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Research Article

# Effect of Technology on Individuals' Psychological Health: A Pilot Study

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**Abstract**

This study aimed to (i) identify individuals' perceptions on technology usage, (ii) examine the extent of their use of technology, and (iii) explore the effect of using technology on individuals' psychological health. The data were collected from 76 participants in a private university in Abu Dhabi using an online survey. The results showed that the majority of participants have positive perceptions of technology, that they use technology excessively on a daily basis, and that using technology negatively affects individuals' psychological health.

**Keywords:** Technology usage, effects, perceptions, psychological health

## 1. Introduction

It's undeniable that modern technology has improved all of our day-to-day lives. It has made every part of our lives easier, from staying connected to friends and loved ones, to hailing an Uber, to watching TV, and even ordering dinner. But just like eating a whole cake at once, too much of a good thing can turn it into a bad thing. Being always connected does create problems that did not exist before the millennium. We have to be aware of how we interact with technology and if we are becoming addicted to the internet or social media.

A quick look at the generation of the current age known as the generation of technology will reveal a state of confusion that this generation lives, they have loss of identity, loss of balance, a life dominated by randomness and apathy, no principles or solid foundations on which their characters are built, nor enlightened goals that reach them to creative ends. Very few of them have ambition, creativity and objectives. Not to mention the state of isolation and disconnection from the reality and replaced by the virtual world provided by modern technology and its various means and tools. So now there is real fear for the future of human societies, which will be built only by the hands of these young generations.

This raises a number of questions whether in regard to the sort of ramifications modern technologies have on this generation morally, psychologically and physically, the reasons that have led this generation to that state of spiritual vacuum and the disruption of social and human relations, the effects of technology on that heterogeneous nature that characterized the generation of this age, and finally the means of protecting the 21st generation from degradation and falling prey to the modern technologies that have controlled and taken possession of this generation rather than the latter controlling it.

All these legitimate questions form important and serious challenges facing the intellectuals and theorists interested in the implications of technology on the human nature in this age generally and on the young generation and youth particularly. What is important here is to dig deep into the means and solutions to such ramifications and implications. This can only be done through gaining a better understanding of the problem in all its aspects including the causes and effects, and trying to reach realistic and practical propositions that contribute to reducing those ramifications which affect this young generation, especially in the Arab societies.

Statistics show that there is high demand on the Internet from various segments of society (Kim, 2017; Davie et. al., 2004) and every day the number of Internet users increases. In the second half of 1999, the number of Internet users reached more than 230 million (Davie et. al., 2004). No doubt, this percentage has increased exponentially recently, especially after the effective impact of social media such as Facebook, twitter, YouTube, and others that

are easily accessible (Kim, 2017; Palmer, 2015). Indeed, as of December 2017, the number of Internet users in the Arab world, exceeded 164 million, while in the rest of the world it exceeded 3 billion (Meeker & Wu, 2018).

The United Arab Emirates (UAE) high internet penetration and government's efforts to keep pace with the digital development, have been quick to embrace the potential of technology to improve the lives of the country's residents, moving government services increasingly online to improve efficiency and reduce costs. In recent years the embrace of technology has transformed nearly every aspect of life in the country, from communicating, to working, shopping, getting around, and paying bills.

A tech savvy population has proved alluring to the region's entrepreneurs, giving rise to the region's most dynamic start-up culture. The government has applied smart technology to a plethora of areas. the transformations that technology has brought about in the UAE in the past 10 years have been for good rather than for ill, not least thanks to the progressive outlook of the country's authorities. Yet, the path of progress rarely runs entirely smoothly, with technological development in the UAE -as elsewhere- introducing plenty of threats as well as opportunities.

The implications of the rise of Internet subscription and social media, are understood with potentially serious consequences for societal development, with the spread of online extremist propaganda and 'fake news' the most obvious negative impacts. Hence, the idea of this research was to identify different viewpoints in the UAE on the use of technologies and their various effects on the members of society, and try to examine these effects on the psychological health.

### *1.1 Positives and Negatives of Technology*

According to several researchers (Turban et al. (2003); Sharma & Sharma (2018), the positive impacts of technology include (i) making the world a small village, (ii) making social communication simple and fast, (iii) easy access to friends, family, news, recipes and information, (iv) making a huge leap in machinery as processes and industrial production of high quality, and (v) using modern social networking programs and networks to connect to anyone around the world and in remote areas such as video conferences.

The rapid expansion of the internet has provided better opportunities for communication, information, and social interaction (Sharma & Sharma (2018). We are a more efficient, connected society and are able to share our lives with the world. Technology has facilitated learning different languages, learning about other nations' cultures and mentalities, and also learning from problems and finding solutions (Jennifer & Maciej, 2013). Technology has also facilitated access to information, where many of us find it difficult to access specific information and most often visit many libraries, but with the development of technology and the Internet, access to information has become the easiest thing to do. Just at the click of a button and typing what is needed, one gets access to millions of books and journals to get all the information wanted (Chidiac & Aron, 1997; Jennifer & Maciej, 2013).

Technology has also contributed to broaden the culture and knowledge of the person using it (Kulesz, 2016; Kutchinsky, 2014) and also increased the ability to communicate with scientists and intellectuals, as well as fulfilling one's different needs faster such as buying and selling (Dixit et al. 2009). Moreover, and as seen recently, the educational process is depending on technology in scientific programs and researches, and the creation of the best methods of learning and knowledge (The Scientific Researcher, 2019).

Technology is the same as any medium that combines both positive and negative effects, and the consequences depend on the extent of its use. Some of the negative effects of technology overuse include spending more time than planned using the electronic gadget, leading to time pressure or lack of time, neglect of other activities and personal needs, lack of physical activity and social interaction, and mental overload (Thomee et al. 2012). Also, an obsessive need to check text messages, a desperate desire to constantly update Facebook status, or a near-addiction to iPhone games are all manifestations of negative effects of technology on the individual's behavior.

Another negative effect of technology misuse or overuse is seen in adopting socially unacceptable cultures coming through satellite in so-called movies, serials, talk-shows, and TV programs from all over the world (Al Ojeli, 2011). These extrinsic cultures threaten national cultures by eliminating their characteristics and privacy. This affects both the individuals and society due to the overlap of cultures and extermination of local identity. In addition, when an individual watches stars and actors constantly with passion, s/he takes them as idols and starts imitating them in speech, clothing, look, and even behavior, which affects his/her life negatively (Al Ojeli, 2011).

Also, some electronic games teach children violence and aggression (Mashour & Al Refae, 2018) resulting in the child dealing violently and aggressively with his family members and friends. Some children may even beat their siblings or friends imitating what they see in these games, thus becoming violent and harsh in dealing with others. Not only that, it is now evident that using a mobile phone while driving, one is approximately four times more likely to be involved in a crash than a driver who is not using a phone, due to both the cognitive and physical distraction associated with holding the phone (WHO, 2011).

### *1.2 Effects of Technology on Psychological Health*

Undoubtedly, technology has plenty of positive effects on our lives. However, as our reliance on technology continues to grow, some have experienced its negative effects on their psychological health. Indeed, higher use of technology is linked to increases in attention, behavior, and self-esteem problems for adolescents who are already at risk for psychological health problems. The researchers indicate that these problems include addiction, obsession, isolation, stress, anxiety, distraction, insomnia, depression, and cognitive losses (Cotton et al. 2013).

For some people, social media can trigger feelings of low self-esteem because users may see others and assume they are more successful, beautiful, intelligent, and enjoying life more than them. The addiction to or obsession of using technology is regarded in any form (Al Ojeli, 2011), such as children's addiction to their gadgets or electronic games, and teens' addiction to social media such as WhatsApp, Facebook or Twitter. Generally, if a person uses technology more than 40 hours per week, then he is considered to be addicted to technology (Chidiac & Aron, 1997). One of the problems of Internet addiction has been noticed recently is weakening social relations between family members (Younes & Al Zoubi, 2015; Kraut et al. 1998) which leads to isolation and loneliness. Most family members, especially youth and children, spend most of their time surfing the web, following YouTube and Snap chat, or chatting with others using chatting applications, at the expense of direct social relations (Kim, 2017; Millon et al. 2012).

The term ICT stress has been used to describe stress caused by excessive use of technology and social media that can lead to psychophysiological stress due to occupational strain, and that can become conditioned to the computer work environment technology usage (Thomee et al, 2012). Being continuously connected to the Internet and checking emails, messages, and social media has been linked with higher stress levels (Millon et al, 2012). Indeed, Younes et al, (2016) indicated that there is actually significant correlation between Internet usage and stress. In addition, studies have shown a link between depression and the use of social media sites, such as Facebook, Twitter, and Instagram (Charmaraman & Richer, 2018). It has been shown that heavy Internet users are 2.5 times more likely to be depressed (Mullarkey et al. 1997). Finally, many people today could be diagnosed with iDisorder, where one exhibits signs and symptoms of a psychiatric disorder such as OCD, narcissism, addiction or even ADHD, which are manifested through overuse of technology (Soltan, 2012).

Based on the above, the research seeks to answer the following questions:
RQ1: What are the individuals' perceptions of technology usage?
RQ2: What is the extent of individuals' use of technology?
RQ3: What is the effect of using technology on individuals' psychological health?

## 2. Research Methodology

The findings reported in this study represent the results of a pilot study. Thus, before explaining the research methodology, the researchers would like to start with a briefing about pilot studies.

### *2.1 Pilot Study*

Pilot studies are usually conducted to pre-test the research instrument with the goal of assessing the feasibility of the planned steps as well as time and budget issues that will take place during the main research (Thabane et al. 2010). The aim of this pilot study was to establish the appropriateness and effectiveness of the measurement instrument in terms of reliability and validity (Wiersma, 1985). Reliability is "*the consistency with which measurements are made*" (Weathington, 2010; 84) while validity refers to "the extent to which an instrument measures what it is supposed to measure" (Wiersma, 1985; 356). The researchers conducted the pilot study to validate the reliability and validity of the instrument. The pilot study was conducted in a private university with the participation of 76 participants. The pilot study was conducted to: (a) further guarantee the readability and comprehensibility of the instrument; (b) ensure that participants can easily navigate and answer the instrument; and (c) test the functionality of the web-based system hosting the instrument (Skaik, 2016). After completion of the pilot study and reflecting any necessary adjustments, the questionnaire was administered to the targeted population.

*2.2 Research Design*

The study used the quantitative research approach, known as opinion polling research (Cribb & Hartomo, 2002). This type of research usually consists of simple questions that yield numerical results that enable the researcher to make valid interpretations through comparing those numbers [30]. This research tends to be typically structured and prescriptive from the beginning and there is little, if any, deviation from the design during a research. Researchers usually use this approach to predict the phenomenon when it is related to another phenomenon and there's sufficient information about them (Johnson & Christensen, 2019). A cross-sectional web-based survey was used as a method to collect data from the participants working in a private university in Al-Ain city in UAE. The survey can collect large numbers of data and apply correct numerical formulas to test the proposed relationships between the variables under study (Skaik, 2016). The web-based survey was chosen due to its advantages in overcoming time and space boundaries, its ease of data entry (Skaik, 2016), and its cost-effectiveness in developing and distributing through an internet link (Weathington, 2010).

*2.3 Setting and Participants*

The setting for this study was a private university located in Al-Ain city in the Emirate of Abu Dhabi in the United Arab Emirates. The sample for consisted of the local community in the university including faculty members and students. Meaning that all the participants were UAE nationals. Different researchers (Julious, 2005; Van Belle, 2011) suggested that a number between 10-30 participants for pilot studies in survey researches should be quite acceptable. However, a total of 76 faculty members and students participated in this pilot study. This number was more than expected and very good to yield the anticipated results for reliability and validity. The sampling technique used for this study was the convenience sampling, which includes samples of whoever would be available at the time of conducting the study and willing to participate (Gay, 1992; Skaik, 2016).

*2.4 Research Instrument*

The questionnaire was used to gather information from the participants and it was developed by the researchers based on their comprehensive readings about the topic and the available literature review. The questionnaire was adapted to the setting and context of the study. Once the questionnaire was developed, it was reviewed and refereed by a number of experts and specialists in the field. The experts were requested to review the questionnaire for its validity and content. The received feedback was used to make the necessary modifications before distributing the final version. Few items were added while others were deleted or modified. The pilot study was then conducted to determine the items yielding the kind of information that is needed (Simon, 2011). The questionnaire consists of four sections. The first one asks the participants to fill in their personal information, and the second assesses the participants' perceptions of positive and negative expressions on technology with 14 items for the positives and 15 for the negatives. The third section detects the participants extent of using technologies by asking them to choose the average number of hours they spend in using technologies on a daily basis. The fourth section examines the relationships between using technologies and the participants' psychological health through 8 items. The measuring scale used was the 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).

*2.5 Data Collection and Analysis*

One of the fastest techniques to collect data is the internet using an online survey (Skaik, 2016) and so the researchers decided to collect data using a web-based questionnaire. The questionnaire was distributed using modern technological means and channels of social communication. As the questionnaire was created online, the link was sent to the willing participants, who were requested to fill in the questionnaire and were also informed that participation in the study was voluntarily and that all ethical considerations were considered and followed. Once the participants submit their answers, the data were recorded directly into a spreadsheet, which was transferred later into SPSS to carry out the required analysis. The data collection phase was carried out during the first semester of 2017/2018.

The data were analyzed using SPSS to determine the relationship between the usage of technologies and psychological health, in addition to measuring the individuals' perceptions and their extent of technologies usage. The sample descriptive characteristics were assessed based on the demographic information including gender, age, level of education, marital status, and occupation. The descriptive statistics were used to inspect the mean scores and standard deviations of the items measuring the individuals' perceptions and extent of using technologies. In this study, the correlative method was used to reveal the correlative relationships between the variables that are related to each other in non-causal relationships. These relationships are measured by the correlation coefficient, which is between (+1 and -1) where the zero value indicates that there is no relationship.

## 3. Results and Discussion

The following results include; Individuals' Perceptions of Technology, Extent of Using Technology & Technology and Psychological Health.

### *3.1 Participants' Descriptives*

As seen from Table 1 below, the numbers of male and female participants were 40 and 36 respectively. The participants age ranged from 20 years to 50 years and above with the majority in the twenties and thirties. As for the level of education the participants composed 17 Ph. D holders who would be from the faculty members, while the rest were either master degree holder or studying master as well as those studying bachelor and diploma with the majority from Bachelor students. 48 of the participants are single while the rest 28 are married. As for the occupation, 26 of the participants were faculty members and 50 were students. As mentioned, the participants for the pilot study were all UAE nationals.

**Table 1** Participants' Information (N = 76)

| Category | Item | No. |
|---|---|---|
| Gender | Male | 40 |
| | Female | 36 |
| Age Group | In the 20s | 34 |
| | In the 30s | 14 |
| | In the 40s | 18 |
| | 50 and above | 10 |
| Level of Education | Ph. D | 17 |
| | Master | 13 |
| | Bachelor | 36 |
| | Diploma | 10 |
| Marital Status | Married | 28 |
| | Single | 48 |
| Occupation | Faculty Member | 26 |
| | Student | 50 |

### *3.2 Individuals' Perceptions of Technology*

In order to measure the individuals' positive perception of technology, they were asked to rate their agreement to 14 statements. As seen in Table 2, the results of the mean scores ranged from 3.19 to 4.41, majority of the participants supported the positive effects of technology. The highest means where given for the statements showing the importance of technology in contacting relatives in remote areas, interacting and exchanging information and expertise, facilitating access to an event in a short period and opening up to the outside world, and creating new jobs, where the means scores were above 4.0.

**Table 2** Individual's positive perceptions of technology

| Statement | Mean | St. D. |
|---|---|---|
| Modern techniques help me stay in touch with relatives in remote areas | 4.41 | .894 |
| Programs introduced through new technologies capture my attention and positively affect my personality | 3.33 | 1.100 |
| I enjoy complete privacy when I'm with the device | 3.31 | 1.156 |
| My approach in dealing with modern techniques is the religious sanction | 3.86 | 1.051 |
| I have the ability to filter all the information I need from other sources | 3.58 | 1.029 |
| Modern technology is a bliss | 3.89 | 1.009 |
| The Internet helped me to discover new opportunities to develop my personal and career ambitions | 3.81 | 1.028 |
| The Internet helped me to practice and develop my constructive hobbies | 3.54 | 1.119 |
| The Internet helped me to interact with distinctive persons, who were difficult to contact previously | 3.49 | 1.224 |
| Modern technologies contribute to increasing per capita income | 3.19 | 1.146 |
| Online information sources help me in my study by improving my performance and raising my learning ambition | 3.78 | .859 |
| One of the media positives is facilitating access to an ongoing event in a short period and opening up to the outside world | 4.27 | .909 |

| | | |
|---|---|---|
| Modern means of communication made the world a small village where interacting and exchanging information and expertise are easy | 4.34 | .925 |
| Technological development has created new jobs | 4.06 | .925 |

In order to measure the individuals' negative perception of technology, they were asked to rate their agreement to 15 statements. As seen in Table 3, the results of the mean scores ranged from 2.62 to 4.36. The participants agreed that social media had disrupted family and social systems and weakened communication among family members, and believe that technology has negative effects on the physical and mental activity, and beliefs. It is noted that majority of them agreed that using a mobile phone is the main cause of traffic accidents. Interestingly, many participants believe that modern technology has eliminated many jobs.

**Table 3** Individual's negative perceptions of technology

| Statement | Mean | St. D. |
|---|---|---|
| The interaction among family members decreased due to technology | 4.00 | 1.159 |
| Technological development resulted in free time | 3.02 | 1.220 |
| I feel that technology is wasting a lot of my time | 3.67 | 1.114 |
| The new generation spends long hours using modern technology | 4.17 | 1.081 |
| Modern techniques have increased physical and mental inactivity | 4.12 | 1.067 |
| Lighting emitted form electronic devices affect the cardiovascular system and causes diabetes and obesity | 3.64 | 1.108 |
| The new devices, including modern means of communication distract me from performing my duties | 3.68 | 1.094 |
| Programs introduced through new technologies attract my attention and negatively affect my personality | 2.77 | 1.204 |
| Not everything published online about religious issues is true | 4.07 | 1.093 |
| I am subject to information pressure that draws my attention and sometimes attracts me to the unknown | 3.28 | 1.158 |
| Modern technology is a scourge | 2.62 | 1.195 |
| Some of the media negatives are spreading false doctrines and faiths and promoting them by polishing the images of their adherents, and spreading superstitions | 3.96 | 1.082 |
| Using a mobile phone while driving results in traffic accidents | 4.36 | 1.061 |
| Family disintegration and divorce happen due to the openness of social media and immaturity of some of its users | 4.01 | 1.038 |
| The use of modern technologies eliminated many jobs | 3.58 | 1.110 |

*3.3 Extent of Using Technology*

In order to measure the extent of the participants' usage of technology, they were asked to indicate the number of hours daily they use the different means of modern technology including the Internet websites, email, chat, and social media. Table 4 shows the results by total of number of daily hours. Table 4 shows that the majority of participants at a percentage of 40.8% use technology continuously from 7-9 hours, followed by 31.6% for those using it from 4-6 hours, then 17.1% for those using it from 10-12 hours, and 6.6% use it from 1-3 hours only. From the table, we note that only 2.6% of participants use technology from 13-15 hours and only 1.3% use it from 16-18 hours daily. So it can be inferred that the participants mainly use technology ranging from 4 to 12 hours on a daily basis.

**Table 4** Daily hours of using modern technology (N=76)

| Total no. of hours | No. of users | Percentage |
|---|---|---|
| 1-3 hours | 5 | 6.6 % |
| 4-6 hours | 24 | 31.6 % |
| 7-9 hours | 31 | 40.8 % |
| 10-12 hours | 13 | 17.1 % |
| 13-15 hours | 2 | 2.6 % |
| 16-18 hours | 1 | 1.3 % |

*3.4 Technology and Psychological Health*

Table 5 displays the results of the correlation between technology and psychological health. From the table, we note that technology has a negative impact on the psychological health of individuals. Looking at the mean scores and the correlation coefficient values; one can see that they are all above 3.5 and .700 respectively indicating that the participants highly agree with the statements measuring the negative impact of technology on their

psychological health. Obviously, the participants do believe that technology has affected their psychological health negatively, whether in terms of being addicted to using technology, feeling depressed, anxious, stressed, or low self-esteem.

**Table 5** The effects of technology on individuals' psychological health

| Statement | Mean | St. D. | Correlation Coefficient |
|---|---|---|---|
| I feel anxious and nervous when I forget my smartphone | 3.82 | 1.142 | -.738** |
| Modern technology has increased stress and pressure | 3.88 | 1.070 | -. 724** |
| Electronic devices cause persistent depression | 3.98 | 1.137 | -.898** |
| Using technological devices for long hours results in social isolation | 3.77 | 1.204 | -.744** |
| Following social media has made me feel bothered, troubled and anxious | 3.79 | 1.082 | -.752** |
| spending more time on social networking sites has affected my personal traits and self-esteem | 3.57 | 1.158 | -.719** |
| I feel addicted to using modern technology spending more than I plan to | 4.00 | 1.138 | -.880** |

** p-value <0.01, df =1

**4. Discussion**

RQ1: What are the individuals' perceptions of technology usage?

As seen from the results, the majority of the participants have positive perceptions of technology, where they supported the importance of technology in communication and interaction. The participants reported that they are now communicating and interacting with relatives in remote areas, in addition to exchanging information and expertise through modern technological means. Participants are also convinced that technology has increased employment opportunities as a result of the creation of new jobs. On a personal level, the participants agreed that technology has helped them develop personal and career ambitions and constructive hobbies, as well as improving study performance and raising learning ambition. This is consistent with what the researchers have previously indicated about the benefits and positive effects of technology (Srinivasan et al. 2002).

On the other hand, the participants agreed that social media had disrupted the family relationship and weakened communication among family members, although it made it easier for them to reach faraway relatives as mentioned above. They also believed that technology has negatively affected physical and mental activity, this could be attributed to entirely depending on modern technologies in daily life. Further, majority of them agreed that using a mobile phone is the main cause of traffic accidents. This is also consistent with what the researchers have previously indicated about the negative effects of technology (Baumeister & Tice, 1990; Kraut et al. 1998).

RQ2: What is the extent of individuals' use of technology?

The results of this study showed that a total of 89.5% of the participants use technology on a daily basis from 4 to 12 hours. This is somehow considered an excessive use of technology whether it is the Internet, email, chatting, Video and computer games, social media, smartphones or tablets and their different Apps. Both the Canadian 24-Hour Movement Guidelines for the Early Years and the Australian Department of Health recommend that people less than 18 years to limit their usage of technology to 2 hours daily only. Also (Chidiac & Aron, 1997) indicated that using technology more than 40 hours per week indicates that the person is addicted to technology. Based on the average time the participants reported using technology, it is inferred that they are indeed using it extremely a lot.

RQ3: What is the effect of using technology on the individuals' psychological health?

Based on the results, using technology has significant negative effect on the psychological health of individuals. The majority of participants agreed that the effect of technology is very clear on their lives and personalities indicating that technology has affected their psychological health negatively, in terms of addiction, depression, anxiety, stress, social isolation, and low self-esteem. Interestingly, in spite of being aware of the negative effects of technology, the participants admit being affected by such effects psychologically. This result is consistent with previous studies that proved that technology does have a negative impact on the individuals' psychological health (Sharma & Sharma, 2018).

## 5. Conclusion

The findings of this study confirm that technology has an impact on psychological health and we must be wary of being accustomed to using technology in our daily lives. It seems compulsory to support healthy use of modern technology in order to prevent possible destructive effects, since it has become an ever-increasing part of daily life whether at home, at work, at school, and at leisure. The actual fear lies in the current generation of children who will be the future generation of our society, if no regulations and rules are put in effect, then this generation will develop bad habits and suffer from chronic physical and psychological diseases. We need to work together to formulate scenarios that are in line with their minds, through which we may instill the values, principles, moralities, ideals, and codes, along with providing directions and advices. Limiting the time of using technology will result in better health whether physically, mentally or psychologically.

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