

**RELATIONAL AND COMPARATIVE ANALYSIS ON SOCIAL NETWORKING,
SMARTPHONE, AND GAME ADDICTIONS**



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JANUARY 2018

**RELATIONAL AND COMPARATIVE ANALYSIS ON SOCIAL
NETWORKING, SMARTPHONE, AND GAME ADDICTIONS**

**A THESIS SUBMITTED TO THE
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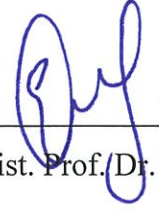
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
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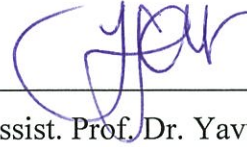
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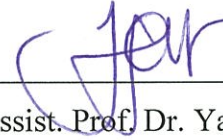
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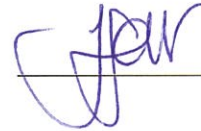
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ABSTRACT

RELATIONAL AND COMPARATIVE ANALYSIS ON SOCIAL NETWORKING, SMARTPHONE, AND GAME ADDICTIONS

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Teenagers spend an incredible amount of time on smartphones, especially on social media and online games. These devices, with the content they provide have become an indispensable part of the modern human being. The term personal computer used to mean a decent size machine on a desk but nowadays they are mostly in our bags or even in our pockets. Studying the advantages and disadvantages of these technologies for students is an important case in educational research. The main purpose of this study is to investigate the relationship between high school students' smartphone, social networking sites (SNS) and game addictions. Relationship between these technologies and students' grade point average (GPA) scores, gender, school type, grade and what purposes they most frequently use their smartphones for were other subjects investigated in the study.

The sample consisted of high school students in Turkey from grades 9 to 12 (N=504) and they responded to an online survey which included smartphone, SNS and game addiction scales. Correlations between variables were analyzed using Pearson correlation. Two-way ANNOVA without repeated measures was also employed in this study to be able to analyze and compare the data.

The results indicated a significant correlation between smartphone, SNS, and game addiction however there were no significant correlation found between addiction types and GPA scores. Addiction levels between boys and girls also differed significantly. Although students from state schools scored higher in each of the addiction scales there was only a significant effect of the type of school on game

addiction scale scores with regards to school type versus grade and on smartphone addiction scale scores with regards to gender versus school type. Number of purposes of smartphone use also have a significant effect on all addiction types studied. Results of this study have important implications and provide up-to-date example for further research studies in terms of addiction, academic performance, technology use preferences and gender differences.

Keywords: Social Networking Sites, Online Gaming, Smartphone Addiction, Scale, GPA



Öz

SOSYAL AĞ, AKILLI TELEFON VE OYUN BAĞIMLILIKLARI ÜZERİNE İLİŞKİSEL VE KARŞILAŞTIRMALI ANALİZ

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Ergenlik yaşlarındaki insanlar akıllı telefonları başında aşırı zaman geçiriyor ve özellikle sosyal medya ve online oyunlara aşırı zaman ayırıyorlar. Sağladıkları içerik ile ele alındıklarında bu cihazlar insan oğlunun hayatında vazgeçilmez bir yere sahip oldu. Kişisel bilgisayar denince akla, masa üzerinde duran bir cihaz akla gelirken günümüzde çantalarda ve hatta ceplerde taşınan cihazlar, kişisel bilgisayarların yerini almış durumda. Bu teknolojiler ayrıca sınıflarda eğitim amaçlı da kullanılmaktalar. Öğretmenler, bu teknolojileri düşünerek ders planlarını ve müfredatı oluşturmaya çalışıyor. Söz konusu bu teknolojilerin öğrenciler açısından avantajları ve dezavantajları üzerine çalışmalar yapmak eğitim araştırmaları alanı için önemli bir durum. Bu çalışmanın ana amacı lise öğrencilerinin akıllı telefon, sosyal medya ve oyun bağımlılıkları arasındaki ilişkiyi araştırmaktır. Yıl sonu genel başarı ortalaması, cinsiyet, okul türü, öğrencilerin akıllı telefonu en sık kaç amaç için kullandıkları gibi diğer faktörler ile belirtilen bu teknoloji bağımlılıkları arasındaki ilişki de araştırılan konular arasındadır.

Örneklem Türkiye genelinde, liselerde 9. ila 12. sınıflarda öğrenim görmekte olan öğrencilerden oluşmaktadır (N=504). Öğrenciler online bir bağlantı aracılığı ile paylaşılan, içinde akıllı telefon, sosyal medya ve oyun bağımlılıkları ölçeklerini de bulduran bir anketi cevaplayarak araştırmaya katılmışlardır.

Değişkenler arasındaki korelasyonlar Pearson Korelasyonu ile analiz edilmiştir. Nicel veriyi karşılaştırmak ve analiz etmek amacıyla araştırmada ayrıca tekrarlanmayan gözlemlili Çift Yönlü ANOVA da kullanılmıştır. Sonuçlar, akıllı

telefon, sosyal medya ve oyun bağımlılıkları arasında anlamlı bir korelasyonu ortaya koymuş ancak bağımlılık seviyeleri ve öğrencilerin yıl sonu genel başarı ortalamaları arasında anlamlı bir korelasyona rastlanmamıştır. Erkekler ve kızlar arasındaki bağımlılık seviyeleri de oldukça anlamlı bir seviyede farklılık göstermiştir. Devlet okullarındaki öğrenciler bağımlılık ölçeklerinden özel okullardaki öğrencilere göre daha fazla puan almış olmalarına rağmen, okul türü ile yalnızca, okul türü ve sınıf karşılaştırıldığında oyun bağımlılığı anket skorları arasında ayrıca, cinsiyet ve okul türü karşılaştırıldığında akıllı telefon bağımlılığı ölçeği skorları arasında anlamlı bir ilişki bulunmuştur. Akıllı telefonun en sık kaç amaç için kullanıldığı değişkeni ile çalışılan tüm teknoloji bağımlılığı türleri ile anlamlı bir ilişki bulunmuştur. Bu çalışmanın sonuçları önemli çıkarımlar ortaya koymakta ve bağımlılık, akademik başarı, teknoloji kullanım tercihleri ve cinsiyet farklılıkları konuları ile ilişkili gelecek araştırmalar için güncel bir örnek oluşturmaktadır.

Anahtar Kelimeler: Sosyal Medya, Çevrimiçi Oyun, Akıllı Telefon Bağımlılığı, Ölçek, Genel Not Ortalaması



To My Family

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I met Prof. Dr. Ali Baykal during my thesis studies in Assist. Prof. Dr. Yavuz Samur's room and without even asking he was always giving valuable advices by just listening our discussions and long talks with Assist. Prof. Dr. Yavuz Samur. He provided the help and support that without him, this thesis wouldn't be finished. I would especially like to thank Prof. Dr. Ali Baykal for spending his time answering my questions and thinking about solutions to my problems and sharing his precious experiences with me. I also want to thank Assoc. Prof. Dr. Mehmet Barış Horzum for sharing his feedback with me on my thesis by being in my committee. I feel so honored and fortunate for knowing them.

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TABLE OF CONTENTS

ABSTRACT	v
Öz	vii
ACKNOWLEDGEMENTS	x
TABLE OF CONTENTS	xi
LIST OF TABLES	xiv
LIST OF FIGURES	xvi
LIST OF ABBREVIATIONS	xvii
CHAPTER 1: Introduction.....	1
1.1 Introduction	1
1.1 Statement of the Problem	2
1.2 Purpose of the Study.....	3
1.3 Research Questions	3
1.4 Significance of the Study	4
1.5 Definitions	5
Chapter 2: Literature Review	7
2.1 Introduction	7
2.2 Technology Addiction	7
2.3 Smartphone Addiction.....	8
2.4 Social Networking Sites (SNS) Addiction	11
2.5 Game Addiction	13
2.6 A Summary of the Literature Review	16
Chapter 3: Methodology	18
3.1 Introduction	18
3.2 Research Design	18
3.3 Target Population and Participants.....	19
3.4 Data Collection Procedures	21
3.4.1 Smartphone addiction scale.	21
3.4.2 Social networking sites addiction scale.	22
3.4.3 Game addiction scale.....	25

3.4.4 Demographics Survey.....	25
3.5 Data Analysis Procedure	26
3.6 Reliability and Validity	27
3.7 Limitations.....	28
Chapter 4: Results	29
4.1 Introduction	29
4.2 Research Question 1	29
4.3 Research Question 2	30
4.3.1 Gender versus grade on SAS scores.	31
4.3.2 Gender versus grade on SNS scores.	33
4.3.3 Gender versus grade on GAS scores.	34
4.4 Research Question 3	36
4.4.1 Gender versus school type on SAS scores.....	36
4.4.2 Gender versus school type on SNS scores.....	37
4.4.3 Gender Versus School Type on GAS Scores.	38
4.5 Research Question 4	40
4.5.1 School type versus grade on SAS scores.....	40
4.5.2 School type versus grade on SNS scores.....	42
4.5.3 School type versus grade on GAS scores.	43
4.6 Research Question 5	44
4.6.1 Number of purposes of smartphone use versus school type on SAS scores.	45
4.6.2 Number of purposes of smartphone use versus school type on SNS scores.	46
4.6.3 Number of purposes of smartphone use versus school type on GAS scores.	47
Chapter 5: Discussion and Conclusion	49
5.1 Introduction	49
5.2 Discussion of Findings for Research Questions.....	49
5.2.1 Discussion of findings for RQ:1.....	51
5.2.2 Discussion of findings for RQ:2.....	52
5.2.3 Discussion of findings for RQ:3.....	54

5.2.4 Discussion of findings for RQ:4.....	55
5.2.5 Discussion of findings for RQ:5.....	55
5.3 Recommendations and Suggestions for Further Research.....	56
References.....	58
APPENDICES.....	67
APPENDIX A.....	68
APPENDIX B.....	70
APPENDIX C.....	71
APPENDIX D.....	72
CURRICULUM VITA.....	73



LIST OF TABLES

Tables	
Table 1.....	19
<i>Demographics of the Sample (N=504)</i>	19
Table 2.....	24
<i>Pearson Correlations Between Each Item in SNS Addiction Scale</i>	24
Table 3.....	29
<i>Pearson Correlations Between GAS, SAS, SNS and GPA Scores</i>	29
Table 4.....	30
<i>Descriptives of Scale Scores by Gender, School Type and Grade</i>	30
Table 5.....	32
<i>Gender Versus Grade on SAS Scores</i>	32
Table 6.....	33
<i>Gender Versus Grade on SNS Scores</i>	33
Table 7.....	35
<i>Gender Versus Grade on GAS Scores</i>	35
Table 8.....	36
<i>Gender Versus School Type on SAS Scores</i>	36
Table 9.....	37
<i>Gender Versus School Type on SNS Scores</i>	37
Table 10.....	39
<i>Gender Versus School Type on GAS Scores</i>	39
Table 11.....	40
<i>School Type Versus Grade on SAS Scores</i>	40
Table 12.....	42
<i>School Type Versus Grade on SNS Scores</i>	42
Table 13.....	43
<i>School Type Versus Grade on GAS Scores</i>	43
Table 14.....	45
<i>Number of Purposes of Smartphone Use Versus School Type on SAS Scores</i>	45

Table 15.....	46
<i>Number of Purposes of Smartphone Use Versus School Type on SNS Scores</i>	<i>46</i>
Table 16.....	48
<i>Number of Purposes of Smartphone Use Versus School Type on GAS Scores.....</i>	<i>48</i>
Table 17.....	50
<i>Significance Levels of All Variables with Respect to Scale Scores.....</i>	<i>50</i>
Table 18.....	52
<i>Frequencies of GPA scores</i>	<i>52</i>



LIST OF FIGURES

Figures

Figure 1. SAS scores with respect to gender versus grade.	33
Figure 2. SNS scores with respect to gender versus grade.	34
Figure 3. GAS scores with respect to gender versus grade.....	35
Figure 4. SAS scores with respect to gender versus school type.....	37
Figure 5. SNS scores with respect to gender versus school type.....	38
Figure 6. GAS scores with respect to gender versus school type.	40
Figure 7. SAS scores with respect to school type versus grade.	41
Figure 8. SNS scores with respect to school type versus grade.	43
Figure 9. GAS scores with respect to school type versus grade.	44
Figure 10. SAS scores with respect to number of purposes of smartphone use versus school type.	46
Figure 11. SNS scores with respect to number of purposes of smartphone use versus school type.	47
Figure 12. GAS scores with respect to number of purposes of smartphone use versus school type.	48

LIST OF ABBREVIATIONS

ADHD	Attention Deficit Hyperactivity Disorder
AERA	American Educational Research Association
APA	American Psychiatric Association
ASAM	American Society of Addiction Medicine
DSM	Diagnostic and Statistical Manual of Mental Disorders
GAS	Game Addiction Scale
GPA	Grade Point Average
GWJ	Global Web Index
ICD	International Classification of Diseases
IGD	Internet Gaming Disorder
MIT	Massachusetts Institute of Technology
MPPU	Mobile Phone Problematic Use
SAS	Smartphone Addiction Scale
SNS	Social Networking Sites
TUİK	Turkish Statistical Institute
OCD	Obsessive Compulsive Disorder
WHO	World Health Organization

CHAPTER 1: Introduction

1.1 Introduction

After the internet revolution and with the invention of smartphones people nowadays are dependent on technology more than ever in the history of men. People rely on these tiny devices in their professional lives, private lives, for various purposes which are continuously evolving and growing with an increasing speed. Accessing internet through these devices almost anytime and anywhere someone prefers made them indispensable and a big necessity. With internet and the connection possibilities it presents, with social networking sites, blogs, online chat rooms, and other ever growing new methods of connection, smartphones started to be the number one device people prefer to use among other technological devices like desktop computers, laptops and tablets (Global Web Index (GWI), 2016).

From the information point of view, the internet has become an easily accessible online knowledge base which was at first bounded by wires and now, with wireless technologies and smartphones, this immensely large knowledge base provided by the internet has no limits. Any questions or any problems one faces initially consulted or debated in the internet by means of these technological devices. As a result, people started to rely on their smartphones more than their own memory (Barr, Pennycook, Stolz & Fugelsang, 2015). These devices have become like a first aid kit for everybody in any situation.

People exercise with them, they wake up and sleep with them. It will not be suitable to think of a device without the content and applications it provides. Social networking sites, games, messaging apps are among the most common contents. The question rather this interaction between a technology and human being is for its well-being or not is a deep subject. However, with smartphones engaging people's lives in various ways, researchers began to study the effects of smartphone dependency and problematic uses of smartphones (Drouin, Kaiser & Miller, 2015).

According to recent statistics by Global Web Index (GWI)'s quarterly report on the latest trends for smartphones, tablets, smart TVs and wearables for 4th quarter of 2016, smartphones are now the most commonly owned device among the online population by 91%. And the same report suggests that the most enthusiastic mobile users are between the ages of 16 and 34. And the percentage of smartphone owners

between the ages of 16 to 24 is 94%. And this age group also identifies smartphones as their most important device (GWI, 2016).

Since the age group that seems to engage most with mobile phones are the young population, most of whom would be students, it is an intriguing subject to study in educational research to investigate the usage of smartphone and some of its most commonly used applications and contents such as social networking sites and gaming with respect to their relationship with students' GPA scores, genders, their school types and grades.

1.1 Statement of the Problem

The technologies people started to use every day and carry with them everywhere have nearly become parts of their bodies. Students are no exception. They use these technologies very often and they use them everywhere. Sometimes schools and teachers encourage them to use these technologies to improve their learning and benefit from these devices. Nowadays it is hard to see a student without a smartphone in his/her hand. People also started to develop some disorders or problems they think that are caused by these technologies. Researchers started to dig deeper into the problematic use of these technologies more recently. Thus, it will be important to study what advantages or disadvantages do these devices bring to the students and to educational sciences.

In their studies, Işıklar, Şar and Durmuşçelebi (2013) suggested that problematic use of smartphones causes a low level of self-esteem, social problems and emotional conditions. While the excessive use of smartphones could be problematic, it will be wise to dig deeper and study the contents and applications that people, especially students in this case, use the most. For this reason, this current study also asks questions about SNS and game use or addiction.

The contents that are used most are studied deeply by many companies for sales concerns and interests. Statistics GWI Device quarterly report (2016) revealed that social networking dominates the activities of mobile users and over 80% internet users fall into the Networkers or Chatters categories. What comes after these categories is the Mobile Gamers Category by 61% use of mobile activity.

Looking at these numbers, social networking sites (SNS) and games seem to be the most commonly used applications or contents on smartphones. In another study by Jeong, Kim, Yum and Hwang (2015), it is stated that both SNS and game use are positive predictors of smartphone addiction and they also revealed another important

result which is that SNS use has a more positive effect on smartphone addiction than game use does. It is also concluded that more attention needs to be paid to the content type of smartphone addiction.

In recent years, psychologists and researchers started to study technological addictions and most recently, World Health Organization (WHO) and American Psychiatric Association (APA) also starting to realize the possible problems with online gaming. Both WHO and APA are studying on improving their classification and diagnostic manuals and revisions with more specific focus on online game addiction or gaming disorder. Even in some countries, problems appear to be so obvious that there are treatment facilities established by governments (Zastrow, 2017).

This study has taken this problem of smartphone, SNS and game use into consideration and tried to reveal a relationship between these variables and also students' GPA scores, gender, grade and school types. It is very important to introduce new findings on the use of these technologies or mediums which are becoming a big part of educational activities and instructional and educational design.

1.2 Purpose of the Study

Recent mobile technologies enable possibilities people only could dream of in the past. Almost everything in this age is evolving according to modern technological developments. For this reason, work and education environments are also changing. Some mobile technologies have become indispensable objects for most people. Among these irreplaceable technologies smartphones and their contents like SNS and gaming are maybe the most used ones.

The purpose of this study is to reveal if there is a relationship between smartphone addiction, SNS addiction, game addiction and students' GPA. The relationship between gender, grade, school type, purpose of smartphone use and technology addictions mentioned above are also studied. It is aimed to find out not only the relationship regarding students' GPA, gender, grade and school types but the inter-relationship between SNS, game and smartphone use and addiction which is not yet deeply covered in educational research.

1.3 Research Questions

This study is aimed to deal with questions regarding the relationship between smartphone addiction, SNS addiction, game addiction, gender, grade, school type

and students' GPA. The following are the main research questions to be answered with this study:

RQ1: What is the relationship between smartphone addiction, SNS addiction, game addiction and students' GPA scores?

RQ2: When cross tabulated with respect to gender versus grade is there any significant difference between the means of smartphone addiction scale (SAS), SNS addiction scale and game addiction scale (GAS) scores across groups?

RQ3: When cross tabulated with respect to gender versus school type is there any significant difference between the means of smartphone addiction scale (SAS), SNS addiction scale and game addiction scale (GAS) scores across groups?

RQ4: When cross tabulated with respect to school type versus grade is there any significant difference between the means of smartphone addiction scale (SAS), SNS addiction scale and game addiction scale (GAS) scores across groups?

RQ5: When cross tabulated with respect to number of purposes of smartphone use versus school type is there any significant difference between the means of smartphone addiction scale (SAS), SNS addiction scale and game addiction scale (GAS) scores across groups?

1.4 Significance of the Study

This study initially aims to reveal if there is any relationship between smartphone addiction, SNS addiction, game addiction and high-school students' GPA scores. Through the journey of technological advances of the 20th century, mankind is facing the most rapid change in technology progress. As Chandler (2013) discusses in his article on Massachusetts Institute of Technology (MIT) news web site, what Moore's law (Moore, 1965) suggests is that the number of components in integrated circuit chips will double every 18 months, meaning that rates of improvement will increase exponentially over time. Thus, people are exposed to newer technologies very frequently and they try to adopt to these technologies in their own professional and personal lives.

Smartphones are considered the most important and most commonly used of all technologies so far (GWI, 2016). The most popular contents for smartphone and internet users are networking and gaming. Another important fact is that the most enthusiastic mobile users are aged between 16 and 34. This drives the researcher to pursue one of the aims of this study which is to research on the relationship between these technologies and high-school students' GPA's.

Studies evolving around these subjects are very common these days but there aren't many related to the relationship between these technologies and students' GPA scores. Even though there are several studies that reveal the advantages of mobile technologies in classrooms from learning new languages and vocabulary to class engagement, (Ellaway, Fink, Graves, & Campbell, 2014; Philip, 2017; Sarıgöz, 2016) there are also studies on their potentially negative or problematic uses (Choliz, M., 2012; Drouin et al., 2015; Güzeller & Coşguner, 2012; Işıklar et al., 2013; Merlo, Stone, & Bibbey, 2013; Seo, Park, Kim & Park, 2016). This current study aims to find out not only the relationship between the uses of these technologies (under the term of addiction) but it also aims to reveal if there is any relation with students' GPA scores, gender, grade and school type. With these many subjects to study and correlate, it serves as a valuable example for future research.

The fact that the influence of smartphone addiction on students' success is studied with incorporation of its most commonly used contents like SNS and gaming also makes this study significant in educational research.

1.5 Definitions

Addiction: Griffiths (2005) states that any conceptualization of addiction has implications for some groups of people like addicts, their families, researchers and others. So, the needs of these groups may not be equally served by certain models. For this reason, the conceptualization of addiction must be flexible, accountable, integrative and reflexive. Earlier in the literature behavioral addictions compared against clinical criteria for established drug-ingested addictions. In this study, the term "addiction" is used in order to state a problematic behavior or a disorder that has negative effects in one's normal social and professional life.

Game: Schell states that (as cited in Samur, 2012) game is an interactive problem-solving activity that has goal(s), conflict(s), rule(s), challenge(s) to engage players. Also, Salen and Zimmerman (2004) defines game as "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome" (p.11). These two definitions describe the term "game or gaming" used in this study.

Social networking sites (SNS): Social networking sites are defined by Boyd and Ellison (2008) as:

...web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with

whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site (Boyd & Ellison, 2008, p.211).

In this study SNS refers to all internet sites and applications that serves in the previously defined manner and purpose.

Smartphone addiction: As Gökçearsan, Mumcu, Haşlaman and Çevik (2016) states that smartphone addiction is the excessive use of smartphones in a way that is difficult to control, and its influence extends to other areas of life in a negative way. This definition mainly represents the term that is used in this study as smartphone addiction.

SNS addiction: Andreassen (2015) defines SNS addiction as being overly concerned about SNSs, to be driven by a strong motivation to log on to or use SNSs, and to devote so much time and effort to SNSs that it impairs other social activities, studies/job, interpersonal relationships, and/or psychological health and well-being. In this study, the term SNS addiction refers to this definition.

Game addiction: World Health Organization (WHO) recently defined game addiction in its 11th revision of International Classification of Diseases (ICD-11) and mainly states that it is characterized by a pattern of persistent or recurrent gaming behavior which may be online or offline, manifested by impaired control over gaming, increasing priority given to gaming to the extent that gaming takes precedence over other life interests and daily activities and continuation or escalation of gaming despite negative consequences (WHO, 2017).

Chapter 2: Literature Review

2.1 Introduction

This chapter aims to provide a background and a context for the study. Technology addiction, smartphone addiction, social networking sites addiction and game addiction are the main topics from the context. Related studies on scale developments for assessing addictions on these same topics are also provided.

2.2 Technology Addiction

Before studying any kind of addiction, it is going to be accurate to state the definition of addiction in the literature. According to American Society of Addiction Medicine (ASAM, 2011):

Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors. (ASAM, Public Policy Statement: Short Definition of Addiction, para. 1)

Reviewing this definition, technology addiction stands in a different category of addiction. Griffiths (1995) defines technology addiction and states that it is a non-chemical, behavioral addiction which involves human-machine interaction which may occur passively like watching TV or it may appear actively like in machine gambling or computer gaming and usually contains inducing and reinforcing features which may contribute to the promotion of addictive tendencies (Widyanto & Griffiths, 2006).

First studies about addictions were only on substance addictions like alcohol or drugs. And they weren't called "addictions" necessarily, they were called "disorders". The word "addiction" first appeared in the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM) in 2013. And they created a category for substance-related and addictive disorders. The category included the first behavioral disorder that was gambling disorder (Zastrow, 2017).

There are different kinds of behavioral addictions which are defined as technological addictions in the literature like machine gambling addiction (Griffiths,

1995), internet addiction (Young, 1998), game addiction (Kuss & Griffiths, 2012; Lemmens, Valkenburg & Peter, 2009), social networking sites (SNS) addiction (Çam & İşbulan, 2012; Griffiths, 2013; Kuss & Griffiths, 2011; Wilson, Fornasier & White, 2010) and more recently smartphone addiction (Drouin et al., 2015; Hawi & Samaha, 2016; Gökçearsan et al., 2016; Martinotti et al., 2011; Salehan & Negahban, 2013).

Even the above-mentioned addictions exist in the literature very commonly and more recently started to be studied more deeply, the American Psychiatric Association (APA) doesn't include all these behavioral addictions in their fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (APA, 2013). However, it is stated in DSM-5 (2013) that while gambling disorder is the only addictive disorder included in DSM-5, internet gaming disorder will be included in Section III of the manual. And it is also mentioned that the addictive disorders mentioned in Section III with internet gaming addiction, more research is needed for these disorders to be considered as formal disorders (APA, DSM-5, 2013).

2.3 Smartphone Addiction

Smartphones have now become a very important part of our lives. Other than being just a communication tool, people use them in many different ways and they also help us in our social and professional lives in lots of different ways. People are starting to rely more on our smartphones than their own memories. It has almost become an extended mind (Barr et al., 2015). People use their smartphones in many everyday activities from organizing a meeting to looking for a place to have lunch with colleagues and with all these activities, involvement in social networking results in more dependency to smartphones (Billieux, Maurage, Lopez-Fernandez, Kuss, & Griffiths, 2015). As a result, researchers began to study the effects of mobile phone dependency and problematic uses of mobile phones (Drouin et al., 2015). In a research conducted by Kwon, Kim, Cho and Yang (2013a), the reason of smartphone addiction is attributed to the fast-developing media including internet and smartphones in advanced IT industries. They also add that the fast access to the internet and the fast distribution of smartphones caused a serious type of behavioral addiction.

This technology, which has become an ordinary item these days, allows a very native communication between people and made it effortless reaching important information that when people can't reach it they feel lost or missing out on

something so that they feel a kind of dependency to this technology which is further speculated as mobile phone or smartphone addiction (Fullwood, Quinn, Kaye, & Redding, 2017).

The problems caused by mobile phone dependency may vary in the condition they appear. In a study by Rothberg (2010), findings showed that repeated use of mobile phones in the vibration mode may mislead the users' perception that even if it's not vibrating, user senses a vibration, which is sometimes referred to as phantom vibration syndrome. The results showed that %68 of the participants experienced phantom vibrations. Also, Rosenberger (2015) discussed in the same subject and stated that user experience and perceptual habits were at play. He elaborated further by discussing that, "a user's body becomes so strongly trained to perceive the vibrating phone as an incoming call or text that similar sensations may be mistakenly perceived" (2015,129).

There are some previous studies on the effects of mobile phone dependency on high-school students' GPA. There are also some studies on effects of social media addiction to academic performance (Al-Menayes, 2015) and frequency of Mobile Phone Problematic Use (MPPU) (Lopez-Fernandez, Honrubia-Serrano, Freixa-Blanxart, & Gibson, 2013). In their study, Lopez-Fernandez et al. (2013) found out that 10% of their sample consisted of 1,026 secondary school students appeared to be problematic mobile phone users. And their study showed that a typical problematic user tended to be between the ages of 11 and 14 years old.

Drouin et al. (2015) discussed the MPPUs and searched literature to identify the reasons and they concluded that problematic mobile phone use appeared to be associated with a variety of negative psychological characteristics like anxiety, depression, neuroticism, poor sleep and stress. They also set new directions for recognition and treatment of this so-called addiction of mobile phone use (Drouin et al., 2015).

Lepp, Barkley and Karpinski (2014) found a negative relation between GPA and mobile phone use and positive relation between anxiety and mobile phone use. In their study Martinotti et al. (2011) also pointed out to take collaborative actions within communities and also emphasized that schools could play a key role in primary prevention of these problems.

A paper which is presented in American Educational Research Association (AERA) 2017 annual meeting also studied smartphone addiction and its relationship

with students' GPA with a similar but smaller sample consisting of N=118 high school students from Istanbul, Turkey. The researchers used a scale that was developed by Demirci, Orhan, Demirdas, Akpınar, and Sert (2014). The scale had a Cronbach's alpha result of 0.921 and was consisting of 7 sub factors which were, disturbing daily life and tolerance, withdrawal symptoms, positive anticipation, cyberspace-oriented, over use, social network dependence and physical symptoms. Even though the 7 sub factors had high internal consistency and reliability, the results from the study revealed no significant relationship with smartphone addiction and students' GPA scores (Ertas & Ozer, 2017).

Kwon et al. (2013b) developed a scale to assess smartphone addiction with a Cronbach's alpha result of 0.967. The sample size consisted of 197 individuals. The smartphone addiction scale (SAS) had six factors which were, daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance. It is also stated in the study that people with a low level of education, and students, are more likely to become addicted to smartphone use, and the participants' self-report smartphone addiction showed similarities with their SAS scores.

The scale developed by Kwon et al. (2013b) was used to develop a Turkish version of the scale by Demirci et al. (2014). The researchers revealed a seven-factor structure and factor loadings of items ranged from 0.349 to 0.824. The Cronbach's alpha coefficient was 0.947 for the scale. In the study, it is also pointed out that average scale scores were significantly higher in users with over 16 hours of smartphone use compared with users of smartphones for less than 4 hours ($p=0.01$). It is also mentioned that the highest scale score was in the game category and total scores for gaming were significantly higher than those for voice calling ($p=0.02$), short text messaging ($p=0.02$) and other categories ($p=0.04$).

A research conducted by Liu, Lin, Pan and Lin (2016) focuses on smartphone gaming and frequent use pattern associated with smartphone addiction. The main aim of this study was to investigate the risk factors of smartphone addiction in high-school students. The study, conducted on 689 adolescents (646 male), revealed that smartphone gaming and frequent smartphone use were associated with smartphone addiction (Liu et al., 2016).

In a recent study by Lopez-Fernandez et al., (2017) dependence on mobile phones of young adults was studied. There was a quite large sample consisting of 2775 young adults aged between 18-29 years. It was a cross-cultural empirical study,

containing ten European countries grouped in four different regions as North: Finland and UK; South: Spain and Italy; East: Hungary and Poland; West: France, Belgium, Germany, and Switzerland. The sample participated in an online survey that measured patterns of mobile phone use and mobile phone dependence via a Problematic Mobile Phone Use Questionnaire (PMPUQ). The results revealed the heaviest use of mobile phones from the Northern and Southern regions while perceived dependence was less prevalent in the Eastern region. Young adults from Belgium, UK and France had the highest dependence reported. Risk factors for increased PMPUQ scores were identified as being female, using mobile phones daily, engaging in social networking, playing games, shopping and viewing TV shows, chatting and messaging. It was concluded that dependence on mobile phone use is influenced by frequency and specific application use.

Another study on the dependence on smartphones by Bae (2017) studied the relationship between the type of smartphone use and smartphone dependence with a sample of N=2212 from middle and high-school students in Korea. The study revealed that the amount of smartphone use for information, entertainment seeking and gaming were all associated with smartphone dependence. Whereas, the amount of smartphone use for mobile SNS and instant messaging weren't related to smartphone dependence.

In Turkey, according to statistics provided by Turkish Statistical Institute (TUIK) (2015), by 2015, 7 out of every 10 houses in Turkey have an internet access. By April, 2015, %96.8 of households in Turkey have a mobile or smartphone. In the first 3 months of 2015, %74.4 of people who used internet, used their mobile or smartphones to access internet while they were outside their homes or offices.

2.4 Social Networking Sites (SNS) Addiction

With the current and ever evolving technologies of our time, enabling communication and sharing of information beyond most of their pioneers' imaginations, Social Networking Sites (SNS) have become communities where we express ourselves, share information and get informed, interact with friends or whomever we like from celebrities to policy leaders. According to the Europe Region Report of Global Web Index (GWI), (2016) people in Europe spend 1.40 hours each day on SNS. In the world, the time spent on SNS is almost 2 hours a day (GWI, 2016).

In his review on issues in SNS addiction, Griffiths (2013) reports that

excessive SNS use may become problematic especially in younger ages. Carbonell and Panova (2017) suggest that extensive use of SNS by many adolescents, when viewed in their developmental stage and sociocultural landscape, may be explained by SNS's ability to allow the management and enhancement of social capital, self-esteem, self-presentation and handling of certain issues characteristic of adolescents. Griffiths (2013) further elaborates that SNS addiction shares a common underlying etiological framework with other substance-related and behavioral addictions and also states that there is emerging evidence that a minority of social network users experience addiction like symptoms as a result of their excessive SNS use.

When it comes to relationship between SNS addiction and GPA, in a research by Al-Menayes (2015) the results show that the amount of time one spends using SNS effects academic performance in a negative way. It is also stated in the study that there was a significant relationship between time spent on social media and GPA scores of students ($\beta = -.085, p \leq .001$). The sample Al-Menayes studied on consisted of college students enrolled in mass communication courses at a large state university ($N=1327$). He further reports that, the more a person shows symptoms of addiction the worse their grades are (Al-Menayes, 2015).

On the other hand, a qualitative study which examined the impact of SNSs on students' academic performance via open-ended survey responses in the United States (US) and Europe revealed that both US and European students mentioned that SNSs have neither a positive nor a negative impact on their academic performance (Ozer, Karpinski and Kirschner, 2013). Besides, in the same study by Ozer et al. (2013), most US students discussed the negative impacts of SNS and the students think that SNS use is a distraction and time consuming and that is related to academic procrastination.

In another research conducted by Karpinski, Kirschner, Ozer, Mellott and Ochwo (2012) the results showed a negative relationship between SNS use and GPA ($r = -.61, p < .001$) in their US sample and in their European sample the results were smaller in magnitude but again were significant ($r = -.27, p < .001$). It is important to keep in mind that in their study Karpinski et al. (2012) collected the data from 590 undergraduate and 285 graduate students from the United States and Europe. In their study Kirschner and Karpinski (2010) stated that users log on to SNSs frequently during class and therefore damage their academic success.

An SNS scale is developed in is a study from Turkey by Arslan and Kırık

(2013). In their study, researchers developed a social networking status scale and they measured the validity and reliability of the scale. In their research with a sample of 650 social media users the confirmatory factor analysis showed three dimensions consisting of addiction, ethic and convergence. The scale has 65 items and is rated on a 5 point Likert scale.

A similar study on SNS addiction was conducted by Kırık, Arslan, Çetinkaya and Gül (2015) with a sample of 271 high-school students between the ages from 13 to 19 from Istanbul, Turkey. The study showed that SNS addiction level differs in different age groups and it revealed that the lowest level was in 14 years age group and the highest level of addiction was found on the 17 years age group. Another finding to be noted is that as daily frequency of visiting SNS increases SNS addiction level also increases dramatically (Kırık et al., 2015).

2.5 Game Addiction

Starting with gambling addiction, behavioral addictions in technology use have become a big concern in research. One of the biggest concerns in early days of internet age was the internet addiction. Young (1998) started studying internet addiction and saw similarities to people addicted to gambling, drugs or alcohol. Obsessive video game playing was studied by Keepers (1990). With the ever-advancing technologies in internet, communication and computers, games have started to play an important role in internet and technology use.

In the latest revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in 2013, American Psychiatric Association (APA) included internet gaming disorder in Section III of the manual and they state that researches listed in that section require further research in order to be considered as formal disorders. It is also mentioned that much of this research is coming from Asian countries.

The debate on Internet Gaming Disorder (IGD) being included in DSM-5 is currently an ongoing discussion among researchers and psychologists. The etiology, risk factor and treatment isn't yet taught to be definitive or certain. Many researchers agree on the fact that more research is clearly needed (Gentile et al., 2017). It is important to mention that while there is still an uncertainty on some issues regarding game addiction it should be recognized that gaming is an activity which millions of people in the world enjoy without any problems, it may be problematic in some cases and it is an example of disordered gaming (Griffiths, Kuss, Lopez-Fernandez, &

Pontes, 2017).

The World Health Organization (WHO) is currently working on their 11th revision of International Classification of Diseases (ICD-11) and “Gaming Disorder” has been identified as a behavioral disorder which is to be included in the next revision of ICD, under the classification of “Disorders due to addictive behaviors”. The description given in the draft version of the ICD-11 is as follows:

Gaming disorder is characterized by a pattern of persistent or recurrent gaming behavior (‘digital gaming’ or ‘video-gaming’), which may be online (i.e., over the internet) or offline, manifested by: 1) impaired control over gaming (e.g., onset, frequency, intensity, duration, termination, context); 2) increasing priority given to gaming to the extent that gaming takes precedence over other life interests and daily activities; and 3) continuation or escalation of gaming despite the occurrence of negative consequences. The behavior pattern is of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning. The pattern of gaming behavior may be continuous or episodic and recurrent. The gaming behavior and other features are normally evident over a period of at least 12 months in order for a diagnosis to be assigned, although the required duration may be shortened if all diagnostic requirements are met and symptoms are severe. (WHO, ICD-11 Beta Draft, 6C91Gaming disorder)

However, in our day, some governments, especially in Asian countries like China and South Korea, see excessive, compulsive online gaming as a serious adolescent public issue and established treatment facilities. In some extreme cases of Internet Gaming Disorder (IGD) it resulted in household violence by children against their parents who try to stop them from gaming (Zastrow, 2017).

An important study in game addiction has been done by Lemmens et al. (2009). The aim of this study is to develop and validate a scale to assess computer and video game addiction. It is discussed in the paper that game addiction as a term, even still not fully considered as a formal addiction or disorder, is the most commonly used term to define excessive, obsessive, compulsive and problematic use of video games (Lemmens et al., 2009). Seven pathological gambling criteria adopted from Diagnostic and Statistical Manual of Mental Disorders (DSM) which consists of salience, tolerance, mood modification, withdrawal, relapse, conflict and problems are tested for game addiction. The results of this study show that the

correlations among the seven criteria of game addiction can be entirely explained by one higher- order factor game addiction (Lemmens et al., 2009). The scale developed by using the diagnostic criteria for pathological gambling is administered and the results revealed that the validity and the reliability of the scale is high across the two samples.

Another study on game addiction by Kuss and Griffiths (2012) studies online gaming addiction in children and adolescents. According to the results of the literature search done by Kuss and Griffiths (2012) 18 studies are found to assess online gaming addiction by means of using adapted diagnostic criteria for pathological gambling and impulse control disorders. The research also revealed that six studies used an adopted version of Young's (1998) Internet Addiction Scale.

This literature review shows that other than different classification schemes adopted to assess gaming addiction, typically based on the official criteria for pathological gambling, substance dependence, or a combination of the two, parental reports and other miscellaneous criteria and assessment instruments are also used (Kuss & Griffiths, 2012). Further evidence stated by Kuss and Griffiths (2012) suggests that problematic online gaming be conceptualized as a behavioral addiction rather than a disorder of impulse control.

According to a recent study by Andreassen et al. (2016), addictive use of video games is positively associated with being male and single, lower age, attention deficit hyperactivity disorder (ADHD), obsessive-compulsive disorder (OCD), anxiety, and lower levels of depression. The sample studied assessed by a survey published in five different national Norwegian newspapers providing an open-access link to a Web based cross-sectional survey focusing on several addictive behaviors (N = 41,970). After removing respondents who only either clicked the link or given limited number of answers, a total number of 23,533 individuals completed the survey.

Another study conducted by Aydın and Horzum (2015) investigates the predictive variables of computer game addiction level of teachers. The sample consisted of 264 teachers with 164 (%62.1) male and 100 (37,9) female from Istanbul, Turkey. To assess game addiction level, a computer game addiction scale developed by Ayas, Çakır and Horzum (2011) is administered to the sample. The results revealed that time spent on computer games is a significant predictor of computer game addiction and two variables are positively related with each other. It

is also stated that neurotic and male teachers have higher computer game addiction scores than the females. The results also show that there is no meaningful relationship between game addiction and personality structure and age differences (Aydın & Horzum, 2015).

A research by Wittek et al. (2015) investigates prevalence rates and predictors of video game addiction in a sample of gamers from Norway (N=3389). The study revealed 1.4 % addicted gamers, 7.3 % problem gamers, 3.9 % engaged gamers, and 87.4 % normal gamers and being male and being young are positively associated with addicted-, problem-, and engaged gamers. It is also stated in the paper that game addiction is independent of level of education, but the results also suggest that problem- and engaged gamers have a lower degree of education. It is speculated that gamers with high level of education put more time and effort into their careers than gamers with a lower education thus they spend less time on games (Wittek et al., 2015).

Another recent study by Chen and Leung (2015) studied the relation of psychological factors including perceived gratifications, loneliness, leisure boredom, and self-control with game use and addiction. Their research sample consisted of 409 respondents from China. The results revealed that loneliness and self-control were significant predictors of mobile social game addiction, whereas leisure boredom was linked to the intensity of game use. An intriguing result was that loneliness was significantly linked to mobile social game addiction but was unrelated to the level of mobile social game use and they concluded that it was unclear if loneliness is the antecedent or the consequence of excessive social mobile game use. They further speculated two opposing scenarios that excessive mobile social game use causes loneliness or lonely individuals are more likely to use mobile social games excessively.

2.6 A Summary of the Literature Review

In this chapter, literature on technological addictions including smartphone, SNS and gaming are reviewed. Initially, to be able to clarify the terminology that recently became a very chaotic debate on behavioral addictions especially internet and gaming addiction, a brief definition of the term addiction is given (ASAM, 2011).

After a review on technology addiction, naming main differences from substance addiction (Widyanto & Griffiths, 2006) the literature review follows the

path from the first studies of gambling disorder to the more recent internet and gaming disorders (Griffiths, 1995; Kuss & Griffiths, 2012; Zastrow, 2017).

Studies on specific addiction types are presented starting with smartphone addiction. The reasons for becoming dependent to smartphones and the effects they have on human life is reviewed (Barr et al., 2015; Billieux et al., 2015; Drouin et al., 2015; Kwon et al., 2013a;) The problems arise from smartphone dependency or addiction vary from phantom vibrations (Rosenberger, 2015; Rothberg, 2010;) to effecting students' GPA scores (Al-Menayes, 2015; Lepp et al., 2014; Lopez-Fernandez et al., 2013). Also, scales developed to assess smartphone addiction (Demirci et al., 2014; Kwon et al., 2013a,b;) are reviewed in this section.

The next addiction type reviewed is the social networking sites (SNS) addiction. With recent developments in mobile technologies, social networking sites became one of the most time spent online activities (GWI, 2016). The problems caused by excessive SNS use are reviewed with examples from previous studies (Carbonell & Panova, 2017; Griffiths, 2013). And the relationship between SNS addiction and GPA or students' academic performance is also presented (Al-Menayes, 2015; Ozer et al., 2013; Karpinski et al., 2012). There are also studies on scale developments to assess SNS use (Arslan & Kırık, 2013; Kırık et al., 2015).

Game addiction is the last technology addiction reviewed in this chapter. After a brief review on history of behavioral addictions from Keepers (1990) and Young (1998) to the present state where gaming addiction is becoming widely recognized by world wide health and psychology institutions like WHO and APA.

Excessive gaming or gaming disorder or more recently gaming addiction is becoming a huge problem where governments start take actions (Zastrow, 2017) and there is some research associating this disorder with attention-deficit/hyperactivity disorder (ADHD) and also obsessive-compulsive disorder (OCD) (Andreassen et al., 2016). the relationship with gaming disorder and education is also presented (Wittek et al., 2015). Predictors of gaming disorder or addiction and different classification schemes and scale developments to assess gaming addiction also presented from the literature (Kuss & Griffiths, 2012; Lemmens et al., 2009; Aydın & Horzum, 2015; Ayas et al., 2011).

Chapter 3: Methodology

3.1 Introduction

In this chapter, the design and methodology of the study is explained. The chapter gives thorough information about the methodology of the research, the methods used to collect data, scales used and the sample. There is also information about the SNS scale developed by the researcher using the Delphi technique. Detailed information about other scales used to assess game addiction and smartphone addiction are also included in this chapter.

3.2 Research Design

This study is a quantitative study following a correlational model mostly focusing on correlations between variables. To be able to assess smartphone addiction, SNS addiction and game addiction, three different scales are used in the administered survey. For smartphone addiction and game addiction, scales previously tested in the literature are used and for SNS addiction, the researcher developed a new scale with the Delphi technique and the reliability and validity of the scale is tested and results are provided in the data collection part. There are also questions to reveal some demographic information about the students like their ages, gender, school levels, and smartphone use. Data is analyzed using SPSS and Microsoft Excel softwares.

With the help of IBM's SPSS application, descriptive statistics are used to examine the demographic data and to find out the descriptive statistics of variables. Pearson correlation which measures the straight-line relationship is the most commonly used correlation and it is used to examine the relationship between the variables stated in the research questions. Also, two-way analysis of variance (ANOVA) without repeated measures is used to reveal any differences between studied variables and addiction scale scores. The reason for this method to be chosen over t test analysis is that t tests compare only two population means whereas analysis of variance (ANOVA) allows researchers to compare more than two variables. In this study, there are more than two variables to compare and this is the reason for this method to be chosen (Gravetter & Wallnau, 2014).

Relationship between smartphone addiction, SNS addiction, game addiction and students' GPA is examined to be able to see if new technologies and overusing

or addiction with these technologies have any relationship with each other and to what extent. Students' GPA scores are another variable that is studied in order to investigate a relationship with addiction of these technologies. Other variables like, gender, school type, grade, purpose of smartphone use are also studied and correlation between these variables are examined.

3.3 Target Population and Participants

The sample was chosen using convenience sampling. The researcher contacted available colleagues and shared the link of the survey for them to administer it to their available students. To be able to gather more information about the demographic characteristics of the sample (N=504), descriptive statistics was conducted to get the frequencies of information such as gender, school type, grade, smartphone, computer and game console ownership. A detailed information was provided in Table 1.

Table 1
Demographics of the Sample (N=504)

Characteristics		Frequency	Percent
Gender	Girls	211	41.90%
	Boys	293	58.10%
School Type	Private School	316	62.70%
	State School	188	37.30%
Grade	Grade 9	178	35.30%
	Grade 10	197	39.10%
	Grade 11	71	14.10%
	Grade 12	58	11.50%
*Possession	Smartphone	491	97.40%
	Computer	456	90.50%
	Game Console	200	39.70%

Table 1 (cont.d)

Characteristics		Frequency	Percent
*Using smartphone for...	Social Media	405	80.20%
	Instant Messaging	384	76.04%
	Talking on the phone	318	62.97%
	Games	183	36.24%
*SNSs	WhatsApp	480	95.05%
	Instagram	436	86.34%
	Snapchat	361	71.49%
	Facebook	292	57.82%
	Twitter	169	33.47%

* Multiple choice items.

As seen in Table 1, the sample consists of 211 girls (%41.9) and 293 boys (%58.1). There are 316 students (%62.7) from private schools and 188 (%37.3) students from state schools. Most of the students (%74.4) are studying in 9th (%35.3) and 10th (%39.1) grades. %97.4 of them reported that they have a smartphone, %90.5 has a computer and only %39.7 of them possess a game console. 80% of the students mentioned using their smartphones mostly to check their social media accounts, 76% for instant messaging and only 36% mentioned using it to play games. When it comes to social networking and instant messaging, the data revealed that 95% of the students use WhatsApp for instant messaging, 86% use Instagram, 71% use Snapchat. 58% of the students have Facebook and 33% of them have Twitter accounts. Majority of the sample (N=298, 59,12%) is from the city of Istanbul.

It is also valuable to mention that the sample has no dependency according to their grade levels and genders. Thus, there is a homogeneity regarding the gender and the grades of the students and the sample appears to be robust.

The survey is prepared as not to collect any personal data from the sample. No names, addresses, phone numbers or any personal information which may jeopardize

the students' privacy is asked from the student in the survey.

3.4 Data Collection Procedures

Since this study is a quantitative study data regarding smartphone, SNS and game use need to be collected in order to analyze and compare variables. In order to collect data, a survey was planned to be prepared and distributed to the sample in high schools around Turkey. To be able to reach a larger sample it was decided that an online survey would best serve the purpose. So, using a survey client web site, a survey was prepared. The survey includes questions about the characteristics of the sample like their gender, birth year and other questions regarding technology use. There are also scales included in the survey in order to assess addictive behavior on smartphone, SNS and gaming. There is detailed information about the scales chosen and prepared for the survey in the following section. (See Appendices)

After the survey was prepared the link to the survey was distributed to colleagues and to some school principles that could be reached, and they were asked to share the link of the survey with students who were willing to participate in the study. In almost two months all the data was collected.

It is important to state that the survey administered to the sample didn't include any questions regarding students' personal information like their names, addresses or phone numbers and such. It was at utmost importance for the researcher not to collect any personal information and also not to violate any personal rights. A proper permission from the schools' managements was asked from each school to be able to keep the study legitimate.

3.4.1 Smartphone addiction scale. The short form of the smartphone addiction scale (SAS) developed by Kwon et al. (2013a) was administered to a sample of 367 students from a university in Turkey in a study by Noyan, Darçın, Nurmedov, Yılmaz and Dilbaz (2015). The scale translated into Turkish independently by two individuals working in the psychiatry field whose second language were English. After the translation, four psychiatrists and four psychologists chose the best translation. After translate/re-translate procedure the final scale was administered to 20 volunteers for the scale to be evaluated in terms of its understandability.

The scale adopted from Kwon et al. (2013a) by Noyan et al. (2015) is chosen for this study to evaluate smartphone addiction. The short form of SAS has a Cronbach's alpha result of 0.867 and it has a high reliability with a reliability

coefficient result of 0.926. The scale has ten items and is rated on a 6-point Likert scale, with 1 = “strongly disagree” and 6 = “strongly agree”. The scale only has one factor and has no subscales. Scale points change between 10 and 60. The more points one has from the scale the more he/she is considered to have a higher risk of addiction. (See Appendix C)

One of the reasons this scale is chosen to be used is that it is a reliable and valid scale which is in Turkish, thus can be used in this study with a sample consisting of students whose native language is Turkish. After reviewing some similar scales, the questions in this scale are found appropriate for the sample regarding the age and socio-cultural backgrounds of the sample since both samples, from Noyan et al., (2015) and from this study are mostly from the same city and same country.

3.4.2 Social networking sites addiction scale. After a review of literature on SNS addiction and studying the instruments used in the literature it is decided to develop a SNS addiction scale for this study. There are many examples of scales used to assess SNS addiction (Arslan & Kırık, 2013; Çam, İşbulan, 2012; Esgi, 2016; Kırık et al., 2015). After looking at these scales and reviewing them, no present scale is found useful for this study. There were some questions that are not found appropriate for the sample age and many if not all scales were in English and mostly prepared for specific social networking sites or applications. Since this study aims to raise questions on SNS in general those scales are not found suitable. To be able to do a research with reliable and valid sources and methods it is decided for the best to prepare an SNS scale for this specific study.

The Delphi method is chosen for developing the SNS addiction scale questionnaire. The main reason for this method to be chosen is that it is a broadly used and accepted method for achieving convergence of opinion concerning real-world knowledge solicited from experts within certain topic areas (Hsu & Sandford, 2007). With basic characteristics like subject anonymity, controlled feedback Delphi technique disables difficulties seen in face-to-face discussions when pooling individuals' opinions more accurately and facilitates the problem-solving process (Dalkey, 1969). Subject anonymity can reduce the effects of dominant individuals when using group-based processes used to collect information and controlled feedback is designed to also reduce the effect of noise (Dalkey, 1969; Hsu & Sandford, 2007). According to Dalkey (1969) noise is the communication which both

distorts the data and deals with group or individual interests rather than focusing on problem solving. With these aspects, Delphi technique was considered appropriate in collecting and pooling opinions for deciding the items on the SNS addiction scale (Dalkey, 1969; Hsu & Sandford, 2007).

Researcher first prepared a survey consisting of 4 open ended questions about SNS use and other questions regarding the demographic information of the sample. A sample of 64 students were non-randomly chosen from a high-school in Istanbul region and the link of the survey was shared with them. The 4 open ended questions were asked: a) Why do you use SNS? Write down 3 most important reasons. b) What positive results do you get using SNS? Write down 3 most important results. c) What negative results do you get using SNS? Write down 3 most important results. d) Write down 3 most common behaviors you observe on people you think are SNS addicts.

Some answers given to the first open ended question “Why do you use SNS?” are for news, information, pass time, for fun, to know what others doing, get in touch with my friends. For the second open ended question “What positive results do you get using SNS?”, the answers are like, learning new information, not missing out what’s happening around, getting latest news fast, makes me feel good, having fun, passing time. For the third open ended question, “What negative results do you get using SNS?”, some answers given are, waste of time, can’t see the people around, it prevents you from talking to people face to face, makes me asocial, it is addictive, it usually causes headaches, eye aches, arguments online with people you don’t know, there is very bad, harmful content. And, for the fourth open ended question, “Write down 3 most common behaviors you observe on people you think are SNS addicts.”, some answers given are, they can’t be without their phones, failure, they don’t communicate face to face, quick tempered, careless, always staring at their smartphones, they don’t talk, they are aggressive, when their phones aren’t around they become uncomfortable, introverted, withdrawn.

Deducing from the answers given to these question, 22 scale questions were created. These questions were sent to 8 experts from education field to be analyzed and further investigated. After a session of feedback and adjustments 16 items were pooled out and the SNS addiction scale was created. After the survey administered the scale inter-item correlation is analyzed and the results are shown in Table 2.

Table 2
Pearson Correlations Between Each Item in SNS Addiction Scale

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1- While I'm using social media, I pay less attention who or what is around me.	-															
2- I feel bad if I don't share anything for a long time in social media.	.469**	-														
3- I feel happy while I'm using social media.	.528**	.535**	-													
4- I check whether my posts are liked or not.	.446**	.502**	.639**	-												
5- I exceed my data plan because of social media.	.447**	.414**	.478**	.413**	-											
6- I prefer spending my time on social media than with people around me.	.538**	.426**	.412**	.304**	.451**	-										
7- I lose track of time while I'm using social media.	.588**	.377**	.540**	.512**	.458**	.467**	-									
8- I prefer talking to people on social media than people around me.	.370**	.386**	.299**	.224**	.269**	.557**	.326**	-								
9- I experience physical problems (pain, fatigue, sleep problems etc.) because of social media.	.493**	.461**	.376**	.323**	.394**	.456**	.451**	.411**	-							
10- When I don't use social media I feel departed from the world.	.531**	.492**	.448**	.351**	.443**	.521**	.475**	.381**	.497**	-						
11- I think social media has a negative influence on my success (at school, work, etc.).	.486**	.337**	.350**	.333**	.386**	.423**	.577**	.318**	.471**	.493**	-					
12- I have difficulty concentrating on my work because of social media.	.494**	.396**	.358**	.341**	.411**	.476**	.547**	.393**	.481**	.541**	.764**	-				
13- I have difficulty fulfilling my responsibilities because of social media.	.561**	.447**	.390**	.388**	.461**	.499**	.557**	.348**	.554**	.563**	.723**	.775**	-			
14- Even if I wish to reduce my social media use, I can't.	.550**	.401**	.455**	.369**	.395**	.538**	.555**	.437**	.464**	.500**	.660**	.660**	.693**	-		
15- I think I spend time on social media more than I should.	.536**	.451**	.490**	.449**	.439**	.408**	.626**	.327**	.535**	.511**	.654**	.599**	.651**	.664**	-	
16- I particularly follow what some people do on social media.	.448**	.406**	.552**	.510**	.408**	.356**	.504**	.303**	.361**	.393**	.403**	.413**	.424**	.399**	.516**	-

As can be seen from the Table 2, all the items appeared to have high level of correlation between each other. The reliability statistics revealed a high Cronbach's alpha result of 0.93. (See Appendix D)

3.4.3 Game addiction scale. In a study by Baysak, Kaya, Dalgar and Candansayar (2016), a sample of 726 players of an online game were evaluated by a game addiction scale originally developed by Lemmens et al. (2009). The scale was first translated by Baysak et al. (2016) and then translated back to English by a professional translator to be compared with the original scale. The scale is composed of 21 items with and there are 7 subscales consisting of salience, tolerance, mood modification, relapse, withdrawal, conflict, and problems. The Game Addiction Scale (GAS) has good internal consistency with all 21 items with a Cronbach's alpha result of 0.96.

There is also a short form of the GAS and it is composed of 7 items. The item which had the highest coefficient for each criterion in the first analysis Baysak et al. (2016) did was considered as the item of the shorter version of the scale. After modifications were done to the first and second items of the short form of GAS the fitness of the scale was highly improved ($\Delta\chi^2 (\Delta df=1) = 77.34, p<0.001$). Internal consistency of the scale was quite high with a Cronbach's alpha of 0.88.

The short form of GAS developed by Baysak et al. (2016) is used in this current study to evaluate game addiction. The reason this scale is chosen to be used is that it is a reliable and valid scale which is in Turkish, thus can be used in this study with a sample consisting of students whose native language is Turkish. (See Appendix B)

3.4.4 Demographics Survey. The survey administered to the sample is a web-based survey prepared by the researcher via surveey.com web site. The survey not only includes the scales to assess variable technology addictions but also there are demographic questions about technology use, gender, age, city, school type, family income, grade, brothers and sisters, GPA, smartphone ownership, computer ownership and game console ownership, internet data plan, how often one exceeds the data plan and similar other questions. (See Appendix A)

It should be noted that the GPA scores obtained from the survey are the scores stated by the students, thus they represent what the students think their GPA is at that moment or is going to be at the end of that term.

3.5 Data Analysis Procedure

This section gives information about statistical analysis and procedures that are used for each of the research question studied in this research. For all analysis carried out, mainly IBM's SPSS and Microsoft Excel applications were used.

The first research question (RQ1: What is the relationship between smartphone addiction, SNS addiction, game addiction and students' GPA scores?) is analyzed using Pearson correlations. Total scores of each addiction scale (smartphone, SNS, game) and the GPA scores of students are correlated to see if there is a relationship between them. All the scales used are highly reliable and valid according to the Cronbach alpha results calculated ($p < .005$). The smartphone addiction scale (SAS) has 10 items and is measured with a 6 point Likert scale. SNS addiction scale has 16 items with a 9 point Likert scale. Game addiction scale (GAS) has 7 items and it is measured with a 5 point Likert scale. Students' GPA score are collected with self-report via the survey.

Regarding the second research question (RQ2: When cross tabulated with respect to gender versus grade is there any significant difference between the means of SAS, SNS addiction scale and GAS scores across groups?), to see if there is a significant difference between SAS, SNS addiction scale and GAS scores with respect to gender versus grade, a two-way analysis of variance (ANOVA) without repeated measures is conducted. This method is chosen to be able to see if grade or gender has any effect on addiction levels. The sample consists of 211 females (41.86%) and 293 (58.13%) males with a total number of $N=504$ students. There were 178 (35.30%) 9th grade, 197 (39.10%) 10th grade, 71(14.10%) 11th grade and 58 (11.50%) 12th grade students in the total ($N=504$) sample.

The third research question (RQ3: When cross tabulated with respect to gender versus school type is there any significant difference between the means of SAS, SNS addiction scale and GAS scores across groups?) is again analyzed by two-way ANOVA without repeated measures. The two groups identified under the name of school type are 1: Private School and 2: State School. The sample consists of 316 (62.70%) private school students and 188 (37.30%) state school students. The differences between scale scores with respect to gender versus school type are compared.

To be able to answer the fourth research question (RQ4: When cross tabulated with respect to school type versus grade is there any significant difference between

the means of SAS, SNS addiction scale and GAS scores across groups?) relationship between variables are analyzed using two-way ANOVA without repeated measures. This time the data is analyzed to reveal if there is any effect on scale scores with respect to school type versus gender. The demographic information about the school types and gender can be seen in Table 2.

The fifth research question (RQ5: When cross tabulated with respect to number of purposes of smartphone use versus school type is there any significant difference between the means of SAS, SNS addiction scale and GAS scores across groups?) is answered analyzing the relationship between variables using two-way analysis of variance. The data is analyzed to reveal if there is any effect on scale scores with respect to school type versus the number of purposes of smartphone use. The school types analyzed are 1: Private School (n = 316, %62,70) and 2: State School (n = 188, %37,30). The data for number of purposes of smartphone use are collected by the survey asking a multiple selection question which is “For what purposes do you use your smartphone more frequently?” Available five selections are, talking on the phone, instant messaging, game, social media and other.

3.6 Reliability and Validity

There is a survey administered to the sample which contains 3 scales for 3 different types of technological addictions (smartphone, SNS, and game) and it also includes questions about demographic characteristics of the sample studied. For the reliability of the scales, the results revealed high scores obtained from SPSS. The short form of SAS was developed by Noyan et al. (2015) and it had a Cronbach’s alpha result of 0.867. In this study, the scale has a higher Cronbach’s alpha result of 0.904. The short form of GAS which was developed by Baysak et al. (2016) is used in this study had a Cronbach’s alpha of 0.88. In the current study, the Cronbach’s alpha of the GAS used is measured 0.871. The SNS addiction scale which is developed by the researcher of this current study has a high Cronbach’s alpha result of 0.932.

The two scales used for smartphone addiction and game addiction have proved reliability and validity results as can be seen in literature. The reliability of the SNS scale developed by the researcher proved to be high and in the development process, it was sent to three different scholars who are considered experts in their fields for a final review and with their provided feedbacks and reviews the items in the scale was developed. Thus, the scale developed by the researcher is proved to be valid by the

help of expert scholars from the fields of educational sciences and educational technology.

3.7 Limitations

There are some weaknesses in the study that should be considered as limitations. One of them is the GPA scores collected via the survey. GPA scores are acquired from students' self-report. Thus, they represent not the official GPA scores of students but what the students stated at the time of completing the survey. The survey was spread to many different schools in different cities. There was no communication with the students taking the survey and no personal information was also shared by them. Collecting registered GPA scores of all students is a very difficult task considering that the survey is distributed to various schools around the country and there was no information related to the students' school rather than his or her grade and type of school he or she attends.

Another limitation is honesty and originality of the answers the students gave to the survey questions. This was an internet-based survey, so it is not certain if the student doing the survey was well aware of the intend of the study although there is an introduction in the beginning of the survey that explains the aim of the study briefly. And there is no proof that the answers students gave was their honest and true answers or not.

Another important point that should be stated is that this current study is not a longitudinal study. Thus, all the results pointed out should be considered to be valid for the time the study took place. For a more rigid interpretation of the results a longitudinal research would serve better and robust results.

Since the research conducted is a quantitative research, the data collected and the analysis of the data is the only source of information. Also, most questions are answered with correlation studies and inferences about casual relationships between variables should be analyzed with caution. Furthermore, it is also important to state that level of technology addiction mentioned and studied in this research is only measured using scales and there is no biological data collected to suggest any addiction.

The results of the study might have a low level of generalizability for all high-school students in Turkey. Although there are 504 students in the study, which might be considered as a strength, there may be cultural and social differences between the students who participated in the study and the universe they are thought to represent.

Chapter 4: Results

4.1 Introduction

This chapter introduces the results in detail regarding all research questions studied. All results revealed from the analysis are presented in tables and figures.

4.2 Research Question 1

The first research question of the study asks if there are any relationships between smartphone addiction, SNS addiction, game addiction and students' GPA scores. To be able to assess smartphone addiction the short form of SAS addiction scale by Noyan et al. (2015) was used. The scale has 10 items and has a high level of reliability ($\alpha=0.90$). SNS addiction was measured by SNS addiction scale developed by the researcher of this study. The scale had a high level of reliability ($\alpha=0.93$) and correlations within the items were all significant ($p<.05$). Game addiction was measured using the short form of GAS developed by Baysak et al. (2016) with 7 items ($\alpha=0.88$).

The relationship between smartphone addiction, SNS addiction, game addiction and GPA was measured using Pearson correlations and the results are shown in Table 3.

Table 3
Pearson Correlations Between GAS, SAS, SNS and GPA Scores

Variables	1	2	3	4
(1) GAS Total	-			
(2) SAS Total	.120**	-		
(3) SNS Total	.186**	.763**	-	
(4) GPA Score	-.055	.016	.013	-

* $p<.05$.

** $p<.001$.

Smartphone, SNS and game addiction were significantly correlated ($p<.05$). The lowest correlation is between game and smartphone addiction with $r = .12$ and the highest is between smartphone and SNS addiction with a correlation of $r = .76$

($p < .05$).

Regarding the relationship between smartphone, SNS, and game addiction and students' GPA scores, there is no significant correlation between GPA scores and with any of the studied addiction types ($p < .05$). The correlations between each variable can be seen in Table 3.

4.3 Research Question 2

For the second research question, a two-way ANNOVA without repeated measures is conducted to be able to examine the differences between smartphone, SNS and game addiction scale scores with respect to gender (boys and girls) versus grade (9th, 10th, 11th and 12th grades). Table 4 shows the demographic statistics of all three scales' scores by gender, school type and grade.

Table 4
Descriptives of Scale Scores by Gender, School Type and Grade.

Scales			M	SD
SAS	Gender	Girls	32.84	12.33
		Boys	25.37	10.32
	School type	Private	27.75	11.83
		State	29.76	11.64
	Grade	9.grade	29.9	12.64
		10.grade	28.69	11.22
		11.grade	24.86	10.42
		12.grade	28	11.87

Table 4 (cont.d)

Scales			M	SD
SNS	Gender	Girls	63.09	30.89
		Boys	48.47	25.69
	School type	Private	53.28	29.29
		State	56.78	28.1
	Grade	9.grade	58.29	31.07
		10.grade	54.99	28.58
		11.grade	45.89	25.18
		12.grade	52.52	25.08
GAS	Gender	Girls	10.21	4.73
		Boys	15.5	6.06
	School type	Private	12.84	6.27
		State	14.03	5.82
	Grade	9.grade	14.84	6.15
		10.grade	12.57	6.02
		11.grade	12.72	6.35
		12.grade	11.62	5.19

4.3.1 Gender versus grade on SAS scores. The differences with SAS scores and gender versus grade are shown in Table 5. Figure 1 shows the line graph of the two variables (gender versus grade) and their relationship with SAS scores.

Table 5
Gender Versus Grade on SAS Scores

Source	SS	<i>df</i>	MS	F	<i>p</i>
Corrected Model	8200.776a	4	2050.19	16.58	.000
Gender	6860.23	1	6860.23	55.48	.000
Grade	1340.55	3	446.85	3.61	.013
Error	61703.22	499	123.65		
Total	479164.00	504			
Corrected Total	69903.99	503			

a R Squared = .117 (Adjusted R Squared = .110)

The two-way ANOVA results shows that both gender and grade have a significant effect on SAS scores ($p < .05$). The main effect of gender yielded an F ratio of $(1, 499) = 55.48$, $p < .05$, such that the SAS scores were higher in girls ($M = 32.84$, $SD = 12.33$) than in boys ($M = 25.37$, $SD = 10.32$). The main effect for grade yielded an F ratio of $(3, 499) = 3.61$, $p < .05$ indicating a significant effect on SAS scores with highest in 9. graders ($M = 29.90$, $SD = 12.64$) and lowest in 11. graders ($M = 24.86$, $SD = 10.42$).

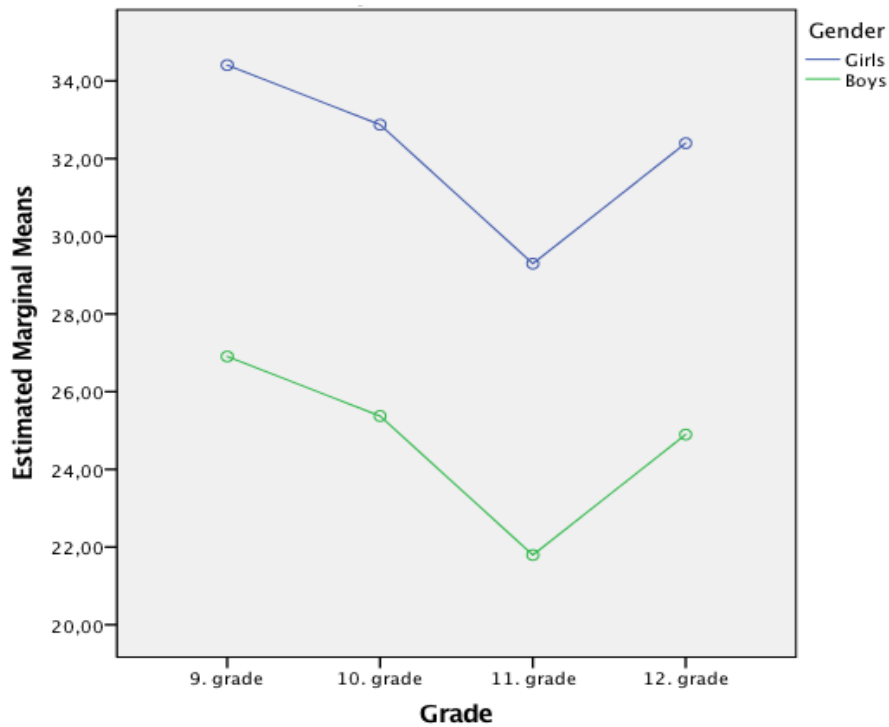


Figure 1. SAS scores with respect to gender versus grade.

4.3.2 Gender versus grade on SNS scores. The differences with SNS addiction scale scores and gender versus grade are shown in Table 6. Figure 2 shows the line graph of the two variables (gender versus grade) and their relationship with SNS scores.

Table 6
Gender Versus Grade on SNS Scores

Source	SS	df	MS	F	p
Corrected Model	34466.472a	4	8616.62	11.17	.000
Gender	26210.75	1	26210.75	33.99	.000
Grade	8255.72	3	2751.91	3.57	.014
Error	384819.69	499	771.18		
Total	1921092.00	504			
Corrected Total	419286.16	503			

a R Squared = .082 (Adjusted R Squared = .075)

For the SNS addiction scale scores, the two-way ANOVA results revealed that again, both gender and grade has significant effects on SNS addiction scale scores ($p < .05$). The main effect of gender yielded an F ratio of $(1,499) = 33.99$, $p < .05$. Analysis also revealed that SNS addiction scale scores were higher in girls ($M = 63.09$, $SD = 30.89$) than boys ($M = 48.47$, $SD = 25.69$). The main effect of grade yielded an F ratio of $(3,499) = 3.57$, $p < .05$. SNS scale scores were highest in 9th graders ($M = 58.29$, $SD = 31.07$) and lowest in 11th graders ($M = 45.89$, $SD = 25.18$) revealing grade having a significant effect on SNS scale scores.

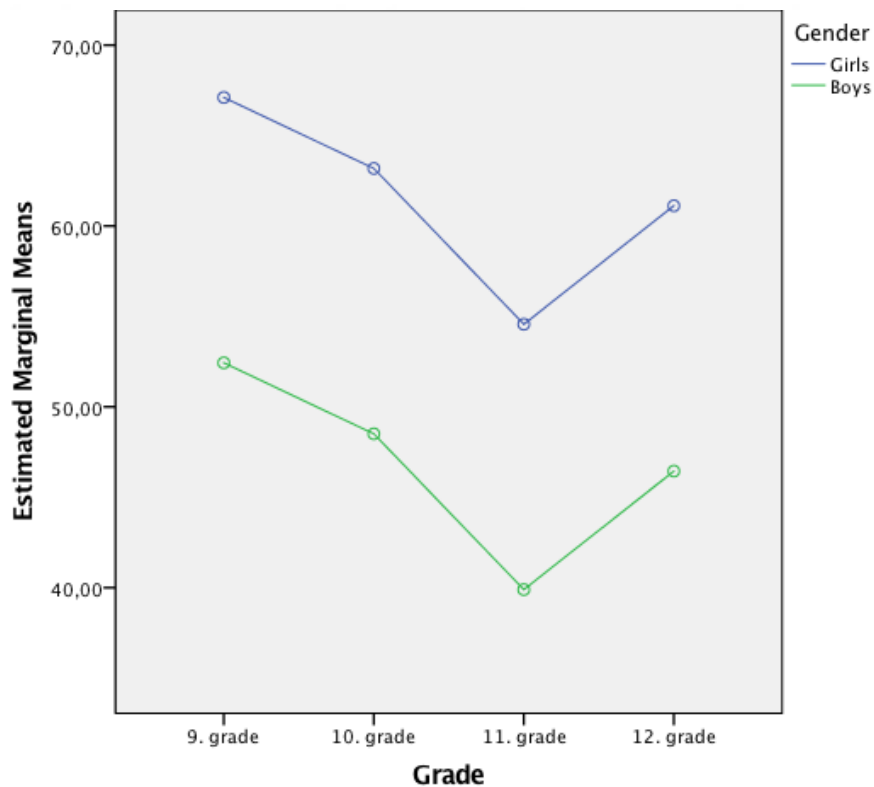


Figure 2. SNS scores with respect to gender versus grade.

4.3.3 Gender versus grade on GAS scores. The effects of gender versus grade on GAS scores are shown in Table 7. And the Figure 3 demonstrates the line graph of the two variables (gender versus grade) and their relationship with GAS scores.

Table 7
Gender Versus Grade on GAS Scores

Source	SS	df	MS	F	p
Corrected Model	4067.228a	4	1016.81	34.27	.000
Gender	3432.35	1	3432.35	115.69	.000
Grade	634.88	3	211.63	7.13	.000
Error	14805.20	499	29.67		
Total	107807.00	504			
Corrected Total	18872.43	503			

a R Squared = .216 (Adjusted R Squared = .209)

The two-way analysis of variance results revealed that both gender and grade have a significant effect on GAS scores at the .05 significance level. The main effect for gender yielded an F ratio of $(1, 499) = 115.69, p < .05$ such that the mean GAS scores are significantly higher in boys ($M = 15.50, SD = 6.06$) than in girls ($M = 10.21, SD = 4.73$). The main effect for grade yielded an F ratio of $(3, 499) = 7.13, p < .05$ indicating a significant effect on GAS scores with highest in 9. graders ($M = 14.84, SD = 6.15$) and lowest in 12. graders ($M = 11.62, SD = 5.19$).

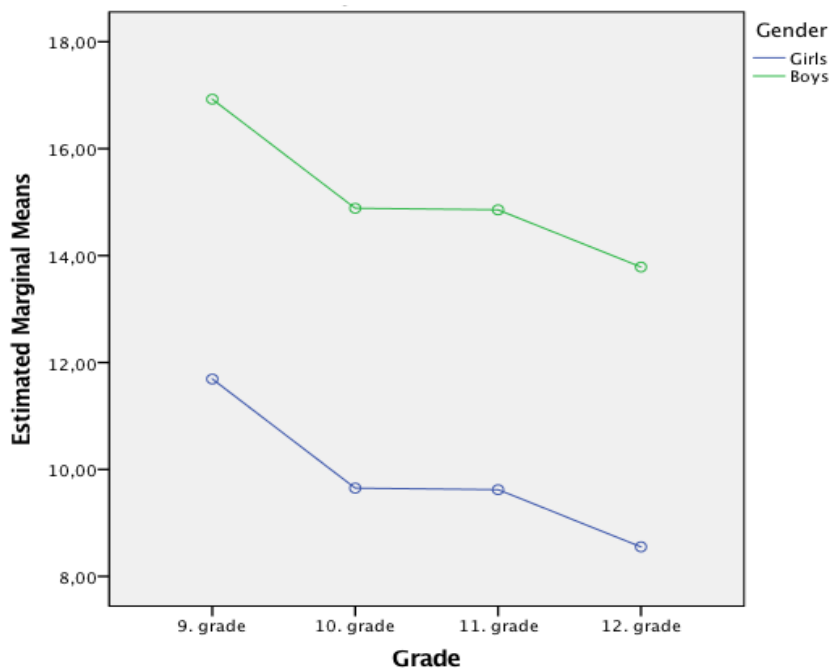


Figure 3. GAS scores with respect to gender versus grade.

4.4 Research Question 3

A two-way ANOVA without repeated measures is conducted to be able to compare the levels of SAS, SNS and GAS scores with respect to gender (boys, girls) versus school type (private, state). The demographic statistics of all three scales' scores by gender, school type and grade can be seen in Table 4.

4.4.1 Gender versus school type on SAS scores. The effects of gender versus school type on SAS scores are shown in Table 8. And the Figure 4 demonstrates the line graph of the two variables (gender versus school type) and their relationship with SAS scores.

Table 8
Gender Versus School Type on SAS Scores

Source	SS	df	MS	F	<i>p</i>
Corrected Model	7718.544a	2	3859.27	31.09	.000
Gender	6860.23	1	6860.23	55.27	.000
SchoolType	858.32	1	858.32	6.92	.009
Error	62185.45	501	124.12		
Total	479164.00	504			
Corrected Total	69903.99	503			

a R Squared = .110 (Adjusted R Squared = .107)

The two-way ANOVA results shows that both gender and school type have significant effects on SAS scores ($p < .05$). The main effect of gender yielded an F ratio of $(1, 501) = 55.27$, $p < .05$, such that the SAS scores were higher in girls ($M = 32.84$, $SD = 12.33$) than in boys ($M = 25.37$, $SD = 10.32$). The main effect for school type yielded an F ratio of $(1, 501) = 6.92$, $p < .05$ revealing a significant effect on SAS scores with higher in state school ($M = 29.76$, $SD = 11.64$) than in private school ($M = 27.75$, $SD = 11.83$).

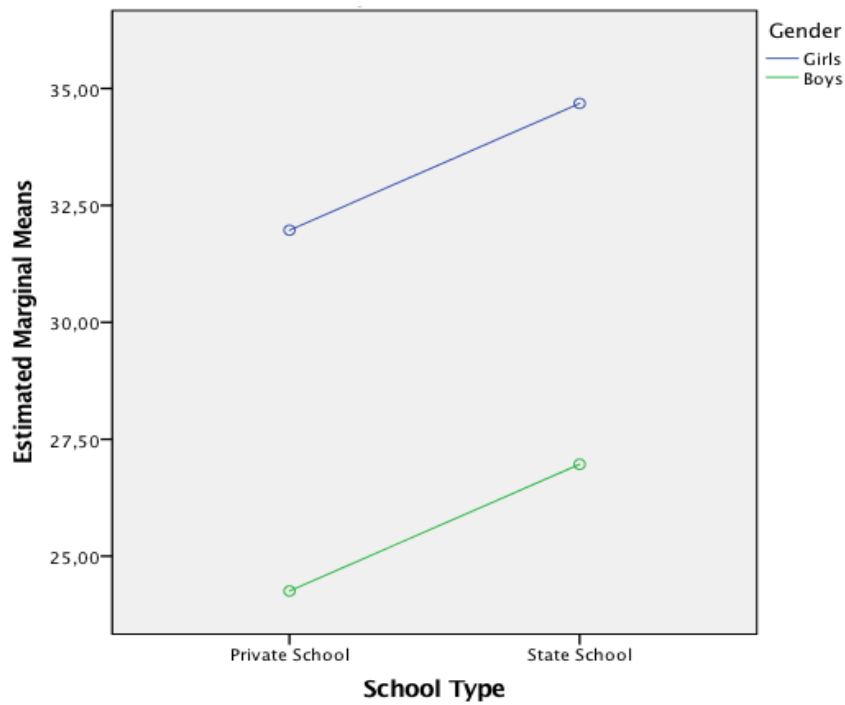


Figure 4. SAS scores with respect to gender versus school type

4.4.2 Gender versus school type on SNS scores. The effects of gender versus school type on SNS, addiction scores are shown in Table 9. And the Figure 5 demonstrates the line graph of the two variables (gender versus school type) and their relationship with SNS addiction scale scores.

Table 9
Gender Versus School Type on SNS Scores

Source	SS	df	MS	F	p
Corrected Model	28970.544a	2	14485.27	18.59	.000
Gender	26210.75	1	26210.75	33.64	.000
SchoolType	2759.79	1	2759.79	3.54	.060
Error	390315.62	501	779.07		
Total	1921092.00	504			
Corrected Total	419286.16	503			

a R Squared = .069 (Adjusted R Squared = .065)

The two-way ANOVA results for SNS addiction scale scores show that while gender has a significant effect on SNS addiction scale scores ($p < .05$), school type doesn't appear to have a significant effect with a significance level of $p = .060$. The main effect of gender yielded an F ratio of $(1, 501) = 33.64$, $p < .05$, such that the SNS addiction scale scores were higher in girls ($M = 63.09$, $SD = 30.89$) than in boys ($M = 48.47$, $SD = 25.69$). The main effect for school type yielded an F ratio of $(1, 501) = 3.54$, $p > .05$ revealing a nonsignificant effect on SNS addiction scale scores with higher in state school ($M = 56.78$, $SD = 28.1$) than in private school ($M = 53.28$, $SD = 29.29$).

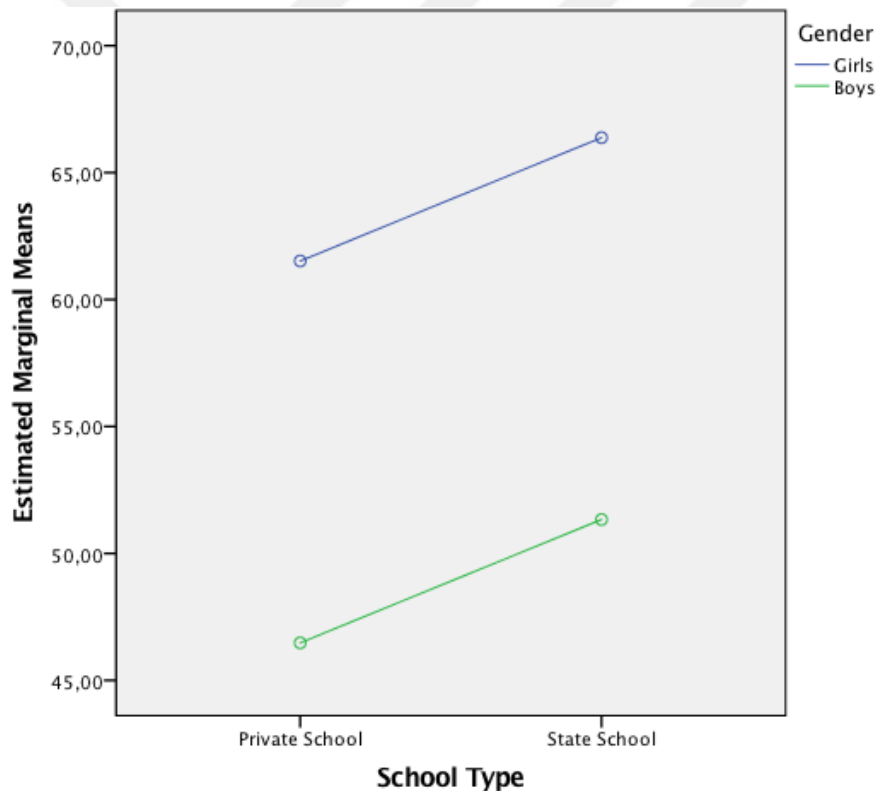


Figure 5. SNS scores with respect to gender versus school type.

4.4.3 Gender Versus School Type on GAS Scores. The effects of gender versus school type on GAS scores are shown in Table 10. And the Figure 6 demonstrates the line graph of the two variables (gender versus school type) and their relationship with GAS scores.

Table 10
Gender Versus School Type on GAS Scores

Source	SS	df	MS	F	<i>p</i>
Corrected Model	3492.728a	2	1746.36	56.89	.000
Gender	3432.35	1	3432.35	111.81	.000
SchoolType	60.38	1	60.38	1.97	.161
Error	15379.70	501	30.70		
Total	107807.00	504			
Corrected Total	18872.43	503			

a R Squared = .185 (Adjusted R Squared = .182)

The two-way ANOVA results for GAS scores show that again, while gender has a significant effect on GAS scores ($p < .05$), school type doesn't appear to have a significant effect with a significance level of $p = .161$. The main effect of gender yielded an F ratio of $(1, 501) = 111.81$, $p < .05$, such that the GAS scores were higher in boys ($M = 15.5$, $SD = 6.06$) than in girls ($M = 10.21$, $SD = 4.73$). The main effect for school type yielded an F ratio of $(1, 501) = 1.97$, $p < .05$ revealing a nonsignificant effect on GAS scores with higher in state school ($M = 14.03$, $SD = 5.82$) than in private school ($M = 12.84$, $SD = 6.27$).

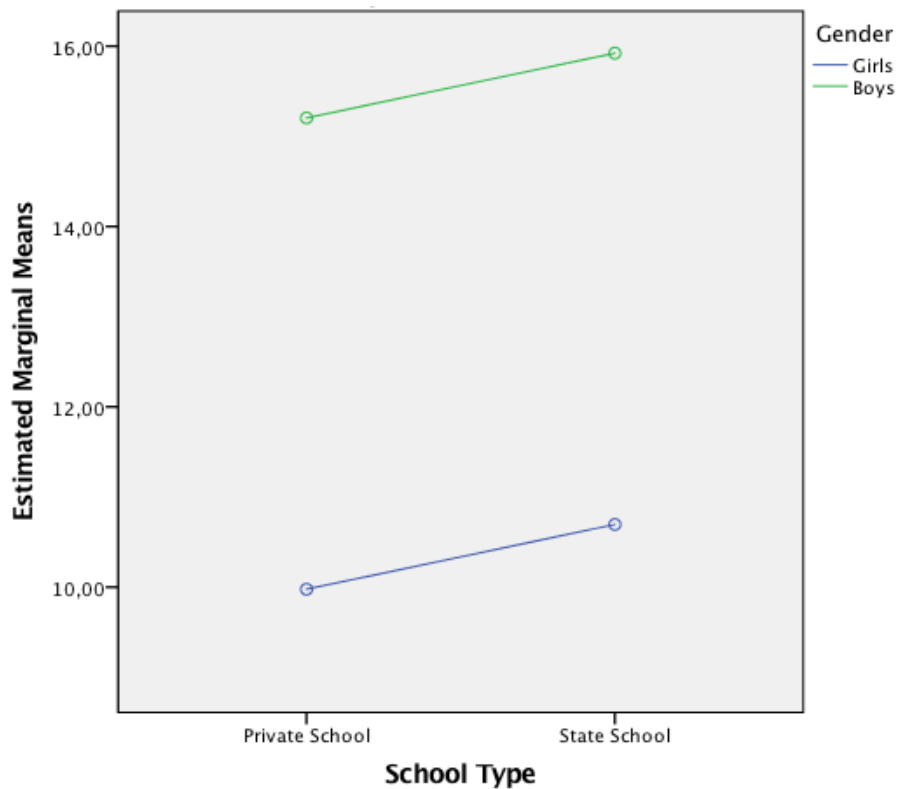


Figure 6. GAS scores with respect to gender versus school type.

4.5 Research Question 4

A two-way ANOVA without repeated measures is conducted on the influence of school type (private, state) versus grade ((9th, 10th, 11th and 12th grades) on smartphone, SNS and game addiction scale scores. The demographic statistics of all three scales' scores by gender, school type and grade can be seen in Table 4.

4.5.1 School type versus grade on SAS scores. The effects of school type versus grade on SAS scores are shown in Table 11. And the Figure 7 demonstrates the line graph of the two variables (school type versus grade) and their relationship with SAS scores.

Table 11
School Type Versus Grade on SAS Scores

Source	SS	df	MS	F	p
Corrected Model	1661.688a	4	415.42	3,04	.017
SchoolType	475.50	1	475.50	3.48	.063

Table 11 (cont.d)

Source	SS	df	MS	F	p
Grade	1186.19	3	395.40	2.89	.035
Error	68242.30	499	136.76		
Total	479164.00	504			
Corrected Total	69903.99	503			

a R Squared = .024 (Adjusted R Squared = .016)

The two-way ANOVA results reveals that grade has a significant effect on SAS scores with a significance level of $p = .035$. Whereas school type doesn't have a significant effect on SAS scores with a significance level of $p = .063$. The main effect of grade yielded an F ratio of $(3, 499) = 2.89, p < .05$, indicating a significant effect on SAS scores with highest in 9. graders ($M = 29.90, SD = 12.64$) and lowest in 11. graders ($M = 24.86, SD = 10.42$). The main effect of school type yielded an F ratio of $(1, 499) = 3.48, p > .05$, revealing a nonsignificant effect on SAS scores with higher in state school ($M = 29.76, SD = 11.64$) than in private school ($M = 27.75, SD = 11.83$).

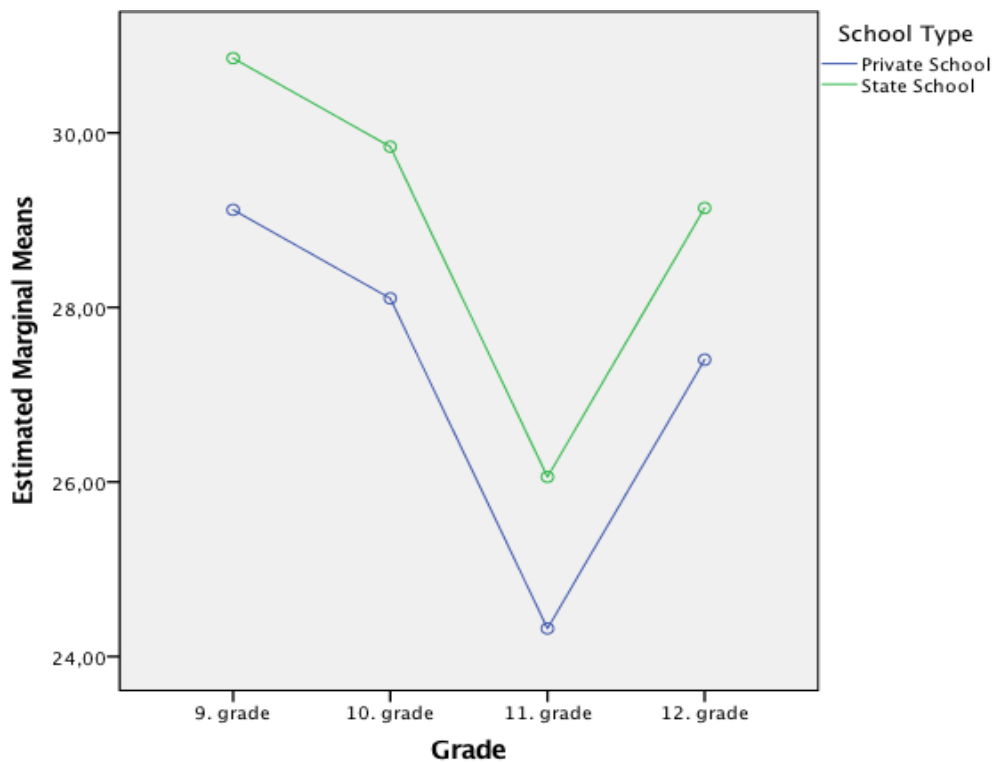


Figure 7. SAS scores with respect to school type versus grade.

4.5.2 School type versus grade on SNS scores. The effects of school type versus grade on SNS addiction scale scores are shown in Table 12. And the Figure 8 demonstrates the line graph of the two variables (school type versus grade) and their relationship with SNS scores.

Table 12
School Type Versus Grade on SNS Scores

Source	SS	df	MS	F	<i>p</i>
Corrected Model	8981.697a	4	2245.42	2.73	.029
SchoolType	1437.18	1	1437.18	1.75	.187
Grade	7544.52	3	2514.84	3.06	.028
Error	410304.46	499	822.25		
Total	1921092.00	504			
Corrected Total	419286.16	503			

a R Squared = .021 (Adjusted R Squared = .014)

The two-way ANOVA results for SNS addiction scale scores show that while grade has a significant effect on SNS addiction scale scores ($p < .05$), school type doesn't appear to have a significant effect with a significance level of $p = .187$. The main effect of grade yielded an F ratio of $(3, 499) = 3.06$, $p < .05$, such that the SNS scores were highest in 9. graders ($M = 58.29$, $SD = 31.07$) and lowest in 11. graders ($M = 45.89$, $SD = 25.18$). The main effect for school type yielded an F ratio of $(1, 499) = 1.75$, $p > .05$ revealing a nonsignificant effect on SNS addiction scale scores with higher in state school ($M = 56.78$, $SD = 28.1$) than in private school ($M = 53.28$, $SD = 29.29$).

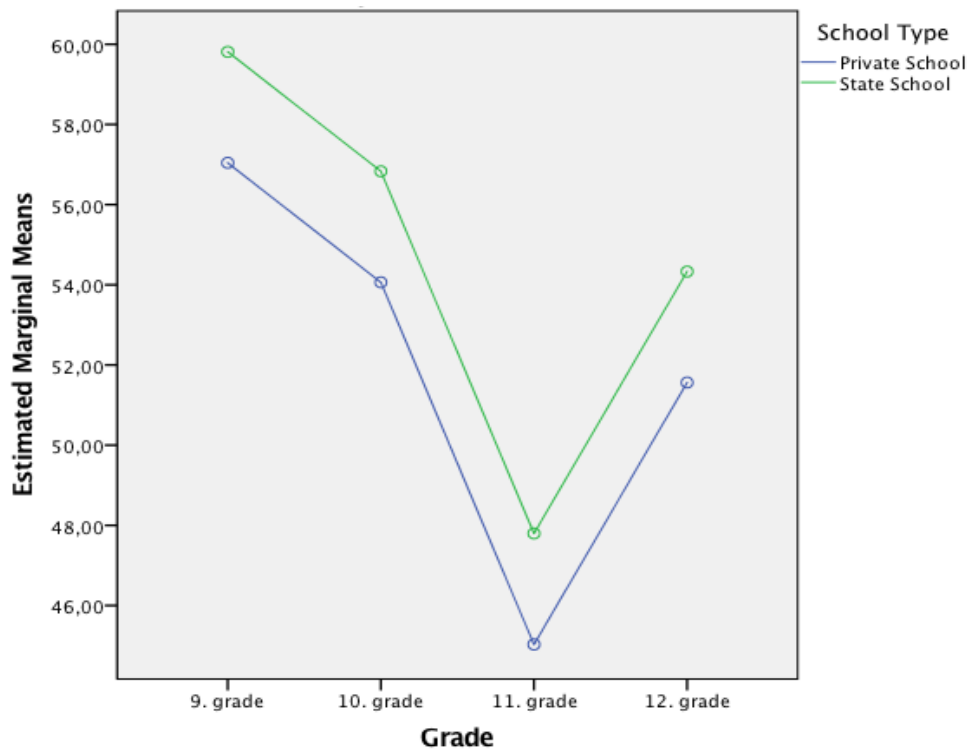


Figure 8. SNS scores with respect to school type versus grade.

4.5.3 School type versus grade on GAS scores. The effects of school type versus grade on GAS scores are shown in Table 13. And the Figure 9 demonstrates the line graph of the two variables (grade versus school type) and their relationship with GAS scores.

Table 13
School Type Versus Grade on GAS Scores

Source	SS	df	MS	F	p
Corrected Model	814.099a	4	203.53	5.62	.000
SchoolType	167.85	1	167.85	4.64	.032
Grade	646.25	3	215.42	5.95	.001
Error	18058.33	499	36.19		
Total	107807.00	504			
Corrected Total	18872.43	503			

a R Squared = .043 (Adjusted R Squared = .035)

The two-way ANOVA results for GAS scores show that this time, both grade and school type have significant effects on GAS scores ($p < .05$). The main effect of grade yielded an F ratio of $(3, 499) = 5.95$, $p < .05$, such that the GAS scores were highest in 9. graders ($M = 14.84$, $SD = 6.15$) and lowest in 12. graders ($M = 11.62$, $SD = 5.19$). The main effect for school type yielded an F ratio of $(1, 499) = 4.64$, $p < .05$ revealing a significant effect on GAS scores with higher in state school ($M = 14.03$, $SD = 5.82$) than in private school ($M = 12.84$, $SD = 6.27$).

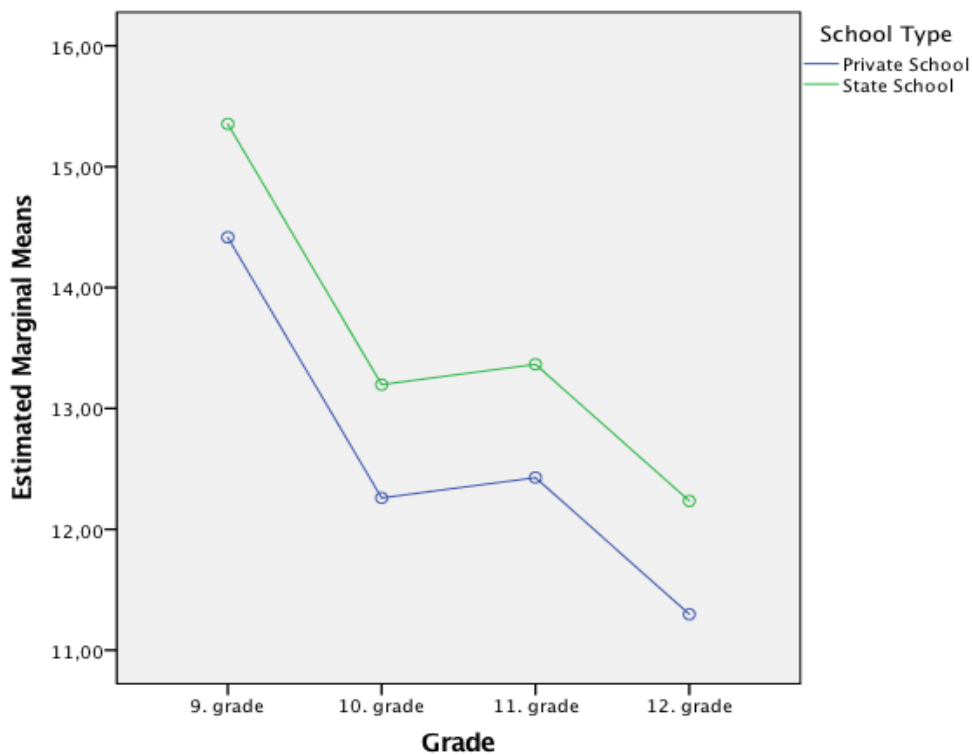


Figure 9. GAS scores with respect to school type versus grade.

4.6 Research Question 5

For the fifth research question, a two-way ANOVA without repeated measures is conducted to be able to compare the effects of number of purposes of smartphone use versus school type (private, state) on SAS, SNS addiction scale and GAS scores. The demographic characteristics of the sample regarding total scale scores and school types can be seen on Table 4 and the demographics of purposes of smartphone use can be seen on Table 1.

4.6.1 Number of purposes of smartphone use versus school type on SAS scores. The effects of number of purposes of smartphone use versus school type on SAS scores are shown in Table 14. And the Figure 10 demonstrates the line graph of the two variables (school type versus purpose) and their relationship with SAS scores.

Table 14
Number of Purposes of Smartphone Use Versus School Type on SAS Scores

Source	SS	df	MS	F	<i>p</i>
Corrected Model	411128,452a	6	68521.41	501.56	.000
Purpose	1392.94	4	348.24	2.55	.039
SchoolType	488.53	1	488.53	3.58	.059
Error	68035.55	498	136.62		
Total	479164.00	504			

a. R Squared = ,858 (Adjusted R Squared = ,856)

The two-way ANOVA results reveals that while number of purposes of smartphone use appears to have a significant effect on SAS scores with a significance level of $p = .04$, school type doesn't have a significant relationship with SAS scores ($p > .05$). The main effect of number of purposes of smartphone use yielded an F ratio of $(4,498) = 2.55$ and the main effect of school type yielded an F ratio of $(1,498) = 3.58$.

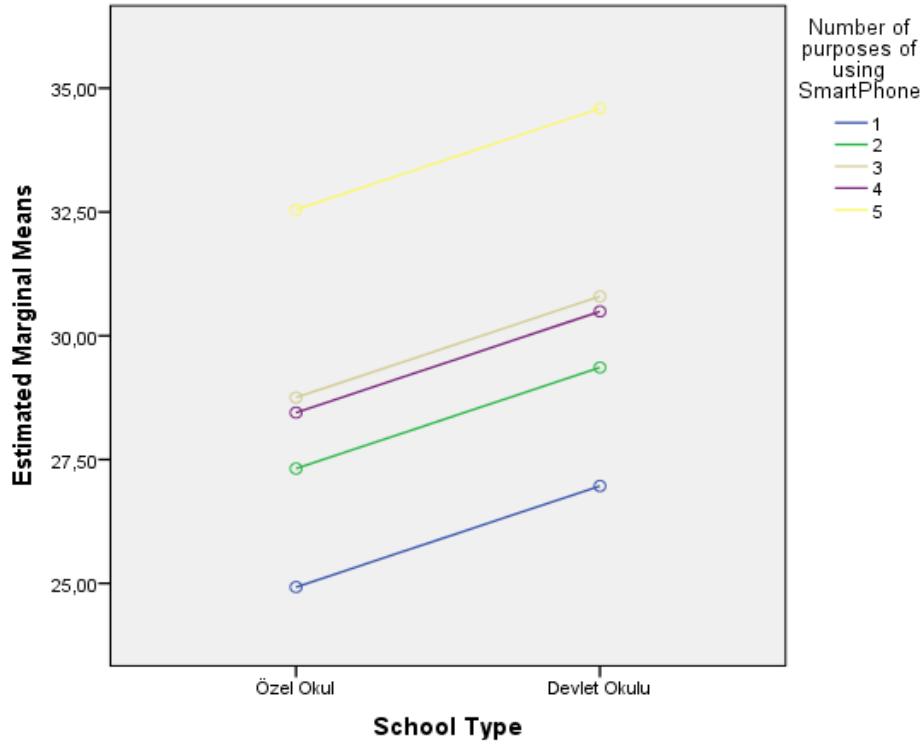


Figure 10. SAS scores with respect to number of purposes of smartphone use versus school type.

4.6.2 Number of purposes of smartphone use versus school type on SNS scores. The effects of number of purposes of smartphone use versus school type on SNS addiction scale scores are shown in Table 15. And the Figure 11 demonstrates the line graph of the two variables (school type versus purpose) and their relationship with SNS addiction scale scores.

Table 15

Number of Purposes of Smartphone Use Versus School Type on SNS Scores

Source	SS	df	MS	F	p
Corrected Model	1515026,686a	6	252504.45	309.67	.000
Purpose	11783.67	4	2945.92	3.61	.006
SchoolType	1474.22	1	1474.22	1.81	.179
Error	406065.31	498	815.39		
Total	1921092.00	504			

a. R Squared = ,789 (Adjusted R Squared = ,786)

The two-way ANOVA results reveals a significant effect of number of purposes of smartphone use and SNS addiction scale scores with a significance level of $p = .006$, whereas school type doesn't have a significant relationship with SNS addiction scale scores. The main effect of number of purposes of smartphone use yielded an F ratio of $(4, 498) = 3.61$, and the main effect of school type yielded an F ratio of $(1, 498) = 1.81$.

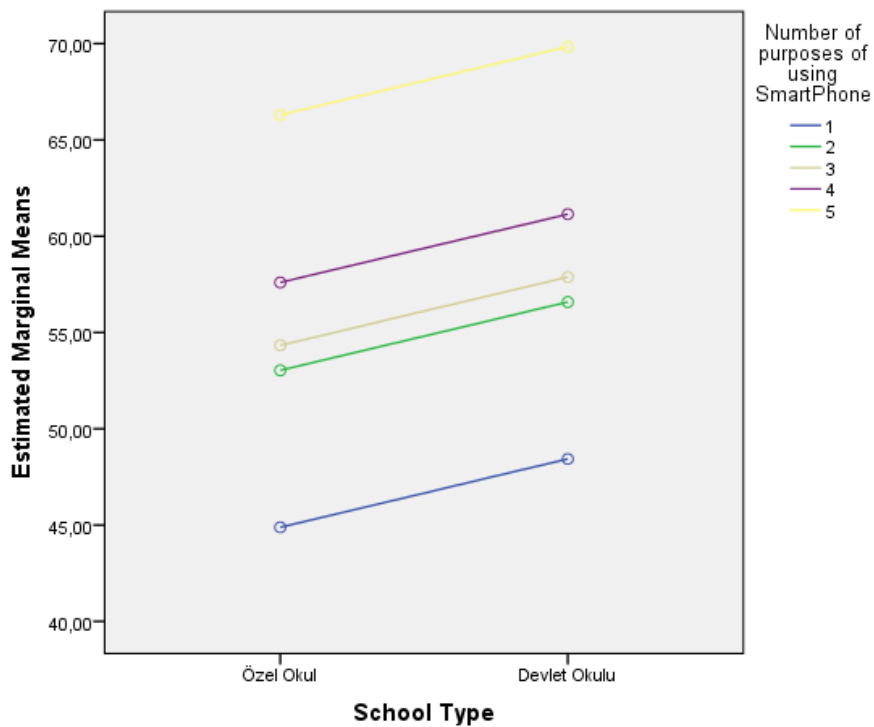


Figure 11. SNS scores with respect to number of purposes of smartphone use versus school type.

4.6.3 Number of purposes of smartphone use versus school type on GAS scores. The effects of number of purposes of smartphone use versus school type on GAS scores are shown in Table16. And the Figure 12 demonstrates the line graph of the two variables (school type versus purpose) and their relationship with GAS scores.

Table 16

Number of Purposes of Smartphone Use Versus School Type on GAS Scores

Source	SS	df	MS	F	p
Corrected Model	89924.483a	6	14987.41	417.38	.000
Purpose	822.06	4	205.52	5.72	.000
SchoolType	186.95	1	186.95	5.21	.023
Error	17882.52	498	35.91		
Total	107807.00	504			

a. R Squared = ,834 (Adjusted R Squared = ,832)

For GAS scores, the two-way ANOVA results reveal significant effect of both number of purposes of smartphone use and school type. It should also be stated that number of purposes of smartphone use has more significant effect ($p = .000$) than school type ($p = .023$). The main effect of number of purposes of smartphone use yielded an F ratio of $(4, 498) = 5.72$ and the main effect of school type yielded an F ratio of $(1, 498) = 5.21$.

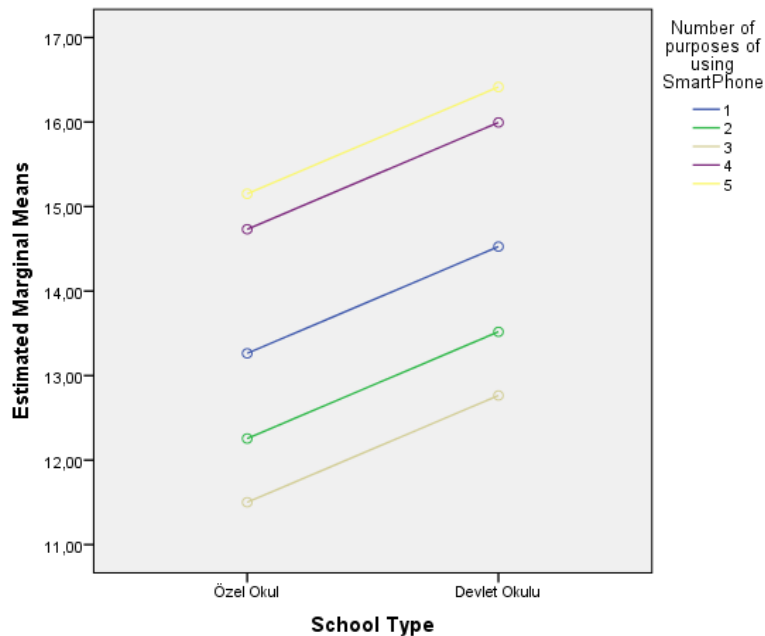


Figure 12. GAS scores with respect to number of purposes of smartphone use versus school type.

Chapter 5: Discussion and Conclusion

5.1 Introduction

In this chapter, the results revealed in the study will be discussed and further evaluated with respect to the aim of the study. All results introduced from each research question in the previous results chapter are discussed respectively.

5.2 Discussion of Findings for Research Questions

The aim of this study is to find out if there is a relationship between smartphone, SNS and game addiction. And also, other variables like GPA, gender, grade, school type, purpose of smartphone use are analyzed regarding their relationship with types of technological addictions studied.

A survey is administered to a N=504 number of students from high-schools in Turkey in order to reveal any relationship between technology addiction types (smartphone, SNS, game) and other variables. The sample is between the ages of 15 and 19 and there are students from private schools as well as state schools. The administered survey includes scales to assess addiction for smartphone, SNS and game. Smartphone addiction scale (SAS) and game addiction scale (GAS) are scales previously used in literature but the SNS scale is developed specially for this study by the researcher. The survey also includes demographic questions and questions regarding smartphone, SNS and game use.

The analysis of the data shows some significance relations between certain variables and all the results of the research questions are discussed below. Furthermore, the results show that the study has a high intrinsic validity and internal consistency. The significance levels of all variables with respect to types of addiction scale scores are provided in Table 17 for a brief summary of the results.

Table 17
Significance Levels of All Variables with Respect to Scale Scores

Analysis	Scale	Variables	Sig. level
Gender vs. grade	SAS	gender	.000*
		grade	.013*
	SNS	gender	.000*
		grade	.014*
	GAS	gender	.000*
		grade	.000*
Gender Vs. School type	SAS	gender	.000*
		school type	.009*
	SNS	gender	.000*
		school type	.060
	GAS	gender	.000*
		school type	.161
School Type Vs. Grade	SAS	school type	.063
		grade	.035*
	SNS	school type	.187
		grade	.028*
	GAS	school type	.032*
		grade	.001*
Purpose Vs. School Type	SAS	purpose	.039*
		school type	.059
	SNS	purpose	.006*
		school type	.179
	GAS	purpose	.000*
		school type	.023*

* $p < .05$.

5.2.1 Discussion of findings for RQ:1. Looking at the relationship between addictions, the study revealed results as expected. All addiction types, smartphone, SNS and game, were found to be significantly correlated with each other. The Pearson correlation analysis revealed a high level of correlation between addiction types as seen on Table 3 ($p < .05$). But the relationship between addiction types and GPA scores were not significant as expected. It can be interpreted from the results that SNS and games which are the most common contents used in smartphones, are positively related with smartphone addiction (Bae, 2017; Billieux et al., 2015; Lopez-Fernandez et al., 2017). So, one can speculate that smartphone addiction is highly inspired with the content it provides. And also, the contents are (SNS and games) highly correlated with each other in terms of addiction. It will not be wrong to deliberate the effects of smartphone technology with its easy to use interface, its practicality with its size and weight, might be the reason for the addictions. For most research shows smartphones as the most preferred and used devices.

It may be interpreted from these results that overusing, problematic using or addiction to any of these technologies studied will probably cause an addiction or a problematic use on another technology which is connected to the other as in gaming and smartphone (Bae, 2017; Liu et al., 2016). If somebody is using SNS in an excessive way, he or she might get addicted to smartphones as well, since the most preferred device seems to be the smartphones (GWI, 2016) maybe because it is a more compact and easy to reach device rather than desktop computers, laptops or tablets.

However, one of the questions of this current study that if any addiction type had a meaningful relationship with students' GPA scores appeared to reveal unexpected results. The Pearson correlation results for the relationship between smartphone, SNS and game addiction and students' GPA scores were not significantly correlated. While in the literature there are some studies revealing negative effect of SNS addiction on GPA (Al-Menayes, 2015) and in his study, Al-Menayes (2015) stated that the time spent on social media effected GPA in a negative way.

In another study on the effects of game addiction and academic achievement by Sahin, Gumus, and Dincel (2014), the results were again not parallel with this current study. Sahin et al. (2014) found out that academic achievement and game addiction were negatively correlated but they further discussed that this correlation

may be qualified as negligible.

The relationship with smartphone addiction and GPA is found not to be significantly correlated in this current research. The reason for this may be because of the low variance of the GPA scores obtained from the sample's self reports. Another probability of this result might be interpreted that the GPA scores students get in Turkey could be overrated and not taken seriously. The frequencies of the GPA scores obtained from students' self-reports are presented below in Table 18 and as can be seen from the table, the frequency of the scores between 81 and 100 (58.12%) constitutes more than the half of the sample. This may either mean the sample consists of highly qualified students or as stated before, students or the administrations of the schools or the teachers are overrating students' grades.

Table 18

Frequencies of GPA scores

GPA score	<i>f</i>	<i>P</i>
0 - 10	2	0.39%
11 - 20	0	0.00%
21 - 30	0	0.00%
31 - 40	0	0.00%
41 - 50	4	0.79%
51 - 60	29	5.75%
61 - 70	75	14.88%
71 - 80	101	20.03%
81 - 90	165	32.73%
91 - 100	128	25.39%

Whereas as a different example, in a study by Lepp et al. (2014), the results revealed a negative relationship between cell phone use and academic performance. They also further discussed that high frequency cell phone users spend less time on academic pursuits than low frequency users because most of their time is spent on cell phone use. Another study in the same direction with Lepp et al. (2014) by Hawi and Samaha (2016) suggests that students who are at high risk of smartphone addiction are less likely to achieve high GPA scores.

5.2.2 Discussion of findings for RQ:2. For the second research question, the difference between addiction scale scores with respect to gender versus grade is

analyzed and both variables (gender and grade) found to be significantly related for all addiction types. As seen in most of the literature (Andreassen et al., 2016; Aydın & Horzum, 2015; Müezzın, 2015; Wittek et al., 2015), gender appears to have a significant relationship with SAS, SNS addiction scale and GAS scores with girls scoring higher points on SAS and SNS addiction scale while boys score higher on GAS.

Regarding the relationship between gender and addiction levels, there were quite interesting results revealed from the study. Girls, appeared to have a higher level of addiction in SNS and smartphones. Whereas boys scored higher on game addiction than girls. Also, the Friedman tests which are carried out on gender point out that there is a significant pattern of rank order of addiction of girls (SAS>SNS>GAS) and boys (GAS>SNS>SAS).

These results might be interpreted as girls are more interested in SNS than boys and boys are more interested in games than girls. The reason for this result may be because the girls are usually expressive and boys are usually instrumental (Parsons and Bales, 1955) thus, girls tend to spend more time socializing via social network sites using their smartphones, which is easy for them to reach and also let them stay safe from the pressures of the society. Whereas boys may be willing to prove themselves within the excitement and competitive traits of gaming.

Literature on SNS and game use are mostly on the same direction. A study by Andreassen et al. (2016) also reveals that being male was significantly associated with addictive use of video games and being female was significantly associated with addictive use of social media. Another study by Aydın and Horzum (2015) also states that male teachers had higher computer game addiction scores than females. As parallel with this current study, literature also suggests that males are more into games (Andreassen et al., 2016; Aydın & Horzum, 2015; Müezzın, 2015; Wittek et al., 2015). A similar study by Müezzın (2015) on high school students' online game addiction also revealed that male students scored higher scores from the online game addiction sub-scales.

Another study on internet related addictive behaviors like gaming addiction and social networking addiction by Wang, Ho, Chan, and Tse (2014) revealed that gender is the most powerful predictor of internet addiction in general and gaming addiction in particular but not a predictor of social network addiction. Also, most research agrees that females seem to be more into social networking and males seem

to be more into gaming (Chen et al., 2017).

From the results of this current study, comparing students from different grades, 9th grade students (n=178) have higher scores on all SAS, SNS addiction scale and GAS scores from other grades. And the relationship between grade and addiction scale scores is found to be also significant. Although in some countries grade levels and ages of the students in that grade may vary, in this present study, students start high-school from 9th grade and usually they are at the age of 14. A study by Kırık et al. (2015) on social media addiction reveals that addiction level is lower in the 14-year group, increasing in 17-year group and again decreasing in 18-year group.

The results also reveal that, especially for smartphone and SNS addiction scale scores the highest scores in 9th grade tend to decrease till 12th grade where the scores again increase. This increase in scores may be the result of the anxiety students usually have towards the university exam (Hembree, 1988) that they take in 12th grade. In Turkey, students take an exam in 12th grade to be able to enroll in universities, maybe exam anxiety limits their engagement in these technologies or they don't have enough time to spend on these technologies. Another possibility is that even the most unconcerned parents start to put some pressure on their children about the university exam and they try to control the time students spend on other things rather than studying.

A study by Rehbein and Mößle (2013) also found similar results as they revealed that internet addiction occurs more often in 9th and 10th grade students than in earlier school years but video game addiction occurs more often in earlier graders like 7th and 8th.

5.2.3 Discussion of findings for RQ:3. The third research question reveals that gender has a significant effect on all three types of addictions, school type has a significant effect only on SAS scores. Students from state schools scored higher on all addiction scales but there is a significant relation only with SAS total scores. Research on the effects of school type on technology addictions is scarce. And school type is a variable that may differ or not exist in different countries or educational systems. In Turkey, there are private schools which are run by private companies or people under the administration of ministry of public education. They are paid institutions where parents have to pay an annual fee to be able to send the student to a private school. State schools are run by the ministry of public education

and they are free to all citizens.

The results in a study by Hawi (2012), the relationship between school type and internet addiction was found to be significant. And also, similar to the results in this current study revealed, Hawi (2012) also found out that there were more students addicted to using the internet in public schools than there were in private schools. However, a study by Rehbein and Mößle (2013) reveals similar results on internet and video game addiction regarding their occurrence in different school type. Thus, it should be noted again that school types may most probably vary from one country to another so these results from literature each may represent a unique case or condition.

It may be speculated from this result that private schools might have a stricter school environment than they have in state schools. Another point worth mentioning is that private schools have more money and funds than state schools which they can and usually spend on technologies for students' use. Some private schools use smartphones in classrooms as a device for learning and practicing. Whereas in state schools, there are limited opportunities for using technology in classrooms, thus students may not be accustomed to use smartphones in lessons than the students in private schools do.

Also, the parents of the students from private schools may have a high level of technology literacy since they tend to be higher income families and they may be using these technologies very frequently that these technologies might have become a part of their normal lives. Another speculation might be that since these families have high awareness on new technologies they may be controlling how their children are using these technologies.

5.2.4 Discussion of findings for RQ:4. The results of the effects of school type versus grade on scale scores revealed that this time school type only has a significant effect on GAS scores and grade again has a significant effect on all addiction types. As mentioned before, 9th graders scored higher than all other grade students on all three addiction scales. The results may also be interpreted as that grade is an effective variable with respect to SAS, SNS addiction scale and GAS whereas school type doesn't necessarily have a significant effect regarding the addiction types.

5.2.5 Discussion of findings for RQ:5. For the fifth research question, the number of purposes of smartphone use versus school type is analyzed. The students

answered a multiple-choice question regarding their purposes of smartphone use. The options provided in the question are social media, instant messaging, talking on the phone, games and other. Students are asked to choose options that are relevant to them. Only n=16 students chose all five purposes including other and most students (n=168) chose three purposes at the same time. The most selected option with a frequency of n=405 (%80.20) is social media and the least selected is games with a frequency of n=183 (%36.24). In the literature, there are many studies revealing the relationship with the purposes of smartphone use and smartphone addiction or dependency (Bae, 2017; Carbonell & Panova, 2017; Griffiths, 2013).

The results revealed with this current study also point out the significant effect of the number of purposes of smartphone use on SAS, SNS addiction scale and GAS scores. It may be interpreted from these results that the more someone uses his or her smartphone for more purpose he or she may get more addicted to his or her smartphone. If someone is just using his or her smartphone for talking, they most probably won't get addicted to their smartphones.

5.3 Recommendations and Suggestions for Further Research

Technology may have so many benefits for people in their daily and professional lives as well as for students and instructors. In education, technology is used and is encouraged to be used in classes or anywhere one likes but with its rapid improvement and tempting facilities it provides people start to get addicted to these technologies. As Griffiths (1999) speculates, new technologies can provide a medium for addiction and they can easily be the focus of obsessive and/or compulsive behaviors and also the structural characteristics of the software and applications may promote some features which may be psychologically rewarding to some individuals. So, studying the relationship between these technologies, their uses and problematic uses and their effects on education will certainly benefit the research on educational technology and also will lighten the path for these new technologies to be developed for the common good.

This study investigated the relationship between technology addictions (smartphone, SNS, game) and also the relationship between technology addictions and students' GPA scores. The researcher also further investigates if gender and school type had any relationship with these technology addictions. Smartphone use, SNS use and game use were other questions that were studied to reveal if they have any significant relationship with addiction types.

The study revealed a strong relationship between technology addictions but there isn't a significant correlation between GPA scores of students and addiction levels. Since the GPA data were founded on students' self-reports, a further research may strengthen the results by obtaining official GPA scores from school administrations. Another suggestion would be that some qualitative data may utilize for assessing addictive behaviors and to further investigate addiction and its effects, interviewing with students with high addiction scale scores and also interviewing with their teachers and parents would be very beneficial.

To be able to further detail the study, biological data of the sample could be analyzed especially of the sample who scored higher on technology addiction scales used and the differences between low scores and high scores could further be investigated. This could also strengthen the findings regarding addiction levels of the sample and could further help research on diagnosis or symptoms of technology addictions.

Since the results of this current study suggests that students from state schools scored higher on all scales, and also boys appear to score higher on GAS and girls appear to score higher on SAS and SNS addiction scale it could be recommended that a qualitative study focusing on these specific subjects might be the focus of a new study.

It may also be advised to the parents to be more careful about their students especially in 9th grade and it could be suggested that they should be stricter on monitoring and controlling technology use of their children. They should also educate themselves about these new technologies and be aware of the uses and problematic uses of these technologies.

For further research on technology use, with their permissions, some data may be collected from the students about their smartphone, SNS and game use. This data would reveal actual usage patterns of addictive and/or non-addictive users. A longitudinal study would benefit from comparing data analysis as the students advance through high school grades and thus would provide more reliable and valid results which can be used in further research. Even though it would most probably be a very difficult and high budget process but if sample could be observed from the point of view of technology use and their GPA could be noted for each year and in the end the results could be compared to see more rigid and concrete results of the effects of technology use in student success.

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APPENDICES

APPENDIX A

ONLINE SURVEY (DEMOGRAPHIC)

0 25 50 75 100

Bulunduđunuz şehir

Dođum yılınız

Sadece yıl giriniz

Cinsiyetiniz

Lütfen Seçiniz

Ne tür bir okulda öğrenim görüyorsunuz?

Lütfen Seçiniz

Ailenizin toplam aylık gelirini yazınız

Okumakta olduđunuz sınıf

Lütfen Seçiniz

Kaç kardeşiniz?

Lütfen Seçiniz

Yıl sonu genel başarı ortalama aralđınızı seçiniz (en son)

100'lük sisteme göre seçiniz

Lütfen Seçiniz

Akıllı telefonunuz var mı?

Devamlı kullandıđınız internet erişimi olan bir mobil telefon

Lütfen Seçiniz

Bilgisayarınız var mı?

Masa üstü, taşınabilir pc

Lütfen Seçiniz

Oyun konsolunuz var mı?

Lütfen Seçiniz

İnternet paketiniz varsa kaç GB?

Lütfen Seçiniz

İnternet kotasını ne sıklıkta aşyorsunuz?

Lütfen Seçiniz

Sosyal medyayı günde ortalama kaç kere kontrol edersiniz?

Sosyal Ağlara bağlanmak için en sık hangi platformu kullanıyorsunuz?

1 ile 9 arasında sıklığa göre işaretleyebilirsiniz. 1 o platformu hiç kullanmadığınızı, 9 ise çok sık kullandığınızı gösterir.

	1 - Hiç	2	3	4	5	6	7	8	9 - Çok sık
Bilgisayar (masa üstü, taşınabilir)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Akıllı Telefon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diğer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Listedeki Sosyal Ağlardan hangilerini kullanıyorsunuz, lütfen işaretleyiniz.

Birden fazla seçeneği işaretleyebilirsiniz

Facebook

Instagram

Twitter

WhatsApp

Snapchat

Diğer, lütfen belirtiniz

Akıllı telefonunuzu en sık hangi amaçla kullanıyorsunuz?

Birden fazla seçeneği işaretleyebilirsiniz

Konuşma

Mesajlaşma

Oyun

Sosyal Ağ

Diğer, lütfen belirtiniz

Oyun oynamak için en sık hangi platformu kullanıyorsunuz?

Lütfen sıklık sırasına göre 1'den 9'a kadar numaralandırınız

	1- Hiç	2	3	4	5	6	7	8	9- Çok sık
Bilgisayar (masa üstü, taşınabilir)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oyun Konsolu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Akıllı Telefon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diğer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX B

GAME ADDICTION SCALE (GAS)

0 25 50 75 100

Son 6 ay içinde ne sıklıkta...					
Kendinize en uygun olduğunu düşündüğünüz seçeneği işaretleyiniz					
	Hiç	Nadiren	Bazen	Sık	Çok sık
1 - Son 6 ay içinde ne sıklıkta kendinizi oyuna bağımlı hissettiniz?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 - Son 6 ay içinde ne sıklıkta oyunlara giderek artan miktarda zaman harcadınız?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 - Son 6 ay içinde ne sıklıkta daha iyi hissetmek için oyun oynadınız?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 - Son 6 ay içinde ne sıklıkta oyundaki zamanı azaltmaya çalıştığınızda başarısız oldunuz?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 - Son 6 ay içinde ne sıklıkta oynamadığınızda strese girdiniz?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 - Son 6 ay içinde ne sıklıkta başkalarıyla (aile, arkadaş, vb.) oyunda geçirdiğiniz zaman yüzünden kavga ettiniz?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 - Son 6 ay içinde ne sıklıkta oyun oynamak için diğer önemli aktiviteleri (okul, iş, spor, vb.) ihmal ettiniz?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX C

SMARTPHONE ADDICTION SCALE (SAS)

%0 %25 %50 %75 %100

Aşağıdaki maddelerde kendinize en uygun olduğunu düşündüğünüz seçeneği işaretleyiniz						
	Kesinlikle Hayır	Hayır	Kısmen Hayır	Kısmen Evet	Evet	Kesinlikle Evet
1 - Akıllı telefon kullanmaktan dolayı planladığım işleri aksatırım.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 - Akıllı telefon kullanmaktan dolayı derslerime odaklanmakta, ödevlerimi yapmakta ve işlerimi tamamlamakta güçlük çekerim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 - Akıllı telefon kullanmaktan dolayı el bileğimde veya ensemdede ağrı hissederim	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 - Akıllı telefonumun yanımda olmamasına tahammül edemem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 - Akıllı telefonum yanımda olmadığında sabırsız ve sinirli olurum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 - Kullanmasam da, akıllı telefonum aklımdadır.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 - Günlük yaşamımı aksatmasına rağmen akıllı telefonumu kullanmaktan vazgeçemem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 - İnsanların twitter veya facebook üzerindeki konuşmalarını kaçırmamak için sürekli akıllı telefonumu kontrol ederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 - Akıllı telefonumu hedeflediğimden daha uzun süre kullanırım.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 - Çevremdeki insanlar akıllı telefonumu çok fazla kullandığını söylerler.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX D

SNS ADDICTION SCALE (SNS)

0 25 50 75 100

Aşağıdaki maddelerde kendinize en uygun olduğunu düşündüğünüz seçeneği işaretleyiniz, 1 - Kesinlikle Katılmıyorum, 9 - Kesinlikle Katılıyorum

Sorularda 'Sosyal Medya' ile Faceook, Twitter benzeri sosyal ağlara ek olarak, WhatsApp, Snapchat, gibi anlık mesajlaşma ağları da kastedilmektedir. 'Çevremdekiler' kelimesi ile "Arkadaşlar, Aile, vb." kastedilmektedir.

	1 - Kesinlikle Katılmıyorum	2	3	4	5	6	7	8	9 - Kesinlikle Katılıyorum
1- Sosyal medya kullanırken çevremdekilere daha az dikkatimi veririm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- Sosyal medyada uzun süre paylaşım yapmadığımda kendimi kötü hissederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- Sosyal medya kullanırken kendimi mutlu hissederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- Sosyal medyadaki paylaşımlarımın beğeni alıp almadığını kontrol ederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- Sosyal medya yüzünden internet kotamı aşarım.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6- Zamanımı çevremdekilerle geçirmek yerine sosyal medyada geçirmeyi tercih ederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7- Sosyal medya kullanırken zamanın nasıl geçtiğini anlamam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- Sosyal medyadaki kişilerle konuşmayı çevremdekilerle konuşmaya tercih ederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9- Sosyal medya yüzünden fiziksel sorunlar (ağrılar, yorgunluk, uyku sorunu vb.) yaşarım.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10- Sosyal medya kullanmadığımda kendimi dünyadan kopmuş hissederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11- Sosyal medyanın başarımı (okul, iş, vb.) olumsuz etkilediğini düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12- Sosyal medya yüzünden işime odaklanmakta güçlük çekerim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13- Sosyal medya yüzünden sorumluluklarımı yerine getirmekte güçlük çekerim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14- Sosyal medya kullanımımı azaltmak istesem de başaramam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15- Sosyal medyaya gereğinden daha fazla zaman ayırdığımı düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16- Sosyal medyada özellikle bazı kişilerin ne yaptığını takip ederim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Leonardo-VETPRO “Blueline” (Project no. 2013-1-IT1-LE003-03845)	29.03.2015
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Contemporary Quality Management Systems Training certificate no: 00113, Kalder, www.kalder.org	29.03.2012
Model of Assessing the Professional Competencies of Car Mechanics in the Context of EU Experience	29.05.2011

Leonardo Da Vinci Programme Partnerships Project
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ISO 9001:2008 QMS BASIC and DOCUMENTATION 26.01.2011
certificate no: 03-500-047, TUNACERT

The Charming of Leadership: Technical Knowledge and
Professional Competence, 2009/2011
Comenius Bilateral Project, Project Coordinator
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CONFERENCES ATTENDED

4th International Congress of Technology Addiction November 2017

AERA 2017 Annual Meeting, San Antonio, TX April 2017
Paper presented in round table session

HOBBIES

Music, Piano, Guitar, Audio Recording, Digital Audio, Digital Photography and
Video Editing, Translation,