanical Turk for completing this survey in its entirety. If you do not finish the study, you will not be compensated. If you complete the study, you will receive a total of \$1.00 and you will receive your payment within approximately 3 days.

Can I withdraw or be removed from the study?

If you decide to participate, you are free to withdraw your consent and discontinue participation at any time simply by existing the survey.

In the event you withdraw or do not complete all questionnaires, you will not be compensated as described above.

Who should I contact if I have questions?

Contact the researcher Kaylee Kruzan at kkruza2@uic.edu or Faculty Advisor Dr. Andrew Rojecki at arojecki@uic.edu if you have any questions about this study or your part in it.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) IRB at 1-(312) 996-1711 or 1-866-789-6215 (toll-free) or via email at uicirb@uic.edu.

Remember:

Your participation in this research is voluntary. If you decide to participate, you are free to withdraw at any time.

I have read (or someone has read to me) the above information. By clicking the "I Agree" box below I consent to participation in this research.

I Agree

(Page 2 of 2)

APPENDIX D

This is a copy of the information that will be included in the banner advertisement that will be displayed on Amazon's MTurk for this research.

Requester: kruzanresearch

Title: Answer a series of short surveys about Facebook

Description: Fill out a series of surveys re: personality and self-esteem; briefly navigate to personal Facebook page

Keywords: Facebook, Social Media, Personality, Self-Esteem, Survey

Qualifications Required: Must have active Facebook account; Must be able to work on a device that allows you to toggle two webpages; Must meet Master Qualification.

HIT Expiration Date: May 1, 2015

Time Allotted: 60 minutes

Reward: \$1.00

HITS Available: 150

APPENDIX E

Pilot Study Follow-Up

Thank you for your participation in this survey. This survey is currently being run as a pilot study and will re-launch after your feedback has been taken into consideration. Please answer the following questions honestly in order for the researchers to be able to fix any ambiguities in the survey and judge appropriate compensation rates.

How long did it take you to complete this survey?

15-30 minutes

30-45 minutes

45 minutes or longer

Do you feel that your pay was sufficient for the time you spent?

Yes

No

If no, please briefly explain:

Did you find any aspects of this survey ambiguous— or were directions at all confusing?

Yes

No

If no, please briefly explain:

APPENDIX F

Facebook History Questionnaire

Did you use Facebook as you were instructed?

Yes

No

Please enter how long (in minutes) you remained on Facebook?

When you were just on Facebook would you say that you spent the most time:

Browsing the newsfeed

In a Facebook group (e.g. “Android Fans,” “Green Juice Buddies,” “PR Fans”)

Creating Content (actively updating YOUR profile)

Private Communication (sending messages via FB chat or FB messenger)

Public Communication (posting on friend’s walls or group walls)

Just Looking (looking at friend’s content etc.)

Please rank the following activities from 1 (the activity you do most often) to 6 (the activity you do least) on Facebook (Please only use each number once):

Browsing the newsfeed

In a Facebook group

Creating Content (actively updating YOUR profile)

Private Communication (sending messages via FB chat or FB messenger)

Public Communication (posting on friend’s walls or group walls)

Lurking (looking at friend’s content etc.)

On average how would you describe the frequency of your FB use?

Highly Active (Any chance I get)

Active (Several times per day)

Moderate (Once a day)

Somewhat Active (Once a week)

Inactive (Less than once a week)

How many times have you changed your profile picture in the past 2 months?

Once

Twice

Never

Would you say most of your connections are:

Intimate (close friends, family)

Casual (friends or family who you are familiar with—see in person from time to time)

Acquaintances (people you have NOT met in real life, or have met in real life less than 1-2 times)

Besides today when was the last time you used Facebook?

An hour ago

Within 24 hours

A few days ago

A week ago or longer

APPENDIX G

Demographic information

How old were you on your last birthday:

Please select your gender?

Male

Female

Transgender

What is your religious orientation?

Christian

Muslim

Jewish

Mormon

Spiritual

Atheist

Agnostic

Something else (please specify)

Please select your current work status:

Work outside home full time

Work outside home part time

Do not work outside home

Other

Please select your current relationship status:

Single

In a relationship

Married

Widowed

Divorced

APPENDIX H

Please follow this URL to view a sample of the survey.

https://uic.qualtrics.com/SE/?SID=SV_0Oo5PEZw5ntSR01

APPENDIX I

IRB Approval

(Please see the following three pages which remain numberless due to formatting constraints)

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Approval Notice
Initial Review (Response to Modifications)

February 12, 2015

Kaylee Kruzan, BA
Communication
1007 W. Harrison Street
1140 BSB, M/C 132
Chicago, IL 60612
Phone: (810) 241-0488 / Fax: (312) 413-2125

RE: **Protocol # 2015-0062**
 “Existential Dilemma on Facebook: Social Networking as Tool for Anxiety Mitigation”

Dear Ms. Kruzan:

Your Initial Review application (Response to Modifications) was reviewed and approved by the Expedited review process on February 5, 2015. You may now begin your research.

Please note the following information about your approved research protocol:

Protocol Approval Period: February 5, 2015 - February 5, 2016

Approved Subject Enrollment #: 150

Additional Determinations for Research Involving Minors: These determinations have not been made for this study since it has not been approved for enrollment of minors.

Performance Site: UIC

Sponsor: None

Research Protocol:

- a) Existential Dilemma on Facebook: Social Networking as Tool for Anxiety Mitigation; Version 2; 01/30/2015

Recruitment Materials:

- a) Eligibility Materials; Version 2; 01/30/2015
- b) Recruitment Material; Version 2; 01/30/2015

Informed Consents:

- a) Consent Document; Version 2; 01/30/2015
- b) A waiver of documentation (no written signature on consent documents) has been

approved for this online research under 45 CFR 46.117(c)(2) (minimal risk; subjects will be provided with an information sheet containing all of the elements of consent)

Your research meets the criteria for expedited review as defined in 45 CFR 46.110(b)(1) under the following specific category:

(7) Research on individual or group characteristics or behavior (including but not limited to research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
01/14/2015	Initial Review	Expedited	01/19/2015	Modifications Required
02/04/2015	Response To Modifications	Expedited	02/05/2015	Approved

Please remember to:

□ Use your **research protocol number** (2015-0062) on any documents or correspondence with the IRB concerning your research protocol.

□ Review and comply with all requirements on the enclosure,

"UIC Investigator Responsibilities, Protection of Human Research Subjects"

[\(http://tiger.uic.edu/depts/ovcr/research/protocolreview/irb/policies/0924.pdf\)](http://tiger.uic.edu/depts/ovcr/research/protocolreview/irb/policies/0924.pdf)

Please note that the UIC IRB has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact OPRS at (312) 996-1711 or me at (312) 996-2014. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Sandra Costello

Assistant Director, IRB # 2

Office for the Protection of Research Subjects

Enclosures:

- 1. UIC Investigator Responsibilities, Protection of Human Research Subjects**
- 2. Informed Consent Document:**
 - a) Consent Document; Version 2; 01/30/2015

3. Recruiting Materials:

- a) Eligibility Materials; Version 2; 01/30/2015
- b) Recruitment Material; Version 2; 01/30/2015

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Kruzan, K. (2014). Avatars as Ghosts in MMORPGS. AOIR 2014, IR15: Boundaries and Intersections, Daegu, Korea, October 21-24

PUBLICATIONS: Kruzan, K. (2014). New media use in mitigating existential fear. *Thanatos*, 3. 149-160.