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Technology and Its Associations with the Meaningfulness of Interpersonal Relationships

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TECHNOLOGY AND ITS ASSOCIATIONS WITH THE MEANINGFULNESS OF

INTERPERSONAL RELATIONSHIPS

by

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Abstract

The usage of technology is steadily increasing globally. More and more individuals are using mobile phones and social media as a way to communicate with others. This literature review explores the relationship between technology and the meaningfulness of relationships. Specifically, it examines how technology may impact levels of connectedness, relationship satisfaction, and empathy in friendships. The review finds that technology has both positive and negative associations with the meaningfulness of friendships, which in turn can affect the general well-being of an individual. Further research is also needed to understand the extent of the impact technology has on friendships, individuals, and other interpersonal relationships.

Technology and Its Associations with the Meaningfulness of Interpersonal Relationships

One of the developments in a world that is increasing in its technological advancements is the widespread presence of mobile phones. Also, along with the rise of mobile phones, social media was invented and popularized. In 2017, there were 1.97 billion monthly users on Facebook alone (Kapoor et al., 2018). As mobile phones and social media continue to gain a larger presence in the world, more individuals encounter both its benefits and drawbacks. One area that has been found to be affected by technology is relationships. Studies are finding that mobile phones and social media are affecting the meaningfulness of interpersonal relationships. This review aims to explore the relationship between technology and meaningfulness in interpersonal relationships.

For the purpose of this paper, meaningfulness will be explored as it pertains to connectedness, relationship satisfaction, and empathy (Lee et al., 2001; Graham et al., 2011; Cialdini et al., 1997). Further, while all types of interpersonal relationships are affected by technology, I will focus here primarily on friendships. However, as technology is rapidly changing and since the facets of meaningfulness are not valued equally in friendships, research on all three components of meaningfulness in friendship is incomplete. Therefore, I will draw from research that focuses on other interpersonal relationships, such as romantic relationships and strangers, and will I will apply this to friendships. Overall, further research is needed in order to understand if there is a causal relationship between technology and meaningfulness in friendships, as well as other interpersonal relationships, as well as how the relationship between technology and meaningfulness may impact people on the individual level.

Technology and Connectedness

Social connectedness is defined as a self-attribution that reflects on one's closeness with others and with the social world as a whole (Lee et al., 2001). Further, social connectedness is related to one's opinion of self in relation to other people and focuses on the emotional distance or closeness between the self and other people (Lee & Robbins, 1995). Connectedness is closely related to belonging and different aspects of belonging, including companionship and affiliation (Lee & Robbins, 1995). The hypothesis of belonging says that humans have a drive and need to form and maintain interpersonal relationships that are positive, stable, and continuous (Baumeister & Leary, 1995). The concept of belonging is important for connectedness because it highlights one's need to create relationships and attachments to others, which are close in nature, and generate a sense of acceptance between individuals.

The importance of belonging in connectedness is evident in the aspects of companionship and affiliation. Through companionship, individuals create a bond with others; this typically starts in infancy with parents (Lee & Robbins, 1995). As individuals get older, this leads to individuals creating affiliations with peers. Children and adolescents find others with similar qualities such as opinions, values, and appearance (Lee & Robbins, 1995). Both companionship and affiliation lead to connectedness in friendships. During adolescence and through the entirety of adulthood, individuals who have succeeded in companionship and affiliation become connected and comfortable in larger social settings and contexts (Lee & Robbins, 1995).

Connectedness is linked to an individual's general well-being. Individuals with high levels of connectedness find others to be friendly and approachable, can identify easily with others, and feel close to people (Lee et al., 2001). Further, individuals with a high degree of connectedness are more confident and comfortable when in large group settings that are not exclusively friends and family, and these individuals can more easily identify with many other

people in varying social roles (Lee & Robbins, 1995). However, in contrast, individuals with low connectedness experience feelings of distance and isolation from others, as well as have difficulty fulfilling and accepting their own social roles and responsibilities (Lee & Robbins, 1995). Further, these individuals may feel misunderstood by others, have difficulty relating to others, and overall, see themselves as outsiders (Lee et al., 2001). Both the consequences of high connectedness and low connectedness show the significant effects connectedness has on an individual and their well-being.

Face-to-Face Conversations

One way to evaluate connectedness in friendships is through comparing face-to-face conversations and technological conversations. This can be done through evaluating whether or not the same qualities are present in both face-to-face conversations and online conversations. Six core components of friendships that lead to greater connectedness are validation, companionship, self-disclosure, instrumental support, conflict, and conflict resolution (Yau & Reich, 2018). Not only are all of these core components found in in-person friendships, but they are also present in online friendships, meaning that online friendships can act as an extension of in-person friendships (Yau & Reich, 2018). All six components of friendships were consistent in both in-person friendships and online friendships; however online friendships brought both increased benefits and potential risks to friendships (Yau & Reich, 2018). For example, one increased benefit of online friendships is that online friends tend to self-disclose to one another more than in-person friends (Yau & Reich, 2018). One possible reason for this is that it may be easier to share with others when one cannot physically see the other person. Overall, increased self-disclosure leads to higher levels of connectedness in friendships, which is a benefit of online friendships.

However, online friendships also bring potential risks to connectedness in friendships. An example of a possible risk is gossip and rumors to spreading more rapidly online than in person, which can then potentially lead to invalidation or humiliation among individuals (Yau & Reich, 2018). Similar to in-person friendships, gossip and rumors can lead to decreased feelings of belonging and connectedness among individuals. Since there is more potential for gossip and rumors online, the likelihood an individual may experience decreased connectedness in friendships increases. Overall, there are no major differences between in-person friendships and online friendships in the six main components of friendships (Yau & Reich, 2018). Instead online friendships can act as an extension of in-person relationships, and as an extension, this may result in both increased benefits and risks of connectedness. This suggests that technology may be helpful or harmful in its association with connectedness in friendships.

Another way of comparing face-to-face conversations to online conversations is through examining the relationship between technology and social anxiety. Social anxiety can play a negative role in connectedness, especially through social anxiety in face-to-face conversations. In comparing the role of anxiety in face-to-face conversations and technological conversations, research found there was a positive correlation between having social anxiety in face-to-face conversations and talking to others online and through texting (Pierce, 2009). One possible reason for this association is the more individuals talk online to others, the more they may experience anxiety in their face-to-face conversations. However, there is also a positive association between a lack of social anxiety and making friends online (Pierce, 2009). Individuals who are adept at social connection may have an easier time making friends online, exhibiting a lack of social anxiety in connectedness with others. An individual can experience both more or less connectedness in friendships related to their use of technology to have

conversations. However, it is unclear what the extent of technology's role is in contributing to social anxiety in face-to-face conversations, or if it is a person's social anxiety affecting their technology usage. More research needs to be conducted to understand technology's role in connectedness in friendships.

In addition to understanding technology's relationship with the quality of face-to-face conversations and social anxiety, it is important to see if increased technology usage is also related to the amount of face-to-face conversations and in-person friendships an individual has. In a longitudinal study focusing on children's development outcomes related to family, school, and neighborhood environments through interviews, researchers found that increased technological usage and online communication in adolescence is not related to increases or decreases in face-to-face conversations (Lee, 2009). In fact, increased online communication was related to having more connections in schools (Lee, 2009). This affirms the idea that online communication and friendships may act as an extension of in-person friendships. Since increased online communication does not diminish face-to-face conversations and in-person friendships, technology may actually contribute to increased connectedness between friends rather than less.

However, it is not clear whether this relationship between increased online communication and in-person friendships is due to the technology's role or an individual's skills in social connection. One hypothesis that suggests this relationship may be a result of an individual's already present social skills is the rich-get-richer hypothesis (Lee, 2009). The rich-get-richer hypothesis states that individuals who already have strong social connections with others will have the greatest benefit from using technology (Kraut et al., 2002). One reason for this may be that adolescents who do not have strong social connections have less need to use technology for online communication whereas individuals who have many strong social

connections have a greater need or reason to use online communication (Lee, 2009). One reason an individual who already has strong social connections may need to use technology more than individuals with weaker social connections is to keep in touch with their already existing friends. This may be a contributor to technology's role as extension of already existing friendships, which overall increases connectedness between friends. However, since the cause for this relationship between connectedness in friendships and technology is unclear, more research needs to be conducted to determine the actual cause.

Not only is there a relationship between technology usage and online communication with face-to-face conversations, but there is also a relationship between the presence of a mobile phone and in-person connectedness. This is evident through the concept of absent presence. Absent presence is the concept where an individual can be physically present in a conversation, but their attention is elsewhere, usually technology (Aagaard, 2016). Mobile phones can create an absent present effect, which is exemplified through an individual's delayed responses, mechanical intonation, and a motionless body (Aagaard, 2016). All three of these effects signal to the individual's conversational partner that the person is not engaged enough to respond immediately or fully. Further, by not being fully present, an individual on their mobile phone during a conversation with friends is indicating to their friend that they are not interested in what they are saying, whether this is the individual's intention or not (Aagaard, 2016). The friend's negative perception of the individual and their mobile phone usage can lead to decreases in connectedness between friends. Mobile phones, then, can create a barrier between friends, which may then impact their overall connectedness.

However, the impact of mobile phones does not end with absent presence created by one individual's usage of technology during a conversation. The presence of a mobile phone can also

impact the quality of a conversation and the connectedness between friends without anybody using it (Misra et al., 2016). While conducted with strangers, one study found that dyads without mobile phones present had superior conversations and reported higher levels of empathetic concern compared to dyads that had mobile phones present (Misra et al., 2016). In fact, dyads with phones reported less connectedness, trust, and empathy with their conversation partners (Misra et al., 2016). The presence of mobile phones alone during face-to-face conversations with others can lead to negative conversation satisfaction, which results in decreased connectedness between individuals. While this study was conducted with strangers, it provides important insights on how the presence of mobile phones may also affect face-to-face conversations within friendships. If friends engage in conversation with mobile phones present and in sight, this may lead to decreased connectedness, trust, and empathy in friendships as well.

However, it may not be the physical presence of mobile phones during conversations that leads to decreased connectedness, but it may be an individual remembering the presence of a mobile phone leading to negative impacts in friendships. The mere presence hypothesis states that it is the presence of mobile phones that negatively affects conversation outcomes (Allred & Crowley, 2016). However, some researchers argue that it is an individual's negative perception of the presence of mobile phones leading to decreased connectedness between individuals (Allred & Crowley, 2016). In one study, researchers found that similar to previous studies, conversational partners with mobile phones present had less satisfaction and connection in their conversations compared to the conversational partners that did not have mobile phones present (Allred & Crowley, 2016). However, the researchers found that it was not the presence of the mobile phones that affected the conversations, but it was the conversational partners' recollection of the presence of cell phones during the posttest that affected their ratings of

conversation satisfaction (Allred & Crowley, 2016). This suggests that even if a mobile phone may be present in a conversation, if an individual did not perceive or remember the mobile phone, the connectedness between individuals may not be impacted.

Even though previous studies found that the presence of mobile phones leads to more negative dissatisfaction and decreased connectedness between individuals, there remains a conflict with the mere presence hypothesis. These results may have occurred because once the participants recollected that there was a cell phone present during their conversation, they may have perceived that their partner's attention was split, leading to decreased satisfaction (Allred & Crowley, 2016). This is similar to the absent presence effect where an individual perceives their friend being on their mobile phone as not being fully invested in the conversation or the individual themselves, which leads to decreased connectedness (Aagaard, 2016). The results of all of these studies suggest that either the presence of technology or the perception of mobile technology, or potentially both, during face-to-face conversations is related to connectedness in friendships as well as other interpersonal relationships.

A Mechanism to Stay Connected

Mobile phones and social media are related to both positive and negative impacts on connectedness in friendships through face-to-face conversations. However, while mobile phones and social media is related to connectedness between friends when they are together in person, technology may also be related to connectedness between friends when they are physically apart. Specifically, individuals can use technology as a tool to stay connected with their friends when they are apart. Adolescents who used social media for the purpose of staying in touch with their friends had higher levels of belonging and connectedness compared to adolescents who did not use social media (Quinn & Oldmeadow, 2013). This may be a result of the Martini Effect, which

is the idea that refers to the feeling of being constantly connected to other people through mobile devices (Quinn & Oldmeadow, 2013). Constant connection and communication with one's friends, whether they are together in person or apart can lead to an overall increase in connectedness in friendships. By having the ability to be connected with others at all times, this may diminish feelings of loneliness or unbelonging.

Increased connectedness between friends through the ability to have constant communication is exemplified through how individuals use mobile phones for text messaging in order to keep communication with one another. Teenagers and young adults use text messaging as a mechanism to stay connected with friends (Walsh et al., 2009). In fact, teenagers and young adults value being able to contact friends at all times (Walsh et al., 2009). By staying connected at all times to one's friends, individuals may experience fewer feelings of loneliness (Walsh et al., 2009). Rather, individuals may have a greater sense of belonging and connectedness through constant contact. Further, one of the positive aspects of constant connection to friends through mobile phones is that it allows for psychological connection, even when physical connection is not possible, such as when friends live in different cities (Walsh et al., 2009). Through group interviews with adolescents and young adults, the researchers found that along with being able to reach out to a friend within a moment's notice, through mobile phones, friends are able to share important news or stories from their lives (Walsh et al., 2009). Communication through mobile phones allows friends to stay close to each other and stay updated on each other's lives when it is not possible due to physical distance. The prevalence of individuals using mobile phones to keep in touch with friends indicates how important it is to stay connected with friends, when they are physically close to each other or if they are physically apart.

In addition to technology being integral when staying close to friends and being able to update each other about their lives, using technology as a way to stay connected is also important in order for individuals to maintain long distance friendships. Research has found that how an individual uses technology to stay in touch in long distance friendships affects the strength and connection in a friendship (Shklovski et al., 2008). For example, there are differences between whether friends use emails or phone calls to stay in touch with one another (Shklovski et al., 2008). Decreases in emails between long distance friends over time leads to friendships weakening, whereas increases in emails were not associated with increased strength of friendship (Shklovski et al., 2008). However, phone calls led to increased connection and strength in friendships (Shklovski et al., 2008). One possible reason for this is that phone calls require people to set aside time of commitment to each other (Shklovski et al., 2008). Further, since communication involves non-verbal cues to understand the context of the conversation, phone calls require people to self-disclose their feelings and thoughts (Shklovski et al., 2008). In contrast, emails, while it is a way to update friends on one's life, may seem impersonal in comparison to talking on the phone. Phone calls can create an intimate experience between friends that allow them to stay connected when they are physically apart.

Despite all of the benefits of technology being a tool that allows friends to stay connected when physically apart, there are also some negative consequences of technology being used as a mechanism for connection. Individuals using technology to stay in touch with others may lead to fear of missing out (FoMO). FoMO is the idea that others may be having rewarding experiences while the individual is not present (Roberts & David, 2019). FoMO is positively correlated with increased social media intensity and negatively correlated with social connection (Roberts & David, 2019). The more an individual experiences FoMO, the less connection they feel with

others. It is important to note that increased FoMO comes with increased social media use. This suggests that the more an individual uses social media, the less connected they may feel with others due to seeing friends having rewarding experiences without them. While technology may be used as a mechanism to stay connected with others, it can also lead to feeling less connected with friends, and instead, can lead to decreased feelings of belonging and inclusion.

Technology has been found to be related to both benefits and drawbacks in connectedness in friendships. Whether individuals experience more of the positive or negative aspects of technology may depend on how and why an individual uses the technology. Individuals who use social media and technology for the purpose of making more meaningful social connections had increased social connection (Clark et al., 2018). In contrast, individuals that used technology for other purposes such as scrolling through social media feeds had decreased social connection with friends (Clark et al., 2018). Reasons for this may include that these types of activities on social media can lead to feelings of isolation and social comparison (Clark et al., 2018). This is similar to an individual experiencing FoMO, which is the result of an individual seeing and comparing themselves with friends rather than directly engaging with friends to stay connected (Roberts & David, 2019). Whether technology and social media is related to positive or negative consequences in connectedness depends on how and individual may approach and use it. If individuals are intending to use social media as a means for more social connection with their friends, then an individual will experience more social connection as a result. However, if an individual does not intend to use technology as a tool for increased social connection, then increased social connection will not necessarily occur, and may instead result in negative well-being through isolation and comparison instead.

Technology and Relationship Satisfaction

Relationship satisfaction, while it can be measured for all types of interpersonal relationships, is a factor that is mainly measured in romantic relationships. However, relationship satisfaction is one's subjective perception and evaluation of their relationship (Graham et al., 2011). A facet of relationship satisfaction is intimacy, which is the feeling of closeness in a relationship, as well as the willingness and tendency to self-disclose to one another in a relationship (Hand et al., 2013). Couples with high levels of intimacy are more trusting, affectionate, and validating with their partner (Hand et al., 2013).

High levels of relationship satisfaction and intimacy have many benefits for couples. These benefits include individuals being more committed and invested in their relationship and being less likely to separate (Hand et al., 2013). Further, there are benefits for individuals as well, including individuals being healthier physically and having higher life satisfaction (Hand et al., 2013). However, couples with low relationship satisfaction tend to perceive their relationships as more stressful and less emotionally secure (Whitton & Whisman, 2010). Further, individuals with low relationship satisfaction may have a diminished sense of general well-being and have a higher risk for depression (Whitton & Whisman, 2010). Relationship satisfaction can overall affect both an individual's relationship as well as their own general well-being.

Relationship Satisfaction in Friendships

Another key component of evaluating how technology is related to the meaningfulness of friendships is through examining how technology impacts relationship satisfaction. One way mobile phones is related to relationship satisfaction between friends is through relational expectations. The usage of mobile phones in friendships results in increased expectations between friends, which has both positive and negative effects on relationship satisfaction (Hally & Baym, 2012). Increased mobile phone use between friends, such as texting each other or

having phone calls, leads to increased expectations of relationship maintenance, which is defined as keeping in contact with one another (Hall & Baym, 2012). Increased expectations of relationship maintenance through the use of mobile phones can lead to friends perceiving technological communication as an obligation (Hall & Baym, 2012). This increased relationship maintenance has a positive effect on relationship satisfaction due to greater expectations of relationship maintenance leading to dependency in friendships (Hall & Baym, 2012). When friends are dependent on each other and feel an obligation towards one another, relationship satisfaction may increase, which may be due to increased feelings of connectedness, or greater investment in the friendship on both ends.

The importance of technology's role in relational maintenance for relationship satisfaction is further exemplified when examining how instant messaging on mobile phones is related to relationship satisfaction. One longitudinal study found a positive correlation between instant messaging and increased relationship satisfaction (Valkenburg & Peter, 2009). This may mean that the more friends communicate through instant messaging, the more relationship satisfaction they experience (Valkenburg & Peter, 2009). One reason why there is increased relationship satisfaction in existing in-person friendships through using instant messaging is due to relational maintenance (Valkenburg & Peter, 2009). Friends who use instant messaging as a way to stay obligated to each other and be dependent on one another show greater investment in each other, which leads to higher levels of relationship satisfaction in their friendships. Instant messaging is just one tool used in relational maintenance, which is important to friendships. In addition, it is important to note that it may not be an individual's instant messaging habits leading to increased relationship satisfaction, but rather an individual's relationship satisfaction

leading to more instant messaging. More research needs to be conducted in order to understand

the causal nature of the relationship between technology and relationship satisfaction.

However, increased expectations of relationship maintenance, which leads to dependency

in friendships can also lead to negative consequences if taken too far. This is seen as an

overdependence in friendship (Hall & Baym, 2012). Overdependence in friendships leads to the

feelings of entrapment, which is where somebody feels trapped and overwhelmed with the need

to respond to text messages and phone calls (Hall & Baym, 2012). This can also lead to feelings

of guilt, especially when there is a delay of response in communication (Hall & Baym, 2012). An

overdependence in friendships due to how much friends feel the need to communicate with each

other leads to decreased relationship satisfaction (Hall & Baym, 2012). However, these results

seem to be based on a scale. It is not the fact that technology itself is related to positive or

negative effects in relationship satisfaction in friendships. Rather, it is how much technology

used within a friendship that is be related to either increased or decreased relationship

satisfaction. Too much technological dependence in a friendship may be related to adverse

effects in relationship satisfaction in friendships.

Another way technology impacts relationship satisfaction between friends is through how

individuals use technology in person when with their friends. One study found that when people

are waiting, 76% of individuals are on their phones instead of interacting with their friend

(Brown et al., 2016). The implications of this is that during waiting periods, friends who use their

phones while with their friends instead of engaging with one another find the interaction to be

less satisfying (Brown et al., 2016). This suggests that when friends use their mobile phones

instead of interacting with each other when they are together, the interaction less satisfying and

relationship satisfaction decreases. This may be due to fewer feelings of connectedness, which

also decreases when individuals are engaged on their mobile phones instead of with their friends (Aagaard, 2016). As people continue to engage more and more with technology and be on their phones, it is important to know that this increased technological use is related to decreased relationship satisfaction between friends.

Similar to how technology is related to connectedness in friendships, technology's association with relationship satisfaction in friendships, as well as other interpersonal relationships, depends on the quality and use of social media and mobile phones. One study compared how college students communicated with family and friends, as well as compared relationship satisfaction in different interpersonal relationships (Baym et al., 2007). College students tend to rely on technology and social media to communicate with their family rather than face-to-face communication, and friends were more likely to use the internet to communicate (Baym et al., 2007). Generally, romantic relationships tend to report the highest relationship satisfaction; however, in this study, friends evaluated their relationship to be more satisfying than romantic couples did (Baym et al., 2007). One possible reason for this is that relationship satisfaction may not be as meaningful to friends as it is to romantic partners (Baym et al., 2007). This means that romantic couples may have a higher standard for relationship satisfaction than friends do. This may mean that technology may not have as large as a role in relationship satisfaction in friendships simply because it is not as important to friends. Different factors of meaningfulness, such as relationship satisfaction, may not be as important as others that contribute to meaningfulness, such as connectedness for friendships. However, this does not mean that technology and technology usage is not related to effects on relationship satisfaction in friendships.

Relationship Satisfaction in Romantic Relationships

Relationship satisfaction is not as important as other facets of meaningfulness in friendships. While there are some studies that look specifically at the relationship between technology and relationship satisfaction in friendships, it is few and far between. In fact, most studies that focus on how technology is associated with relationship satisfaction are examining romantic relationships rather than friendships. However, the research that focuses on relationship satisfaction in romantic relationships can also inform how technology may affect relationship satisfaction in friendships. This is evident through the concept of partner phubbing. Partner phubbing is when one partner is distracted by their mobile phone when in the presence of their partner (Roberts & David, 2016). Partner phubbing can have a significant effect on relationship satisfaction; increased distractions from mobile phones leads to increased conflict between partners and decreased relationship satisfaction (Roberts & David, 2016). The concept of partner phubbing is similar to the absent presence effect. Both partner phubbing and absent presence leads to individuals perceiving others, whether it is a friend or romantic partner, to be distracted and not fully present. While absent presence negatively affects connectedness, partner phubbing leads to decreased relationship satisfaction. Since the concepts are similar, further research may find that absent presence and the equivalent of partner phubbing in friendships may also lead to decreased relationship satisfaction in friendships.

Decreased relationship satisfaction is further exemplified when examining how partner phubbing affects relationship satisfaction and well-being in married individuals (Wang et al., 2016). Similar to research looking at any type of romantic couples, partner phubbing also leads to negative effects on relationship satisfaction in marriages. (Wang et al., 2016). Further, once again similar to other romantic couple research, decreased relationship satisfaction is found to lead to negative effects on depression in married individuals who were married for more than

seven years (Wang et al., 2016). As research with romantic couples, both married and unmarried, finds that partner phubbing leads to decreased relationship satisfaction and general well-being, the need for further research for friendships increases. If technology has a similar association with relationship satisfaction in friendships, this has potential negative effects for both the relationship satisfaction between friends and an individual's personal general well-being, which can be affected by friendships.

Further, decreased relationship satisfaction from partner phubbing has been found to also lead to decreased life satisfaction, depression, and negative well-being among individuals (Roberts & David, 2016). If technology has the same negative relationship with relationship satisfaction for friendships as it does for romantic relationships, then there may be adverse effects of decreased general well-being in individuals if there is decreased relationship satisfaction. Further research needs to be conducted to understand the full impact technology may have on relationship satisfaction in friendships. Understanding how technology may affect relationship satisfaction in friendships may lead to a better understanding of how technology can lead to negative well-being in individuals.

The relationship between technology, intimacy, and relationship satisfaction is also important for understanding how technology may affect not only romantic relationships, but also friendships. Intimacy and closeness in romantic relationships can act as a buffer between technology and relationship satisfaction (Hand et al., 2013). The closer people are in a romantic relationship can decrease the effects technology has on relationship satisfaction. This is important for understanding both connectedness and relationship satisfaction in friendships. If there is a similar effect in friendships as is there in romantic relationships, then this would suggest that the more connectedness and closeness that is experienced in friendship would also

act as a buffer between any negative consequences of technology and relationship satisfaction in friendships.

However, the relationship between technology, intimacy, and relationship satisfaction can also have negative consequences. While intimacy may act as a buffer between technology and relationship satisfaction, a negative association between intimacy and the perception of a partner's technology use has also been found (Hand et al., 2013). The less closeness and intimacy there are between romantic partners, the more an individual in the relationship may perceive their partner to use technology. However, the closer a couple is, they experience more relationship satisfaction (Hand et al., 2013). Since there is a positive association between intimacy and relationship, this may suggest that as an individual perceives their partner to be using technology, relationship satisfaction would decrease. However, decreased relationship satisfaction may lead an individual to perceive their partner to be using technology more frequently. More research needs to be conducted in order to understand the causal relationship between technology and relationship satisfaction.

One possible reason for this association between closeness, intimacy, and perceived technology usage is due to the attribution theory. The attribution theory is the concept that an individual's explanation of behavior determines the perception of that behavior (Hand et al., 2013). Further, the attribution bias suggests that there is a difference between how an individual perceives their own behavior compared to how they perceive others' behavior (Hand et al., 2013). This would mean that individuals in romantic relationships would perceive their partner's use of technology to be more problematic than their own use of technology. This can create problems such as jealousy in relationships, as well as decreases in relationship satisfaction (Hand et al., 2013).

The attribution theory is important for understanding how technology may affect relationship satisfaction in friendships because it focuses on how an individual's perceptions of technology usage may lead to negative consequences in relationship satisfaction. Similar to the romantic relationship studies, in friendship studies, an individual's perception of the presence of technology during a face-to-face conversation can lead to decreased connectedness and conversation satisfaction between friends (Allred & Crowley, 2016). The perception of technology is an important factor in the negative associations between technology and meaningfulness in interpersonal relationships. As research continues to further study how technology affects both connectedness and relationship satisfaction in friendships, as well as other interpersonal relationships, it is important to research how the perceptions of technology adds to the complicated relationship between technology and factors of meaningfulness.

Technology and Empathy

Empathy has been defined in numerous ways in the field of psychology, especially within different subfields of psychology. In counseling psychology, empathy is defined as the ability to understand as well as experience another individual's feelings (Coutinho et al., 2014). Another definition of empathy is the emotional reaction of compassion, sympathy, and tenderness through perspective taking (Cialdini et al., 1997). Perspective taking in empathy is affected by one's perception of attachment to the other person (Cialdini et al., 1997). An individual's view of how close their relationship is with another person affects how attached they feel to the other person's perspective, which is an important factor of empathy.

Another definition of empathy derives from neuroimaging studies. Empathy is defined closely with the process of inferring one's emotional state and then experiencing a similar state of emotion within oneself (Coutinho et al., 2014). This definition is consistent with

neuroimaging studies. Studies show that the same neural networks activate when individuals

experience pain themselves as well as when they see someone experience physical or

psychological pain (Coutinho et al., 2014). This neurological process emphasizes the aspect of

empathy being a process of both understanding and experiencing the feelings and emotions of

others. However, there are still multiple ideas and theories about how one actually experiences

empathy within themselves.

One main contention point about empathy is how one views themselves when

experiencing empathy. One idea is that when an individual is experiencing empathy, they are

viewing the other as the self (Cialdini et al., 1997). This means that when an individual

emphasizes with another person, the individual places and incorporates more of themselves into

the boundaries and lives of others. This is evident through the Inclusion of Others in Self scale,

which was developed by Aron et al. (1992). This scale shows that as people become closer in

their relationships and experience more empathy between each other, the boundaries between the

two blurs as an individual begins to associate themselves more with the other (Cialdini et al.,

1997). Further, this process of inclusion of others in the self has led to increased closeness and

identification with others (Mashek et al., 2007). Both closeness and identification are essential

components of empathy and highlight how empathy can lead to greater meaningfulness between

individuals.

Empathy in Friendships

Empathy is a third factor that can contribute to the meaningfulness of a relationship,

specifically in friendships, as well as be related to technology usage. Among adolescents, there is

a positive correlation between social media use and increases in empathy for peers (Vossen &

Valkenburg, 2016). Increases in empathy were split into two segments: cognitive empathy and

affective empathy (Vossen & Valkenburg, 2016). Cognitive empathy is the ability to understand

their peers (Vossen & Valkenburg, 2016). Affective empathy is the ability to share the feelings

of their peers (Vossen & Valkenburg, 2016). Adolescents who used social media more

frequently were able to both better understand and share the feelings of others (Vossen &

Valkenburg, 2016). Social media may actually be utilized as a tool for empathy, which can better

increase the meaningfulness of a friendship.

Once again, similar to how technology is related to both connectedness and relationship

satisfaction in friendships, how a person uses technology is related to whether empathy is

positively or negatively impacted. It is the activities a person engages in on social media that can

be associated with empathy (Alloway et al., 2014). Specifically, on Facebook, chatting with

friends on Facebook as well as commenting on one another's photos was positively correlated

with increased empathetic concern for others (Alloway et al., 2014). Participating in chat and

commenting on others' photos on Facebook also leads to increased perspective taking and

experiencing personal distress in regard to others' hardships, which are both important aspects of

empathy (Alloway et al., 2014). As with connectedness and relationship satisfaction, certain

activities on social media and mobile phones can increase one's empathy for others.

Empathy in Strangers

As with relationship satisfaction, empathy is a less important facet of meaningfulness in

friendships, especially in comparison to connectedness. As a whole, the relationship between

technology and empathy has not been as well researched in psychology despite some research

showing a relationship between technology and empathy. One study looked at empathy in

strangers who were paired together to either have meaningful or casual conversations either in

the presence or not in the presence of mobile phones (Misra et al., 2016). The dyads who were in

the presence of mobile phones reported lower levels of empathy compared to those who did not

have phones present, regardless of whether or not their conservations were meaningful or casual

(Misra et al., 2016). The presence of technology in face-to-face conversations can negatively

impact one's empathy levels towards another person.

While this research was conducted with strangers, I hypothesize that if one were to apply

the Inclusion of Others in Self scale to this research, it would show important insights on how the

presence of technology may also have an association with empathy in friendships. The Inclusion

of Others in Self scale indicates that as an individual takes the perspective of another, they begin

to associate the other with themselves, leading to more empathy (Cialdini et al., 1997). If this

study were to be conducted with friends, one could hypothesize that as friends already include

each other into themselves more than strangers, and would therefore empathize more with each

other, the presence of technology may not have as large as an effect on friends. However, one

may also hypothesize that just as technology can lead to decreased connectedness and

relationship satisfaction in friendships, technology may also inhibit and disrupt empathy between

friends. Further research is needed to adequately assess the extent technology can have on

friendships.

One study looked at how empathy has changed in college students from the 1970s to the

2000s (Konrath et al., 2011). The study found that empathetic concern and perspective taking has

declined over time in college students (Konrath et al., 2011). While there are multiple hypotheses

and possible reasons as to why empathy is declining in newer generations, one potential cause is

the increased usage of social media and technology. One reason as to why social media and

technology may contribute to decreased empathy is the shift in the development of empathy in

children. Traditionally, children need to interact face-to-face with other individuals in order to

develop empathetic skills (Turkle, 2011). However, as technology usage increases, research has found that more and more, children and adults are spending increased time online and less time with others in person (Konrath et. al, 2011). The significance of this is that as young people are spending more time online, they may be spending less time learning empathy through becoming close to others and forming friendships in person. Once again, further research is needed to better understand how exactly technology impacts empathy within friendships.

Discussion

This literature review assessed the impact of technology on the meaningfulness of friendships. The results of the study found that mobile phones and social media are associated with both positive and negative effects in connectedness, relationship satisfaction, and empathy in friendships. Questions remain about whether or not the relationship between technology and meaningfulness in friendships is a causal relationship. Further, if it is a causal relationship, questions remain as to whether this is caused specifically by the technology itself or by how an individual uses the technology. Some studies suggest that it is the presence of technology itself that can lead to decreased meaningfulness among individuals (Misra et al., 2016; Aagaard, 2016). These studies suggest that it does not matter if or how an individual uses a mobile phone, the physical presence of it is enough to diminish meaningfulness in friendships and other interpersonal relationships.

However, other studies suggest that it is how an individual uses mobile phones and social media, along with how much an individual uses technology that affects meaningfulness in interpersonal relationships. For example, when individuals use mobile phones to stay in contact with friends when physically apart, connectedness and commitment is strengthened in friendship (Shklovski et al., 2008). However, using mobile phones and social media to stay in contact with

friends when physically apart can also lead to FoMO, which is related to increased social media

usage and intensity, as well as social comparison (Roberts & David, 2019). Further, the

relationship between technology and meaningfulness may be due to how an individual uses

technology such as when individuals use instant messaging to have constant communication with

friends for example (Walsh et al., 2009). There is support for a relationship between technology

and meaningfulness, both with technology by itself and by how an individual uses technology. In

order to better understand if technology causes any effects on the meaningfulness of

interpersonal relationships, more causational research needs to be conducted.

In addition to questions about in what ways technology affects variables of

meaningfulness, there also remains questions as to what these effects on interpersonal

relationships do to individuals. This review shows that there are both positive and negative

impacts on connectedness, relationship satisfaction, and empathy in friendships. All these

variables of meaningfulness are important to individuals. Increased meaningfulness of

relationships can lead to better individual general well-being. Knowing which ways technology

leads to increased meaningfulness in relationships can be important for understanding how

individuals can experience greater general well-being.

Limitations and Future Research

This literature review is not without limitations. One such limitation is the lack of

research regarding the relationship between technology and relationship satisfaction and empathy

specifically for friendships. The majority of research on technology and friendships focuses on

connectedness, while romantic relationship research focuses on relationship satisfaction, and

strangers or individuals research focuses on empathy. One reason there may be less of a focus on

how technology impacts relationship satisfaction and empathy in friendships is because those

variables of meaningfulness may not be as important or valued in friendships as they are to other interpersonal relationships (Baym et al., 2007). For this review, connectedness seems to be a more significant factor for friendships than relationship satisfaction and empathy.

However, while relationship satisfaction and empathy may not be as highly valued as connectedness in friendships, that does not mean these factors of meaningfulness are unimportant in friendships or to an individual in a friendship. Decreased relationship satisfaction has been found to make romantic relationships more stressful and lead to a higher risk of depression in an individual (Whitton & Whisman, 2010). Decreases in empathy have been found to positively correlate with increases in narcissism in individuals and increases in narcissism has been associated with increased social media use (Alloway et al., 2014). If there is diminished relationship satisfaction and empathy in friendships, decreases in general well-being and increases in narcissism may also be present in an individual. The lack of focus on other variables of meaningfulness besides connectedness leaves an incomplete picture of the extent technology may impact friendships. Further research is needed to better understand exactly how friendships are impacted by technology, and how these effects on friendship may also affect an individual's general well-being.

One further limitation of this literature review is the lack of insight on other variables that may affect the relationship between technology and the meaningfulness of interpersonal relationships. Such variables include, but are not limited to, all of the ways an individual uses social media (e.g. Alloway et al., 2014; Clark et al., 2018), gender (e.g. Kimbrough et al., 2013; Pujazon-Zazik & Park, 2010), and age (e.g. Forgays et al., 2014; Twenge, 2017). All of the above variables, in association with technology usage, have been found to have associations with connectedness, relationship satisfaction, and empathy in friendships as well as other

interpersonal relationships. However, due to most of the research on technology and meaningfulness being correlational, these outside variables may actually be confounding variable, and thus, be the actual cause of the relationship between technology and meaningfulness. More causational research needs to be conducted in order to determine if the technology causes any effects in the meaningfulness of friendships, if the meaningfulness in friendships causes effects in technology, or if an outside variable is the cause for the relationships between technology and meaningfulness in friendships.

Conclusion

As the world continues to grow and advance in the realm of technology, friendships and other interpersonal relationships are changing. Generations of children, teenagers, and young adults are experiencing life and their relationships differently than previous generations (Twenge, 2017). Few people are experiencing life without being affected by technology in some capacity. Thus, it is important to understand how technology changes and affects friendships and other interpersonal relationships because without accounting for technology, previous ways of studying relationships can no longer provide an accurate understanding of interpersonal relationships. Assessments of connectedness, relationship satisfaction, and empathy are no longer complete without looking at technology's effects on them. Further, just as there are few individuals who do not experience technology in some capacity, interpersonal relationships that are not affected by technology in some way are quickly diminishing. More and more individuals are using mobile phones and social media, and individuals are using technology more as a way to engage more in their relationships with others. It is necessary to understand how technology has affected and changed not only friendships, but also other interpersonal relationships, as well as life as a whole.

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Appendix

Faith and Scholarship

George M. Marsden (1998), in his book *The Outrageous Idea of Christian Scholarship*, argues that faith should not be eliminated from academia, but rather, faith should be a framework where Christian scholars work. Christian scholarship does not need to focus explicitly on faith, but Marsden (1998) contends, "So Christians can do the bulk of their academic work... as long as they are willing to keep in mind the context of theological concern and be open to reflecting on their implications for larger questions," (83). Christian academic scholarship does not need to be dominated by theological concerns. Instead, Christian scholars should be aware of the larger context and background they are bringing to their work and engage in this context for why their work is significant.

Further, a Christian scholar's work is characterized by purpose. In *Scholarship and Christian Faith: Enlarging the Conversation*, Douglas and Rhonda Jacobsen (2004) describe the primary aspect of scholarship as, "to 'pay attention to the world... with a sense of focus, care, and intensity," (124). Scholarship is not just simply hard work or a burst of creativity. Rather, scholarship has a purpose and passion behind it, which makes it significant and meaningful. Christian scholarship has the same standards. Even if the work is not focused on theological topics, Christianity's framework around scholarship and academia is the purpose and passion for a Christian scholar.

As a Christian scholar, I fall into this framework. While my work is not focused on Christianity or theological topics, my purpose and passion for this work stems from my faith. As a Christian, I have a deep care for the world and God's people. My purpose and passion are to serve others, to give generously and to work, not for my sake, but for others. Service can be

found in a multitude of ways, and I believe my research in the field of psychology is one way I can serve others.

Researching and learning in the field of psychology does not stop with writing a paper to showcase knowledge. Applying this knowledge to the world and understanding how it can help benefit others is the necessary next step. Without applying my research in some capacity, my work would be rendered meaningless to me. If it does not bring benefit to anybody, does not educate and inform, and does not advocate for change, then it is just work, not scholarship. This is my purpose and my passion; to learn and then take this knowledge to benefit others. Whether that is through education or other tangible reforms, as long as this piece of academia moves towards serving others, then my purpose in it is fulfilled.

I believe my research about how technology affects the meaningfulness of interpersonal relationships is substantial because it touches on the lives of millions of people. We live in a globalized world where at least millions of people are experiencing and engaging in technology. Technology has changed the world as we know it. Yet we are only beginning to understand the effects of technology on our lives. As a Christian scholar in the field of psychology, I believe it is imperative to learn technology's role in our lives and in our relationships. As humans, we are inherently social, so as technology is changing our social lives, we need to learn the benefits and drawbacks of technology. Then we will know how to better engage with it.

In this sense, my faith is informing my scholarship through my purpose and passion in this field of academia. Studying technology and its effects on individuals and relationships is a new, but growing field. In the field of psychology, we are learning so much about how technology is affecting our lives. Yet, there are many missing gaps in this field that need to be filled. We need to research and learn how technology is shaping and changing our lives. My

purpose in contributing to this field of research is to advocate for the necessity of recognizing

technology's place in our world and the need to understand its effects on individuals and their

relationships. To me, this is a matter of service; understanding and knowing large-scale effects

can lead to transformation among individuals and society as a whole in how we choose to use

and engage in technology.

In addition to this aspect of service, my Christian faith is also informing my scholarship

in this field in terms of exploring how technology affects the Church. While I did not explicitly

research how technology is shaping the Church, I hypothesize that just like any other

interpersonal relationship, the Church is also experiencing the effects of technology. The Church

is a type of interpersonal relationship; it is a community. The Church is a community that seeks

to connect with one another and to be a community where anybody can belong. Just as

technology has been found to impact connectedness in friendships, it has been found to affect

other interpersonal relationships such as romantic relationships and strangers. If the trend is

consistent, this would suggest that technology is also affecting communities, including the

community of the Church.

Technology affecting the Church is already evident. Just as individuals are increasing

their usage of technology in their own lives, we see the Church also increasing their own

technology use. More and more churches are using websites and apps to reach their community.

Some churches are beginning to create satellite campuses where a community can gather to

watch the main pastor on a screen. Just as technology's effects are complicated in the lives of

individuals and in relationships, I hypothesize that the technological effects on the Church are

also complicated. This is also where my faith informs my scholarship. I believe we can take our

knowledge about how technology affects friendships and use that to ask questions and form

hypotheses about how this may affect the Church as a whole. As the Church continues to grow in its technology use, I believe that Christian scholars in this field should study and search how exactly technology changes the meaningfulness of the Church community. From there, we can apply this knowledge, so the Church can choose how and in what ways to engage in technology.

My purpose and passion as a scholar are to better understand how technology affects individuals and their interpersonal relationships. My Christian faith informs my scholarship in terms of why I am doing this work and how I want to apply this work. I believe that I am called to serve others as a Christian, and I can serve through my scholarship. I hope to better inform the field of psychology, and the world as a whole, about the nature of technology in our lives, and I hope this work will encounter and challenge all of us to explore how technology is affecting our own individual lives, our relationships, and our community.