Emerging Adults and the Use of Textual Digital Communication: A Reflection on Self-Esteem, Loneliness, Anxiety, and Wellbeing

Georgiana Ioana Tamba[a] & Ioana Iancu*[a]

* Corresponding author
Email: iancu@fspac.ro
a. Faculty of Political, Administrative and Communication Sciences
Babes-Bolyai University, Cluj-Napoca, Romania

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ABSTRACT
Digital communication is a great facilitator of human connection, positively contributing to life satisfaction and prosocial behavior. However, the existing findings also insist on the drawbacks of the digital communication, as low levels of wellbeing satisfaction, or happiness. Thus, aiming to reconcile the two sets of assumptions and relying on the reality that textual communication is preferred to voice interaction, the present paper investigates the impact of using messaging apps on the emotional state. More specifically, the study explores if time spent texting, the general affinity towards technology, the perceived ease of use, the perceived usefulness, and the intentional behavior to use messaging applications are correlated with self-esteem, loneliness, anxiety, and wellbeing. An online opinion survey (N=147) with Romanian emerging adults is conducted between February and May 2022. The results show that a positive attitude towards technology is negatively correlated with the feelings of loneliness and anxiety. Moreover, a positive perception on the ease of use and usefulness of the messaging applications is linked with an increased wellbeing.

KEYWORDS
Emerging adults; textual digital communication; self-esteem; loneliness; anxiety; wellbeing.

INTRODUCTION

Over the last years, emerging adults have spent more and more time using digital media and electronic devices. Research shows that the number of hours teenagers spend online doubled in just ten years, between 2006 and 2016, and the average teenager spends 6 hours a day texting and scrolling during their leisure time (Twenge et al., 2018). Shortly after smartphones have been introduced to the worldwide market, their ownership skyrocketed (Poushter et al., 2018). As smartphones are widespread, they are used in varied context, from work life to personal life (Busch & McCarthy, 2021). Nowadays, there are more than 6 billion smartphone subscriptions worldwide with a forecast of more than 7 billion for 2027 (Statista, 2023). The average time people spent on these devices is over three hours daily (Takahashi, 2018). Moreover, young adults and working adults spend around 32% to 40% of their waking hours chatting to others (Mehl & Pennebaker, 2003; Milek et al., 2018).

Based on an estimate from 2022, there are more than 5 million applications available on the Google Play Store and Apple App Store (Statista, 2022). These mobile apps are primarily used by young people. In the United States, people between the ages of 18 and 24 spend the most time using mobile apps (93.5 hours per month on smartphones) (Statista, 2016). Moreover, 69% of the digital time is used on mobile devices as of the same month (Statista, 2016). With a 21% share of total U.S. mobile app time, social networking applications lead the pack, while music apps are placed second, with 16% (Statista, 2021).

Most commonly, individuals use their mobile phones for navigating social platforms, for seeking information, for online shopping, or for watching videos (ComScore, 2017). Thus, it can be emphasized that these devices provide significant advantages when it comes to maintaining social relationship, to getting informed, educated, and entertained (Godwin-Jones, 2011; Camacho et al., 2014; Chan, 2013). Digital communication helps people connect more easily and contributes positively to youth's life satisfaction and prosocial behaviors. However, a third of teenagers (34%) agree that digital communication significantly reduces the time they spend with face-to-face interactions, and 44% agree that social media frequently distracts them from people they are within-person (James et al., 2017).

Additionally, smartphone use may have other negative implications. Excessive smartphone use, also known as *problematic smartphone*, is associated with negative effects materialized into reduced efficiency, low academic accomplishment and lack of concentration, and poor interaction in social context (Duke & Montag, 2017; Lepp et al., 2014; Vanden Abeele et al., 2016; Gugushvili et al., 2020). However, the paramount negative effect of problematic smartphone use refers to its implications on mental health and emotional wellbeing (Elhai et al., 2019; Radtke et al. 2022).

The COVID-19 pandemic has considerably affected young adults' social and emotional life. Findings show that adolescents with high extraversion have experienced an increased level of depression, and one of the reasons behind this is the feeling of loneliness (Alt et al., 2021).

Another study emphasizes four major issues in the remote work context: procrastination, ineffective communication, work-home interference, and isolation. These four problems have had a negative effect on individuals' work effectiveness and wellbeing (Wang et al., 2021). Equally important, the pandemic situation has led to a change in the digital communication, text messaging method becoming one of the most preferred (Nguyen et al., 2020).

In this context, the purpose of the present research is to investigate how textual digital communication influences emerging adults. More specifically, the study seeks to evaluate how the use of mobile devices for texting and communicating via messaging apps, correlate with feelings of self-esteem, loneliness, anxiety, and wellbeing. Thus, the research questions of the study are the following:

RQ1. What is the relationship between the time spent on mobile devices for texting and the levels of self-esteem, loneliness, anxiety, and wellbeing?

RQ2. Is there a significant connection between the affinity for technology and the feelings of self-esteem, loneliness, anxiety, and wellbeing?

RQ3. Does the perceived ease of use, the perceived usefulness, and the behavioral intention to further use messaging communication correlate with the feelings of self-esteem, loneliness, anxiety, and wellbeing?

The research contains a sample of 147 youngsters from Romania. An online opinion survey has been conducted between February and May 2022.

The relevance of the paper is twofold. On the one hand, the research completes the existing literature by combining self-esteem, loneliness, anxiety, and wellbeing in the context of mobile devices used for textual digital communication. The literature indicates that these four dimensions have scarcely been observed simultaneously, hence the paper examines them all through validated scales. Moreover, the study provides data on a less studied context, namely the Romanian one. On the other hand, the results can help the industry, the software development engineers in their endeavor to better understand the nowadays role and effects of technology and textual digital communication on young people.

Digital communication, self-esteem, loneliness, anxiety, and wellbeing

This paper analyses the effects of digital communication on the level of self-esteem, loneliness, anxiety, and wellbeing. Global self-esteem is an individual's subjective assessment of one's own worth as a person. Self-esteem, just like other personality traits, is fairly stable over time and across circumstances (Donnellan et al., 2003; Robins et al., 2003; Trzesniewski et al., 2003). Loneliness implies a smaller number of relationships than desired and it is present when the existing relationships lack intimacy (De Jong-Gierveld & Kamphuls, 1985). According to the definition of anxiety, it "elicits uncomfortable or emotional reactions when a behavior is performed" (Venkatesh et al., 2003). Psychological wellbeing and mental health are two concepts so similar that it is hard to separate one from the other one. A short and clear definition for both constructs would be a state of wellbeing, a positive evaluation of one's life, based on a sense of purpose, having fruitful relationships with other people and personal

development (Ryff & Keyes, 1995). Simply put, wellbeing refers to a *feeling good* state that can determine an improved physical and mental health with resonance in enhanced efficiency (Lamers et al., 2012; Oswald et al., 2015).

There are studies that explain how a certain number of hours spent on devices are beneficial to the general mood, which proves that not any kind of digital media use is detrimental (Ferguson, 2017). Additionally, other studies (Ferguson, 2017) reveal that light users of technology score better in wellbeing than non-users. This conclusion shows the positive effects of digital media on the general state of mind, confirming how beneficial it can be when used for a proper amount of time. Earlier findings on the topic are summarized by Verbeek (2005), stating that since technology infuses every area of our everyday lives, having technology that is helpful, inclusive, and secure is crucial. Digital wellbeing refers to a feeling of pleasantness when using technology and with a sense of balance between the online and offline activities (Widdicks et al., 2017)

While some researchers reinforce the favorable aspects of digital communication, other studies support the idea that digital natives generally report a lower level of wellbeing, as well as less happiness, stress, lower life satisfaction, and depressive symptoms (Rosen et al., 2014). Moreover, adolescents who spend five hours or more a day on any electronic device are more likely to commit suicide.

Emerging adults can also use mobile phones for so-called non-communicative activities, such as passively consuming content, playing games, or conducting information searches (Chan, 2013). Non-communicative use has been found to have a negative impact on emotional wellbeing because it reduces social integration. However, using the internet for networking purposes makes it positively connected with psychological wellbeing. In other words, the positive or negative impact of internet use is influenced by the motivation of the internet use (Stevic & Matthes, 2021).

Studies suggest that emotional wellbeing is connected with and influenced by the use of contemporary technology such as smartphones and social networking sites and that this connection is harmful (Verduyn et al., 2015). To explain the unfavorable connections between digital media usage and emotional wellbeing, psychological processes such as negative social comparisons, jealousy, boredom, and sleep disruption have been proposed (Gugushvili et al., 2020).

Moreover, Browne and colleagues (2018) have discovered that negative concerns, rejection sensitivity, and high-stress levels are all socio-emotional determinants of fear of missing out. It is defined as the continuous fear that others may be facing gratifying experiences while one is missing (Przybylski et al., 2013). The researchers observe the fear of missing out phenomenon mostly in digital environments, where they saw a link with the problematic use of technologies such as smartphones, social networking sites, and the internet in general (Chotpitayasunondh & Douglas, 2016).

While the findings are somewhat contradictory regarding emerging adults, the results get increasingly intriguing when the age segment is changed. With the loss of particular talents and capacities, as well as the communication with friends and family members, ageing brings new obstacles. These can have a detrimental impact on one's social capital and, as a result, one's mental wellbeing (Simons et al., 2022).

Digital media and online networks may address some of these issues while also transcending physical distances and providing access to important others. By teaching current generations how to use these technologies in their daily routine and interactions, as well as developing user-friendly interfaces that meet their needs, help preserve one's social capital and wellbeing during the entire lifespan (Simons et al., 2022).

Emerging adults and the use of textual digital communication

These days, mobile phones perform more than simply synchronous audio communication; they also give users access to social networking sites like Facebook or Instagram and messaging apps like WhatsApp. Research shows that these services are particularly beneficial for maintaining weak ties as they lower the time and financial costs of maintaining connections and interactions with friends (Ellison et al., 2007). Furthermore, these services can assist people in keeping in touch with others who live far away from them or in time zones where synchronous audio connection is not possible (Boase et al., 2006).

Mediated communication, while losing the emotional expressions usually translated through visual and non-visual clues, induces a less familiar and rewarding interaction (Daft & Lengel, 1986). Text messaging through a mobile phone is less "rich" than voice calling, which should make it less successful at communicating and evoking emotions (Sproull & Kiesler, 1986). In a study on the American population, Jin and Park (2013) stress that, in contrast to mobile phone use, face-to-face communication is associated with fewer feelings of loneliness. The same results are highlighted on the UK population (Reid & Reid, 2007).

In addition, Turkle (2011) notes that the quality and closeness of face-to-face relationships have decreased as a result of the "always-on culture" that has been infused due to the attractiveness of mobile phones. Mobile devices have interfered in the daily routine and erased the boundary between personal and professional life, thus reducing the degree of efficiency. Due to less emotional and cognitive responsibility, texting is preferred to voice communication (Turkle, 2011).

Some scientists also say that digital communication has an overall negative impact on social relationships. More specifically, the displacement assumption implies that digital communication steals time from face-to-face communication, deteriorating ties and nurturing superficial interactions (Kraut et al., 1998). Another instance is Lee's study (2009), which shows that digital communication has a major impact on family relationships, rather than friendships.

Researchers' views about the topic reveal that emerging adults who spend more time using digital media reported lower emotional wellbeing, including more stress, lower life satisfaction, more experiences of loneliness and social isolation, and more diagnoses of anxiety

and depression (Twenge, 2019; Harwood et al, 2014; Hartanto & Yang, 2016). Even so, other studies found that people who spend more time on social media are the ones that spend more time on face-to-face interactions (Dienlin et al., 2017; Twenge et al., 2019). These paradoxical findings emerge into the first hypothesis if this study:

> H1. The more time young individuals spend on digital media, the lower self-esteem they have (H1a), the lonelier they feel (H1b), the higher is their anxiety level (H1c), and the lower their scores on wellbeing (H1d).

Technology use and acceptance

Digital technology is more pervasive in everyday life. As a result, effective technology management is becoming increasingly vital in order to master daily life (Franke et al., 2019). In an attempt to define the affinity for technology, some characterize it as a "positive affect towards technology" (Edison & Geissler, 2003). As a result, Franke et al. (2019) create the Affinity for Technology Interaction (ATI) scale, a nine-item economic instrument that assesses affinity for technology engagement. The designers of the scale describe affinity for technology engagement as "the tendency to actively engage in intensive technology interaction" (Franke et al., 2019). Research on intellectual styles has proposed that people diverge in their preferred methods of information managing and problem solving (Zhang et al., 2012).

The students' scores on their attitudes about Instagram and Snapchat follow a similar pattern of causal links: attitudes are negatively connected with loneliness and positively correlated with happiness and life satisfaction (Pittman & Reich, 2016). As a sequel, this paper expects to find a correlation between the attitude towards technology, and self-esteem, loneliness, anxiety, and wellbeing as it follows:

> H2. The more positive is the young individuals' attitude towards technology, the lower self-esteem they have (H2a), the lonelier they feel (H2b), the higher is their anxiety level (H2c), and the lower their scores on wellbeing (H2d).

An essential piece of information for this research paper comes from a study that shows that 95% of teenagers own a smartphone (Anderson & Jiang, 2018). Whether for texting, social media, playing an electronic game, or surfing the web, their life has slowly shifted online (Twenge, 2019). As technology becomes almost ubiquitous in youngsters' lives, they use social media platforms in everyday interactions.

A fundamental aspect of involvement in these activities is the adoption and use of new technology. Davis (1986) proposes the Technology Acceptance Model (TAM). This theory is born out of the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behavior and aims to understand the psychological processes of information technology adoption and acceptance (Ajzen, 1991). This paper illustrates how TAM may be used as a theoretical framework to investigate the impact of digital communication via messaging applications on self-esteem, loneliness, anxiety, and wellbeing

In the technology acceptance model, perceived ease of use, perceived usefulness, and behavioral intention are the most crucial variables (Chen et al., 2013). The degree to which a

person feels that using a given technology needs no effort is referred to as perceived ease of use (Radner & Rothschild, 1975). Therefore, an application regarded to be more user-friendly than another is more likely to be adopted because it requires less effort. For instance, the literature indicates that users' perceptions of the ease of using e-learning are negatively impacted by computer anxiety (Abdullah & Ward, 2016). A judgement of one's ability to use a computer has been proven to influence computer use, frequently via influencing the user's emotional state, such as reducing computer anxiety (Marakas et al. 1998). Based on these studies, the current research anticipates that:

> H3. The more positive youngsters perceive the ease of use of technology, the lower self-esteem they have (H3a), the lonelier they feel (H3b), the higher is their anxiety level (H3c), and the lower their scores on wellbeing (H3d).

Perceived usefulness is "the extent to which an individual believes that utilizing a certain system would improve his or her job performance" (Davis, 1986). According to Franke et al. (2019), technical systems are tools that have the ability to help users solve issues and achieve goals more effectively and efficiently, that is, instruments that promote the elimination of inconsistencies between the user's intended state and the current state of the environment. In the present paper, technical systems are understood as the gadgets used for textual digital communication. A team of researchers chose to analyze TAM in relation with e-learning adoption (Abdullah & Ward, 2016). E-learning uptake can be explained in part by perceived enjoyment. Evaluated enjoyment has a big impact on how easy and useful e-learning is perceived. An increase in students' intention to use e-learning is also shown by prior studies when perceived enjoyment is high (Abdullah and Ward, 2016).

Another study addresses "the practical paradox of technology" (Ter Hoeven et al., 2016), or how communication technology use can be both beneficial and harmful to employee wellbeing. Thus, messaging applications can help employees to achieve time efficiencies, but it can also cause stress owing to the fear of overload and loss of control. This paper aim to further explore the belief that using technology improves self-esteem, loneliness, anxiety, and wellbeing, so it hypothesizes:

> H4. The more positive youngsters perceive the usefulness of technology, the lower self-esteem they have (H4a), the lonelier they feel (H4b), the higher is their anxiety level (H4c), and the lower their scores on wellbeing (H4d).

Behavioral intention is defined as the subjective likelihood to use a certain technology in the future (Akram et al., 2021). It is a good predictor for the actual use of that technology and is strongly correlated with the perceived ease of use and the perceived usefulness of that particular device (Davis, 1989). In an online shopping context, Koufaris (2002) investigates how emotional and cognitive responses can influence online consumer behavior, especially, the intention to return. The findings reveal that customer's intention to re-use a certain website is influenced by both enjoyment of the online experience (a psychological variable) and the perceived usefulness of the website. The same idea can be applied for mobile texting.

Computer anxiety, being defined as "the tendency of an individual to be anxious, apprehensive, or afraid about the current or future use of computers in general" (Igbaria & Parasuraman, 1989), can lead to a high level of reluctance in using an online platform (Al-alak & Alnawas, 2011). Based on this context, the present research hypothesizes that:

> H5. The more likely is for the youngsters to further use technology, the lower self-esteem they have (H5a), the lonelier they feel (H5b), the higher is their anxiety level (H5c), and the lower their scores on wellbeing (H5d).

METHODOLOGY

The purpose of the present paper is to investigate the role of textual digital communication on emotional state of emerging adults. Thus, the study emphasizes the possible correlations between, on one side, the time spent on digital devices for texting, the affinity for technology, the perceived ease of use, the perceived usefulness, and the behavioral intention to further use textual communication, and, on the other side, the emerging adults' self-esteem, loneliness, anxiety, and wellbeing. Based on the hypotheses presented above, the conceptual model of the research is the following (Figure 1):
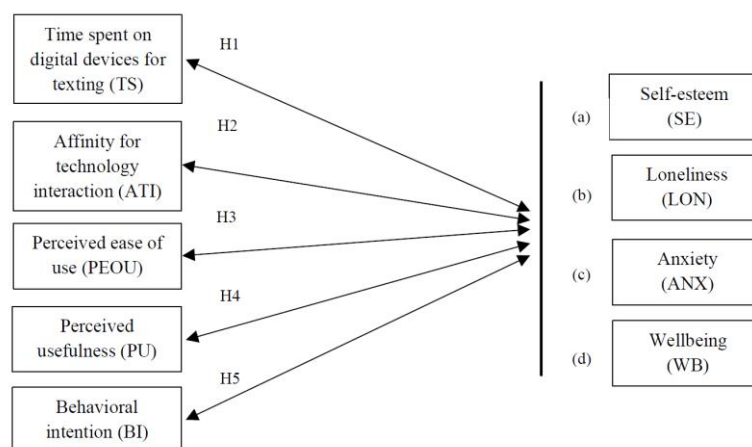

Figure 1. *Conceptual model of the study*

An online opinion survey has been conducted. The questionnaire has been designed in Google Forms and the analysis is conducted in IBM SPSS 22 version. The sociological inquiry lasted from February to May 2022. In the opening part of the questionnaire, the purpose of the investigation has been specified and the respondents have been informed that the data are anonymous and that the results are used exclusively for research purposes.

Sample

The sample (N=147) is composed of emerging adults in Romania, aged between 18-25 years old (*M*=21.18, *SD*=1.762). The gender distribution is 69.4% women and 30.6% men. The majority (63.3%) are high school graduates, while 32.7% have a bachelor's degree. In terms of

specialization, 70.4% are studying social sciences (e.g., marketing, psychology etc.), while 29.6% are studying exact sciences (e.g., medicine, mathematics etc.). All the respondents have a smartphone they use several times per day. The convenience sampling technique has been used (Parker et al., 2019), thus a lack of control on the socio-demographic distribution of the sample is acknowledged.

Measurements

Time spent (TS) on using mobile devices for texting is measured by using the number of hours spent texting. An average variable has been created that includes using text messages, WhatsApp messages, Instagram messages, and Facebook messages (M=2.85; SD=1.081). A 7-point scale has been used, where 1 means *not at all*, 2 means *less than half an hour/day*, 3 means *one hour/day*, 4 means *between 2 and 3 hours/day*, 5 means *between 4 and 5 hours/day*, 6 means *between 6 and 7 hours/day*, and 7 means *more than 8 hours/day*.

The internal consistency of the scales measuring the perceptions of digital devices, messaging application, and emotional state is scrutinized using Cronbach alpha (α). The results are satisfactory, its values being higher than the accepted threshold of 0.7 (DeVellis, 1991) in all the cases. Affinity for Technology Interaction (ATI) scale is designed to evaluate a person's inclination to engage in intensive technological contact (Franke et al. 2019). It is composed on 9 items (α=.775; M=3.68; SD=.942) measured from 1 to 6, where 1 means *strongly disagree*, and 6 means *strongly agree*. Some examples of items are: "*I like to occupy myself in greater detail with messaging applications*"; "*I like testing the functions of new messaging application*"; "*I enjoy spending time becoming acquainted with a new messaging application*".

Perceived ease of use (PEOU) scale (Lewis, 2019), as part of TAM model, measures how easy it is for the user to interact with a certain device. The scale is composed of 7 items (α= .920; M=6.54; SD=.853) measured from 1 to 7, where 1 means *strongly disagree*, and 7 means *strongly agree*. Some examples of items are: "*Learning to use messaging applications would be easy for me*"; "*I would find it easy to get messaging applications to do what I want it to do*"; "*My interaction with messaging applications would be clear and understandable*".

Perceived usefulness (PU) scale (Lewis, 2019) measures how useful the digital devices are considered by the users. The scale is composed of 6 items (α=.965; M=5.23; SD=1.541) measured from 1 to 7, where 1 means *strongly disagree*, and 7 means *strongly agree*. Some examples of items are: "*Using the messaging applications in my job would enable me to accomplish tasks more quickly*"; "*Using the messaging applications would improve my job performance*"; "*Using the messaging applications in my job would increase my productivity*".

Behavioral intention (BI) scale (Luo & Remus, 2014) measures the willingness of the user to further use a certain technology. The scale is composed of 4 items (α=.716; M=5.733; SD=1.256) measured from 1 to 7, where 1 means *strongly disagree*, and 7 means *strongly agree*. Some examples of items are: "*I plan to use messaging applications in the future*"; "*I intend to continue to use messaging applications in the future*"; "*I am not likely to use messaging applications in the future*"; "*I predict I will use messaging applications in the future*".

Self-esteem (SE) is measured using Rosenberg Self-Esteem Scale (Rosenberg, 1965). The scale has 10 items (α=.752; *M*=4.81; *SD*=.890) and it is measured from 1 to 7, where 1 means *strongly disagree*, and 7 means *strongly agree*. Some examples of items are: "*On the whole, I am satisfied with myself*"; "*At times, I think I am not good at all*"; "*I feel that I have a number of good qualities*".

Loneliness (LON) is measured by using UCLA Loneliness Scale (Russell et al., 1980). The scale has 20 items (α=.914; *M*=2.54; *SD*=.973) and it is measured from 1 to 7, where 1 means *strongly disagree*, and 7 means *strongly agree*. Some examples of items are: "*I feel in tune with the people around me*"; "*I lack companionship*"; "*There is no one I can turn to*".

Anxiety (ANX) is measured with the help of Hamilton Anxiety Scale (Hamilton, 1959). The scale is composed of 14 items (α=.902; *M*=2.24; *SD*=.779) measured from 1 to 5, where 1 means *never*, and 5 means *all the time*. Some examples of items are: "*Anxious mood – worries, anticipation of the worst, fearful anticipation, irritability*"; "*Tension – feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax*".

Wellbeing (WB) is measured with Stanford Wellbeing scale (Ryff & Keyes, 1995). The scale focuses more on bodies' instinctive responses under stressful conditions, rather than on people's thoughts and it is composed of 18 items (α=.788; *M*=5.22, *SD*=.758). It is measured on 7-point scale where 1 means *strongly disagree*, and 7 means *strongly agree.* Some examples of items are: "*I like most parts of my personality*"; "*When I look at the story of my life, I am pleased with how things have turned out so far*"; "*Some people wander aimlessly through life, but I am not one of them*".

Considering the research context, the scales have been translated in Romanian.

RESULTS

Most of the respondents claim that they use texting applications several times a day. The figure below (Figure 2) offers a comprehensive overview on the data. Among these applications, the most used is WhatsApp followed by Instagram and Facebook. Moreover, these applications are mostly used several times a day.

For a more exact measure on the time spent texting, the number of hours spent on each application is considered. The data (Figure 3) show that most of the individuals use texting applications between half an hour and 3 hours per day. As these are approximative estimations and considering that desirable answers might have occurred, further investigation is needed.
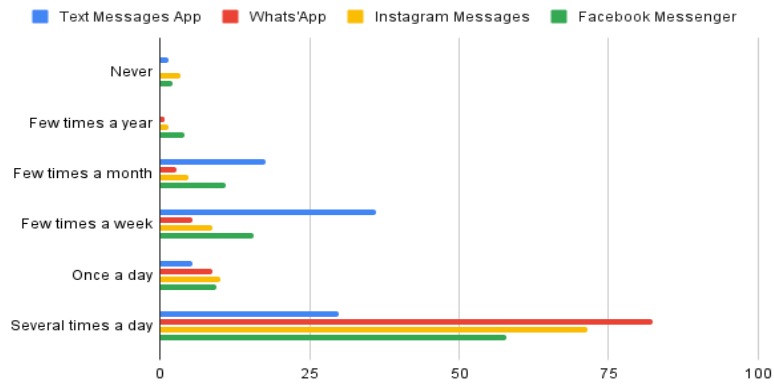
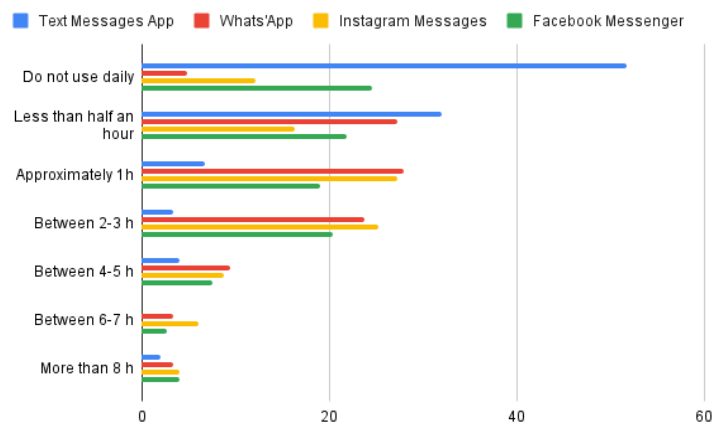**Figure 2.** *The frequency of using texting applications*

Figure 3. *Time spent texting on each application*

Starting from the actual behavior of the respondents, a correlation matrix between all the analyzed variables has been conducted (Table 1).

Table 1. *Correlation matrix*

	TS	ATI	PEOU	PU	BI	SE	LON	ANX
ATI	.027							
PEOU	.218**	.026						
PU	.194*	.002	.394**					
BI	-.099	-.042	.340**	.250**				
SE	.001	.191*	.105	.193*	.026			
LON	-.121	-.221**	-.159	-.089	-.071	-.481**		
ANX	.083	-.174*	.096	-.028	.053	-.593**	.464**	
WB	.000	.122	.187*	.222**	.137	.666**	-.575**	-.427**

*Correlation is significant at the 0.05 level
**Correlation is significant at the 0.01 level

Contrary to expectations, the time spent using textual digital communication is not significantly correlated with none of the emotional variables. However, interestingly, the data show significant, positive, yet light, correlation between the number of hours spent texting and both the perceived ease of use (*r*=.218, *p*<.01) and the perceived usefulness (*r*=.194, *p*<.05). It means that the more hours emerging adults spent using texting digital communication, the easiest and more useful they perceive that interaction. However, more investigation is needed in order to find stronger correlations.

The affinity for technology interaction is significantly correlated with self-esteem (*r*=.191, *p*<.05), loneliness (*r*=-.221, *p*<.01), and anxiety (*r*=-.174, *p*<.05). Although the relationships are not strong, one can emphasize that a higher affinity for using technology, in general, is correlated with a higher self-esteem and lower levels of loneliness and anxiety. This information is valuable since, through technological education and skills development, emerging adults can benefit of a better mental state.

The perceived ease of use of digital devices used in texting is significantly and positively correlated only with wellbeing (*r*=.187, *p*<.05). Thus, the easier the technical interaction is, the higher wellbeing level is. However, since the relationship is weak, further investigation is needed. As expected, the perceived ease of use if also significantly and positively correlated with perceived usefulness (*r*=.394, *p*<.01) and behavioral intention (*r*=.340, *p*<.01), confirming the validity of the Technology Acceptance Model.

The perceived usefulness of the texting interaction is significantly and positively correlated with self-esteem (*r*=.193, *p*<.05) and wellbeing (*r*=.222, *p*<.01). Accordingly, the more useful one finds the textual digital communication, the higher self-esteem and wellbeing one has. As predicted by the Technological Acceptance Model, the perceived usefulness is also significantly correlated with intentional behavior. Behavioral intention, meaning the willingness to further use the textual digital interaction, is not significantly correlated with none of the emotional state.

The data reveals significant and strong relationships between the four emotional variables. While self-esteem is negatively correlated with loneliness (*r*=-.481, *p*<.01) and anxiety (*r*=-.593, *p*<.01), it is positively correlated with wellbeing (*r*=.666, *p*<.01). Likewise, loneliness and anxiety are positively correlated (*r*=.464, *p*<.01) and loneliness (*r*=-.575, *p*<.01) and anxiety (*r*=-.427, *p*<.05) are negatively correlated with wellbeing.

DISCUSSIONS AND CONCLUSION

The current study aims to assess the relationship between feelings of self-esteem, loneliness, anxiety, and wellbeing and the use of mobile devices for texting and communicating via messaging apps (in terms of time spent on mobile devices, attitude towards the technology, perceived ease of use, perceived usefulness, and behavioral intention). The study uses an online opinion survey to gather data from a sample of 147 emerging adults from Romania. After analyzing the results, we could determine if our hypotheses were validated or not. To gain a

deeper understanding, we will examine one hypothesis at a time and consider all of the probable explanations for its validation or rejection.

The data show that there is no significant relationship between the amount of time spent texting and self-esteem, loneliness, anxiety, or wellbeing. Thus, the first hypothesis (H1) is not valid. Considering that the literature has found evidence that spending time on digital media can both positively (Twenge et al., 2019) and negatively (Twenge, 2019) influence the overall wellbeing, further study needs to be conducted.

The relationship between young individuals' attitude toward technology and wellbeing is rather significant. After considering the results shown by the Affinity for Technology scale, it can be stated that a positive attitude toward technology leads to an increase in the self-esteem level. A possible explanation for this can be the fact that enjoying what one does makes her/him feel better about herself/himself, and it can improve self-image. This effect can naturally determine the drop in the level of loneliness and anxiety. This last finding is supported by the existing literature (Pittman & Reich, 2016) that show that attitudes are positively correlated with happiness and life satisfaction. Thus, the second hypothesis (H2) is invalidated.

The third hypothesis (H3) states that the more positive youngsters perceive the ease of use of technology, the lower self-esteem they have, the lonelier they feel, and the higher their anxiety level, and the lower their scores on wellbeing. According to the findings, perceived ease of use significantly correlates only with the wellbeing level, although the relationship is weak. This conclusion is somehow in line with Marakas et al. (1998) that states that the capability to use a device increases the positive emotional state. The hypothesis is only partially validated.

The fourth hypothesis (H4), which states that there is an inversely proportional relationship between the perceived usefulness and the emotional variables, is partially invalidated. Even if the association is not necessarily strong, the younger adults see technology as simple to use, the better their rating of wellbeing. One reason for this is that being able to use technology and not get stuck when completing a task by using certain gadgets makes individuals feel good about themselves. Likewise, there is the possibility of feeling superior to those who may not use technology as effortlessly as they do, which only adds up to the level of satisfaction. The results also show that the more useful technology is perceived to be, the better the level of self-esteem. This outcome can be attributed to the fact that for someone who spends a significant amount of their time staying connected and using technology, it is critical to perceive it as something practical and valuable. The reason for the fact that the level of self-esteem and wellbeing increases is that when one sees value and usefulness in something, it gives purpose, helps thrive for more, and makes one feel good about oneself. Earlier studies also demonstrate that enjoyment is positively correlated with the perceived usefulness (Abdullah & Ward, 2016).

Existing literature claims that people who develop computer anxiety are more likely to be hesitant to further use technology (Al-alak & Alnawas, 2011). However, the results of the resent research show that the behavioral intention is not significantly related to any of the

emotional variables. As a result, the fifth hypothesis (H5) is invalidated. Further investigation is needed in this case as well.

Based on the results, further investigation on the already used variable, but on bigger samples, should be considered. Moreover, relying on the limits of the paper, research perspectives are being born. For instance, the level of extraversion of the respondents might be an important variable that can be linked with technology consumption. Some sensations of loneliness may be more profound depending on a person's personality traits - extraversion or introversion. Introverted internet users report decreased community involvement and increased loneliness, whereas extroverts report greater community involvement and decreased loneliness (Kraut et al., 2002).

Likewise, having unequal cohorts of men and women, the present study could not conduct a comparative gender analysis. The literature shows that females use Facebook for social contact more than males (Tartaglia, 2016). Moreover, depression is characterized by internalizing symptoms, and females are substantially more likely to be affected starting in adolescence (Hankin & Abramson, 2001). Thus, a comparative approach on the way men and women are influenced by textual digital behavior is to be considered.

A longitudinal study is another aspect that could improve further research. The context in itself (e.g., pandemic or post-pandemic situation) might alter the results. Thus, a follow-up data collection might bring a more comprehensive overview on the studied phenomenon.

REFERENCES

Abdullah, F. & Ward, R., (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*, *56*, 238-256. https://doi.org/10.1016/j.chb.2015.11.036

Ajzen, I., (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-t

Al-alak, B. A., & Alnawas, I. A. M. (2011). Measuring the acceptance and adoption of E-learning by academic staff. *Knowledge Management & E-Learning: An International Journal, 3*(2), 201-221. https://doi.org/10.34105/j.kmel.2011.03.016

Alt, P., Reim, J., & Walper, S. (2021). Fall From Grace: Increased Loneliness and Depressiveness Among Extraverted Youth During the German COVID-19 Lockdown. *Journal of Research on Adolescence*, *31*(3), 678-691. https://doi.org/10.1111/jora.12648

Akram, U., Fülöp, M. T., Tiron-Tudor, A., Topor, D. I., & Căpușneanu, S. (2021). Impact of Digitalization on Customers' Well-Being in the Pandemic Period: Challenges and Opportunities for the Retail Industry. *International Journal of Environmental Research and Public Health*, *18*(14), 7533. MDPI AG. http://dx.doi.org/10.3390/ijerph18147533

Anderson, M., & Jiang, J. (2018). Teens, social media & technology 2018. *Pew Research Center*.

Andone, I., Błaszkiewicz, K., Eibes, M., Trendafilov, B., Markowetz, A., & Montag, C. (2016). How age and gender affect smartphone usage. *ACM International Joint Conference on Pervasive and Ubiquitous Computing: Adjunct*, 9-12. https://doi.org/10.1145/2968219.2971451

Boase, J., Horrigan, J.B., Wellman, B., & Rainie, L. (2006). *The strength of internet ties (Report of the Pew Internet & American Life Project)*. http://www.pewinternet.org/~/media//Files/Reports/2006/PIP_Internet_ties.pdf.pdf

Browne, B. L., Aruguete, M. S., McCutcheon L. E., & Medina, A. M. (2018). Social and emotional correlates of the fear of missing out. *North American Journal of Psychology, 20*(3), 341–354.

Busch, P., & McCarthy, S. (2021). Antecedents and consequences of problematic smartphone use: A systematic literature review of an emerging research area. *Computers in Human Behavior, 114*, 106414. https://doi.org/10.1016/j.chb.2020.106414

Camacho, E., LoPresti, M., Appelboom, G., Dumont, E., Taylor, B., & Connoly, E. S. (2014). The ubiquitous role of smartphones in mobile health. *Biometrics & Biostatistics International Journal*, *1*(1), 14–19.

Chan, M. (2013). Mobile phones and the good life: Examining the relationships among mobile use, social capital and subjective well-being. *New Media & Society, 17*(1), 96–113. https://doi.org/10.1177/1461444813516836

Chen, Y., Lin, Y., Yeh, R., & Lou, S. (2013). Examining factors affecting college students' intention to use web-based instruction systems: towards an integrated model. *Turkish Online Journal of Educational Technology-TOJET, 12*(2), 111-121.

Chotpitayasunondh, V., & Douglas, K. (2016). How "phubbing" becomes the norm: The antecedents and consequences of snubbing via smartphone. *Computers In Human Behavior*, *63*, 9-18. https://doi.org/10.1016/j.chb.2016.05.018

ComScore. (2017). *Mobile matures as the cross-platform era emerges.* https://www.comscore.com/Insights/Blog/Mobile-Matures-as-the-Cross-Platform-Era-Emerges

Daft, R., & Lengel, R. (1986). Organizational Information Requirements, Media Richness and Structural Design. *Management Science*, *32*(5), 554-571. https://doi.org/10.1287/mnsc.32.5.554

Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Cambridge, MA: Massachusetts Institute of Technology.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*, 319-340.

De Jong-Gierveld, J., & Kamphuls, F. (1985). The Development of a Rasch-Type Loneliness Scale. *Applied Psychological Measurement*, *9*(3), 289-299.

https://doi.org/10.1177/014662168500900307

DeVellis, R. (1991). *Scale development: theory and applications*. London: SAGE.

Dienlin, T., Masur, P. K., & Trepte, S. (2017). Reinforcement or displacement? The reciprocity of FTF, IM, and SNS communication and their effects on loneliness and life satisfaction. *Journal of Computer-Mediated Communication*, *22*, 71–87, https://doi.org/10.1111/jcc4.12183

Dozois, D., & Covin, R. (2004). The Beck Depression Inventory-II (BDI-II), Beck Hopelessness Scale (BHS), and Beck Scale for Suicide Ideation (BSS). In M. J. Hilsenroth & D. L. Segal (Eds.), *Comprehensive handbook of psychological assessment* (pp. 50–69), Vol. 2. Personality assessment.

Duke, É., & Montag, C. (2017). Smartphone addiction, daily interruptions and self-reported productivity. *Addictive Behaviors Reports*, 6. https://doi.org/10.1016/j.abrep.2017.07.002

Edison, S. W., & Geissler G. (2003). Measuring attitudes towards general technology: Antecedents, hypotheses and scale development. *Journal of Targeting, Measurement and Analysis for Marketing, 12*(2), 137–156. https://doi.org/10.1057/palgrave.jt.5740104

Elhai, J. D., Rozgonjuk, D., Yildirim, C., Alghraibeh, A. M., & Alafnan, A. A. (2019). Worry and anger are associated with latent classes of problematic smartphone use severity among college students. *Journal of Affective Disorders*, *246*, 209-216. https://doi.org/10.1016/j.jad.2018.12.047

Ellison, N., Steinfield, C. and Lampe, C., (2007). The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites. *Journal of Computer-Mediated Communication*, *12*(4), 1143-1168. https://doi.org/10.1111/j.1083-6101.2007.00367.x

Ferguson, C. J. (2017). Everything in moderation: Moderate use of screens unassociated with child behaviour problems. *Psychiatric Quarterly*, *88*, 797–805. https://doi.org/10.1007/s11126-016-9486-3

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. *Reading, MA: Addison-Wesley*.

Franke, T., Attig, C., & Wessel, D. (2019). A Personal Resource for Technology Interaction: Development and Validation of the Affinity for Technology Interaction (ATI) Scale. *International Journal of Human–Computer Interaction, 35*(6), 1-12. https://doi.org/10.1080/10447318.2018.1456150

Godwin-Jones, R. (2011). Emerging technologies: Mobile apps for language learning. *Language Learning & Technology*, *15*(2), 2–11.

Gugushvili, N., Täht, K., Rozgonjuk, D., Raudlam, M., Ruiter, R., & Verduyn, P.(2020). Two dimensions of problematic smartphone use mediate the relationship between fear of

missing out and emotional well-being. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *14*(2), Article 3. https://doi.org/10.5817/CP2020-2-3

Hamilton, M. (1959), The Assessment of Anxiety States by Rating. *British Journal of Medical Psychology, 32*, 50–55.https://doi.org/10.1111/j.2044-8341.1959.tb00467.x

Hankin, B. L., & Abramson, L. Y. (2001). Development of gender differences in depression: An elaborated cognitive vulnerability–transactional stress theory. *Psychological Bulletin, 127*, 773–796. https://doi.org/10.1037/0033-2909.127.6.773

Hartanto, A., & Yang, H. (2016). Is the smartphone a smart choice? The effect of smartphone separation on executive functions. *Computers in Human Behavior, 64*, 329–336. https://doi.org/10.1016/j.chb.2016.07.002.

Harwood, J., Dooley, J. J., Scott, A. J., & Joiner, R. (2014). Constantly connected–The effects of smart-devices on mental health. *Computers in Human Behavior, 34*, 267–272. https://doi.org/10.1016/j.chb.2014.02.006

James, C., Davis, K., Charmaraman, L., Konrath, S., Slovak, P., Weinstein, E., & Yarosh, L. (2017). Digital Life and Youth Well-being, Social Connectedness, Empathy, and Narcissism. *Pediatrics*, *140*(S2), S72. https://doi.org/10.1542/peds.2016-1758F

Jin, B., & Park, N. (2013) Mobile voice communication and loneliness: cell phone use and the social skills deficit hypothesis. *New Media & Society, 15*, 1094-1111. https://doi.org/10.1177/1461444812466715

Koufaris, M. (2002). Applying the technology acceptance model and flow theory to online consumer behavior. *Information Systems Research, 13*(2), 205-223. https://doi.org/10.1287/isre.13.2.205.83

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet paradox revisited. *Journal of Social Issues, 58*(1), 49-74. https://doi.org/10.1111/1540-4560.00248

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: a social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*(9), 1017-1031.

Lepp, A., Barkley, J. E., & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college students. *Computers in Human Behavior, 31*, 343-350. https://doi.org/10.1016/j.chb.2013.10.049

Lewis, J., (2019). Comparison of Four TAM Item Formats: Effect of Response Option Labels and Order, *Journal of Usability Studies*, *14*(4), 224–236.

Lamers, S. M. A., Bolier, L., Westerhof, G. J., Smit, F., & Bohlmeijer, E. T. (2012). The impact of emotional well-being on long-term recovery and survival in physical illness: A meta-analysis. *Journal of Behavioral Medicine, 35*(5), 538–547 https://doi.org/10.1007/s10865-011-9379-8

Lee, S. J. (2009). Online communication and adolescent social ties: who benefits more from

internet use? *Journal of Computer-Mediated Communication, 14*.

Luo, M. M., & Remus, W. (2014). Uses and gratifications and acceptance of Web-based information services: An integrated model. *Computers in Human Behavior, 38*, 509–531. https://doi.org/10.1111/j.1083-6101.2009.01451.x

Marakas, G. M., Yi, M. Y., & Johnson, R. D. (1998). The multilevel and multifaceted character of computer self-efficacy: Toward clarification of the construct and an integrative framework for research. *Information Systems Research, 9*(2), 126-163. https://doi.org/10.1287/isre.9.2.126

Mehl, M. R., & Pennebaker, J. W. (2003). The sounds of social life: A psychometric analysis of students' daily social environments and natural conversations. *Journal of Personality and Social Psychology*, *84*(4), 857–870. https://doi.org/10.1037/0022-3514.84.4.857

Milek, A., Butler, E. A., Tackman, A. M., Kaplan, D. M., Raison, C. L., Sbarra, D. A., & Mehl, M. R. (2018). "Eavesdropping on happiness" revisited: A pooled, multisample replication of the association between life satisfaction and observed daily conversation quantity and quality. *Psychological Science, 29*, 1451-1462. https://doi.org/10.1177/0956797618774252

Nguyen, M. H., Gruber, J., Fuchs, J., Marler, W., Hunsaker, A., & Hargittai, E. (2020). Changes in Digital Communication During the COVID-19 Global Pandemic: Implications for Digital Inequality and Future Research. *Social Media + Society*, *6*(3), 1-6. https://doi.org/10.1177/2056305120948255

Oswald, A. J., Proto, E., & Sgroi, D. (2015). Happiness and productivity. *Journal of Labor Economics, 33*(4), 789-821. https://doi.org/10.1086/681096

Parker, C., Scott, S., & Geddes, A. (2019). *Snowbowl sampling*. SAGE Research Methods Foundations.

Pittman, M. & Reich, B., (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior*, *62,* 156-167. https://doi.org/10.1016/j.chb.2016.03.084

Poushter, J., Bishop, C., & Chwe, H. (2018). Social media use continues to rise in developing countries but plateaus across developed ones. *Pew Research Center,* 1-45.

Przybylski, A., Murayama, K., DeHaan, C., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers In Human Behavior*, *29*(4), 1841-1848. https://doi.org/10.1016/j.chb.2013.02.014

Radner, R., & Rothschild, M. (1975). "On the Allocations of Effort," *Journal of Economic Theory, 10*, 1841-1848. https://doi.org/10.1016/j.chb.2013.02.014

Radtke, T., Apel, T., Schenkel, K., Keller, J., & von Lindern, E. (2022). Digital detox: An effective solution in the smartphone era? A systematic literature review. *Mobile Media & Communication*, *10*(2), 190–215. https://doi.org/10.1177/20501579211028647

Reid, D.J., & Reid, F. (2007) Text or talk? Social anxiety, loneliness, and divergent preferences for cell phone use. *Cyberpsychology & Behavior, 10*, 424-

435.https://doi.org/10.1089/cpb.2006.9936

Rosen, L. D., Lim, A. F., Felt, J., Carrier, L. M., Cheever, N. A., Lara-Ruiz, J. M., & Rokkum, J. (2014). Media and technology use predicts ill-being among children, preteens and teenagers independent of the negative health impacts of exercise and eating habits. *Computers in Human Behavior*, *35*, 364-375. https://doi.org/10.1016/j.chb.2014.01.036

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

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology, 39*(3), 472–480. https://doi.org/10.1037/0022-3514.39.3.472

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069–1081. https://doi.org/10.1037/0022-3514.57.6.1069

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*, 719–727. https://doi.org/10.1037/0022-3514.69.4.719

Sproull, L., & Kiesler, S. (1986) Reducing Social Context Cues: Electronic Mail in Organisational Communication. *Management Science, 32*(11), 1492-1512. https://doi.org/10.1287/mnsc.32.11.1492

Statista (2016). *App Download and Usage Statistics*. https://www.statista.com/statistics/323522/us-user-mobile-app-engagement-age/

Statista (2021). *Distribution of time spent on mobile apps in the United States in June 2017, by category*. https://www.statista.com/statistics/319652/us-mobile-app-time-distribution-category/

Statista (2022). *Mobile apps usage. Statistics & Facts.* https://www.statista.com/topics/1002/mobile-app-usage/#topicOverview

Statista (2023). *Number of smartphone subscriptions worldwide from 2016 to 2021, with forecasts from 2022 to 2027*. https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/

Stevic, A. & Matthes, J. (2021). A vicious circle between children's non-communicative smartphone use and loneliness: Parents cannot do much about it. *Telematics and Informatics*, *64*, 101677. https://doi.org/10.1016/j.tele.2021.101677

Takahashi, D. (2018, September 11). Newzoo: Smartphone users will top 3 billion in 2018, hit 3.8 billion by 2021. *Venture Beat.* https://venturebeat.com/business/newzoo-smartphone-users-will-top-3-billion-in-2018-hit-3-8-billion-by-2021/

Tartaglia, S. (2016). Different Modalities of using Facebook: The Influence of Actual Social Relations, Wellbeing, and Attitude Towards the Medium. *Studia Psychologica*, *58*(1), 1-26.

Ter Hoeven, C. L., Van Zoonen, W., & Fonner, K. L. (2016). The practical paradox of technology:

The influence of communication technology use on employee burnout and engagement. *Communication Monographs, 83*(2), 239-263. https://doi.org/10.1080/03637751.2015.1133920

Trzesniewski, K.H., Donnellan, M.B., & Robins, R.W. (2003). Stability of self-esteem across the life span. *Journal of Personality and Social Psychology, 84*, 205–220. https://doi.org/10.1037/0022-3514.84.1.205

Turkle, S. (2011). *Alone Together: Why We Expect More from Technology and Less from Each Other*. New York: Basic Books.

Twenge, J. M., Martin, G. N., & Spitzberg, B. H. (2018). Trends in U.S. adolescents' media use, 1976–2016: The rise of digital media, the decline of TV, and the (near) demise of print. *Psychology of Popular Media Culture*, 329–345. https://doi.org/10.1037/ppm0000203

Twenge, J. (2019). More Time on Technology, Less Happiness? Associations Between Digital-Media Use and Psychological Well-Being. *Association For Psychological Science*, *28*(4), 372. https://doi.org/10.1177/0963721419838244

Vanden Abeele, M., Antheunis, M. L., & Schouten, A. P. (2016). The effect of mobile messaging during a conversation on impression formation and interaction quality. *Computers in Human Behavior, 62*, 562-569. https://doi.org/10.1016/j.chb.2016.04.005

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly, 27*(3), 425-478. https://doi.org/10.2307/30036540

Verbeek, P. P. (2005). *What things do: Philosophical reflections on technology, agency, and design*. (R. P. Crease, Trans.). University Park, PA: Penn State Press.

Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., Ybarra, O., Jonides, J., & Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General, 144*(2), 480-488.

Wang, B., Liu, Y., Qian, J., & Parker, S. (2021). Achieving effective remote working during the COVID-19 pandemic: A work design perspective. *Applied Psychology, 70*, 16-59. https://doi.org/10.1111/apps.12290

Widdicks, K., Bates, O., Hazas, M., & Friday, A. (2017). Designing for Digital Wellbeing and its Challenges in Everyday Life. In Proceedings of ACM Conference (Conference'17). ACM, New York, 5361–5372. https://doi.org/10.1145/3025453.3025730

Zhang, L.-F., Sternberg, R. J., & Rayner, S. (2012). *Handbook of Intellectual Styles*. New York, NY: Springer.