

Araştırma Makalesi/Research Article

A RESEARCH ON SOCIAL MEDIA ADDICTION AND DOPAMINE DRIVEN FEEDBACK

SOSYAL MEDYA BAĞIMLILIĞI VE DOPAMİN ODAKLI GERİBİLDİRİM ÜZERİNE BİR ARAŞTIRMA

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Öz

Yirminci yüzyılın ortalarına dek, toplumlarda insan ilişkileri yüz yüze ilişkilerden oluşmuştur. İnsanlar hayatları boyunca sınırlı sayıda kişiyle sosyal ilişkiler kurmuş, üzüntü ve sevinçlerini yakın çevresindeki kişilerle paylaşmıştır. 20. yüzyıl ortalarında transistörün icadı ile başlayan teknolojik gelişmeler, teknolojik iletişim araçlarının taşınabilir hale gelmesinisağlamış ve toplumların iletişim şekillerindedeki büyük değişikliklere sebep olmuştur. İnternetin evlere girmesi ile başlayan sanal sohbet kültürü, mobil cihazların yaygınlaşması ile medya paylaşımı boyutuna ulaşmıştır. Toplumun tüm bireyleri medyatik ve ünlü olma şansını yakalamış ve birçoğu bunun için çaba göstermeye başlamıştır. Ancak son yıllarda bu cazibeli medyanın bağımlılık yaptığına dair istatistikî ve tıbbî çalışmalar yapılmaya başlamıştır. Bireylerin beyin ve sinir sistemlerindeki kimyasal hareketler ve fizyolojik davranış değişiklikleri üzerine araştırmalar yapılmıştır. Bu çalışmada, dünyada internet ve sosyal medya kullanımının 2018 yılı istatistik bilgileri sunulmuştur. Ayrıca bağımlılık kavramı, bağımlı davranışı ve semptomları incelenmiştir. Alkol, sigara ve haplar gibi biyolojik ve psikolojik bağımlılığa neden olan maddelerin bireylerin davranışlarında yol açtığı değişiklikler ve beyinde salgılanan dopamin gibi kimyasalların işleyişi hakkında araştırma yapılmıştır. Mani, depresyon ve bipolar bozukluk semptomları incelenmiş, uzun süre sosyal medya kullanan bireyler ile bağımlı ve hasta davranışları arasındaki benzerlikler incelenmiştir.

Anahtar Kelimeler: Sosyal Medya, Bağımlılık, Dopamin Döngüsü

Abstract

Human relationships in societies consisted of face-to-face relationships until the middle of the 20th century. Throughout their lives, people have established social relationships with a limited number of people, sharing their sadness and happiness with them. The great technological developments began with the invention of the transistor in the mid-20th century allowed development of portable communication tools and caused great changes in the way of communication of the societies. The virtual chat culture, which started with the introduction of the Internet into the houses, has reached the dimension of media sharing with the spread of mobile devices. Everyone in society has got the chance to become mediatic and famous, and many of them have started to make an effort for it. However, statistical and medical researches have made in recent years that this attractive media is addictive. Research has been conducted on changes in chemical movements and physiological behavior of individuals' brain and nervous system. In this study, statistical information of the year 2018 on the use of internet and social media in the world are presented. In addition, the concept of addiction, addicted behavior and symptoms were examined. Research made about substances which cause biological and psychological addiction like alcohol, cigarettes and pills and chemicals which affect on behaviour of individuals such as dopamine. Symptoms of mania, depression and bipolar disorder were examined, and similarities between behaviors of individuals using social media for a long time and individuals who are addicted and sick were examined.

Keywords: Social Media, Addiction, Dopamine Loop

EXTENDED SUMMARY

Background:

In this study, terms of addiction, Internet addiction and social media addiction terms are discussed and social media usage ratios with Turkey and some other countries are compared. Also, similarities between drug and social media addicted brain actions are analysed and manic and depressive symptoms compared with social media addicted behaviours.

Research Questions:

Comparison of social media usage between Turkey and some other countries.

Relationship between creation of mediatic behaviour and social media.

Social and mental problems rising with overmuch use of social media channels.

Definition and measure of social media addiction.

Dopamine loop relations with drug and Internet addicted people.

Comparison of manic and depressive behaviours with social media addicts

Methodology:

This study takes reference of statistical data of 2018 Global Digital Suite reports from We Are Social and Hootsuite. This data reveals that there are more than 4 billion people around the world using the Internet. Statistics of most visited websites and average time spent on them in 2017 also collected from We Are Social database. Social media usage habits of people are interpreted within these data. Addiction term, symptoms and addicted behaviour are explained within the DSM (Diagnostic and Statistical Manual of Mental Disorders) which is published by the American Psychiatric Association (APA). Dopamine, which is a stimulant chemical produced by human brain is explained. Dopamine loop and social-validation feedback loop are compared and related. Manic and depressive symptoms are investigated and symptoms of them are compared with those who are addicts of drugs or Internet.

Results and Conclusions:

Social media is a mobile based form of human communication where sharing and discussion is essential without time and space limitation. This environment, which develops a unique cultural world, has become the driving force of the emergence of new social and individual forms of relations, new identities and the emergence of a new global cultural environment. According to the statistical data of January 2018 from We Are Social, 67% of total population in Turkey is connected to the Internet. Turkey ranks 28th in the world with this rate. 42% of the world population is accessing social media. Turkey is the 9th most populous country on Facebook with fiftyone million users and 5th country in the World ranked by number of users with thirtythree million users on Instagram with a ratio of 50,4% female users.

The term "Internet addiction" was first time used and debated in 1996 and indicators for internet addiction were developed in line with criteria of alcohol addiction diagnosis in DSM-IV which is the 4th edition of DSM. The most common cognitive assumptions in the process of new cognitive structuring are; "I am only good on the internet, I am not worthy when I am not on the Internet, but I am an important individual on the internet, I fail when I am not on the Internet, Nobody likes me when I am not on the Internet, Internet is my only friend, People are treating me badly except the internet environment". The results of neurological and psychiatric tests on social media users show that similar biological and psychological symptoms of alcohol, cigarette and drug addicts are seen in active social media users. Also symptoms such as depression, death and suicidal thoughts, low self-esteem, loneliness and social isolation, and depression scale scores are higher in Internet addicts. The intensive use of social media is damaging to the social functioning of the individual and society in some areas. This addiction type is related with Dopamine which is a neuro-chemical created in various parts of the brain and is critical for all kinds of brain functions including thinking, carrying, sleeping, mood, attention, motivation, seeking and rewarding. The dopamine is most responsible for pleasure feeling. Social media dopamine loop is explained which is a similar version of drug addicted dopamine loop.

INTRODUCTION

Forms of social relations established in traditional societies are face-to-face relationships, religious rituals, ceremonies, sounds and symbols. Events such as birth, puberty, marriage and death are turning points in individual life as well as they define the socio-economic roles of individuals in society. The 21st century is a century separating itself from previous periods with many features. In today's world which is also known as information age, computer and internet have penetrated all areas of our life (Ekşi, 2012: 1683). The internet, which is the fastest growing and widespread medium of our age, symbolizes a new checkpoint in terms of human history, because most of the accumulation of knowledge and culture of human history is produced only in the last 30 years (Nakilcioğlu, 2007: 1). According to the statistical data of January 2018 from "Hootsuite" and "We Are Social", 42% of the world population is accessing social media. In Turkey, this ratio is well above the world average with 63%. Social media creates a world beyond the limitations of the physical world and differentiates in perceptions such as time, speed and space. The virtual world is so fast and transient that the real world can not reach. As a result of this, everything is instant and have to be regenerated (Alanka and Cezik, 2016: 550). Most of the social media channels are nourishing own self and are offering the chance to create fake personalities that people want to be. There is potential to affect human life in a negative way and create addiction with inappropriate use of Internet. This study compares behaviour of individuals with psychological disorders or substance addicted with social media users for a long time.

1. COMMUNICATION

The individual of a traditional society has easily faced the limited number of needs by establishing face-to-face relationships in a small social environment. Modern society individual has been able to reach a very large neighborhood by using the communication technologies they produce and by constantly improving them. In the 18th century, especially with the spread of the newspapers and in the following period, inventions such as telegraph, telephone, radio and television and 20th Century societies has taken on a completely different appearance in terms of communication. Communication tools has been causing the societies to get closer to each other today which are the occurrences of globalization (Nakilcioğlu, 2007: 2).

Considering the duplex communication of the internet which is becoming a communication and sharing network that develops rapidly and reaches more people day by day, it is possible to take the beginning of the it until the invention of telegraph in the first half of the 19th century. Afterwards, this type of communication has characterized itself best way with telephone technology and finally it has become a worldwide network by connecting a large number of computers (Esen, 2010: 1). Thus, information consumed in a narrow environment in traditional processes has become accessible to people we have never known. The revolution on the Internet has been the development of the technology of Web 2.0 and the concept of "Manage your Internet". The first practical examples of this concept are Wikipedia, Youtube, MSN, ICQ, chat and friendship websites, etc. where users are able to interact directly with other users (https://en.wikipedia.org/wiki/Web_2.0). Thus, the barriers in front of the group action have disappeared and new ways of coming together and doing something have been found (Shirky, 2010: 24). Social sharing networks, which emerged with Web 2.0 and are one of the last points of information flow on a global scale, have once again broken down the notions of time and space and reinterpreted individual and social life. For this reason, the most meaningful community definition that corresponds to the identification and understanding of this new process that takes place within a global network cycle is the 'Network Society' (Toprak et al., 2009: 29). However, the information technologies designed for facilitating life in the beginning have begun to bring negativity and problems besides their benefits in this process (Ekşi, 2012: 1683).

1.1 Side Effects

Such easy communication in electronic environment; has at first started changing information flow, status relations and organizational hierarchies (Kiesler et al., 1984: 1124). Facts are making it even more attractive to be a part of this networking community such as establishing social connections via the Internet which are not easy to establish in today's urban life, making risk free contacts with strangers easily, expressing thoughts and feelings fearlessly, exaggerating the sides they want to show and spying other people without realizing in sharing environments on the internet (Ekinci, 2002: 251). People have begun to think that they can gain all the rewards that are deprived in this world and that they can present them any way they want in the virtual society which is produced in the virtual reality world. The virtual space in which there are no objectivities and encounters began to be perceived as a different world in which individuals can more easily surf in their desires and dreams (Nakilcioğlu, 2007: 3). Besides, the individuals who have problems with the community in real life are oriented towards the people who form the virtual community as an alternative place to escape real life (Pelzer, 2012: 5). The individual in the virtual environment feels more free and can do whatever he or she wants, without thinking or caring about being watched (Nakilcioğlu, 2007: 2). They use a virtual mask to hide their self unconsciously (Yıldız, 2012: 530). And so there is no more importance of privacy for individuals. Because, the individuals have almost turned into new surveillance players with their own desires. For the individual, the pleasure of surveillance as a means of entertainment has become more important than the confidentiality that has been lost, and the individual voluntarily participates in this surveillance game to reach the pleasure (Kesim Güven, 2011: 186).

1.2 Social Network and Social Media Terms

Social media is a mobile based form of human communication where sharing discussion is essential without time and space limitation. Today, the environment in which the individual communicates with different users from every culture, observes other people and observes by other people is defined as "social network" (Vural and Bat, 2010: 3355). Social network tools are tools which are powered with mobile or computer based devices such as blogs, microblogs, online chat, RSS feeds, social networks, social networking sites, forums, podcasts, video sharing sites, etc. (Koç and Karabatak, 2011: 157). Along with the social networking tools that give time and space flexibility, the space has been liberated from natural restrictions of the human body, the distinction between far and near has gone away due to the connection of the computer terminals and the video monitors. This new environment, which develops a unique cultural world, has become the driving force of the emergence of new social and individual forms of relations, new identities and the emergence of a new global cultural environment (Aydoğan, 2010: 4). Many people now begin to acquire the satisfaction provided by interpersonal relationships from the Internet that they could not find it in their real lives (Peris et al., 2002: 43). However, the people in the cyber space seem to be the messages on the screen, not the humans anymore. There is no definite knowledge as who the people really are on the internet, their gender or where they really live. Cyber space is a new place where nobody has a physical image, so that the individual who enters it leaves whole real world behind himself or herself. In a deeper psychological plane, users view their computers as an extension of their own mind and personality, thus thoughts, attitudes and pleasures can be transferred to the virtual space with this extension. Internet encourages the individual to brighten his online personality or mask for an imaginary audience. The individual thinks that there is no positive or negative result of the action made on the internet, so he or she feels even more free about developing new self. As the operant rushing principle says, the individual wants to repeat the rewarded behavior. Timing is important for any prize's effectiveness and if the prize is delayed, it loses a significant portion of its power. When a user sends a text to the Internet, it may or may not receive a response within a few seconds. A short time response is a prize for the individual and he or she achieved to take attention of the virtual world in a way that the individual could not do it in real life (Denizci, 2009: 50).

1.3 Mediatic behaviour

Many individuals tend to resemble a role model. For example, in order to resemble the character in a television series, he or she unintentionally wears clothes similar to those she wore and uses his or her lines in daily life. This is basic type of media behavior. The person on social media faces more than one role model. A global culture of peeking is emerged and every member of this network became a part of this peeking culture by increasing the number of individuals involved in this network. Internet, in a sense makes possibility of publicizing lives of individuals and becomes people unconcerned about who watched the videos and photos they shared with the claim of being more watched (Niedzviecki, 2010: 11). Most important thing for the individual is now being more followed. In traditional media tools, the individual follows only what is presented to him. But in social networks, the individual can now become the leading part, source or commentator of news (Babacan et al., 2011: 72). This makes the individual feel himself as part of the media. This new media, which the individual regards as the subject itself, without being informed unilaterally, is called "Social Media". Social media creates a mediatic world that revolves around individual with the concept of "self" in the center. Social media usually contains digital objects that directly address the user's interests unlike the conventional media (Perloff, 2014: 367).

1.4 World Usage Statistics of Media Channels

According to the statistical data of January 2018 from "Hootsuite" and "We Are Social", 42% of the world population is accessing social media. Figure 1 shows the first 18 countries of the world according to time spent on social media. It is striking that none of these countries are not the developed countries of the world and some are the poor and unstable countries of the world.



Figure 1. First 18 countries of the world ranked to time spent on social media
(<https://wearesocial.com/blog/2018/01/global-digital-report-2018>)

Turkey is the 9th most populous country on Facebook with fiftyone million users as it is shown in Figure 2. Also Turkish is the 11th most spoken language on Facebook. Also Turkey is 5th country in the World ranked by number of users with thirtythree million users on Instagram with a ratio of 50,4% female users. Turkey is in the 2nd place World ranking with user/population ratio in Instagram. Figure 3 shows the user/population ratio in Instagram usage of some developed countries.

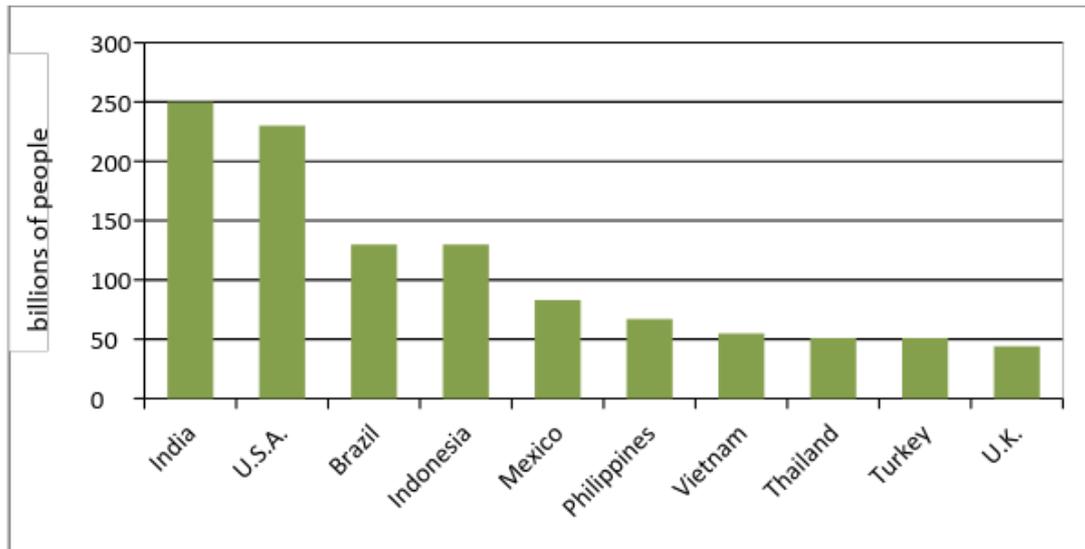


Figure 2. Number of Facebook users in the world sorted by countries
(<https://wearesocial.com/blog/2018/01/global-digital-report-2018>)

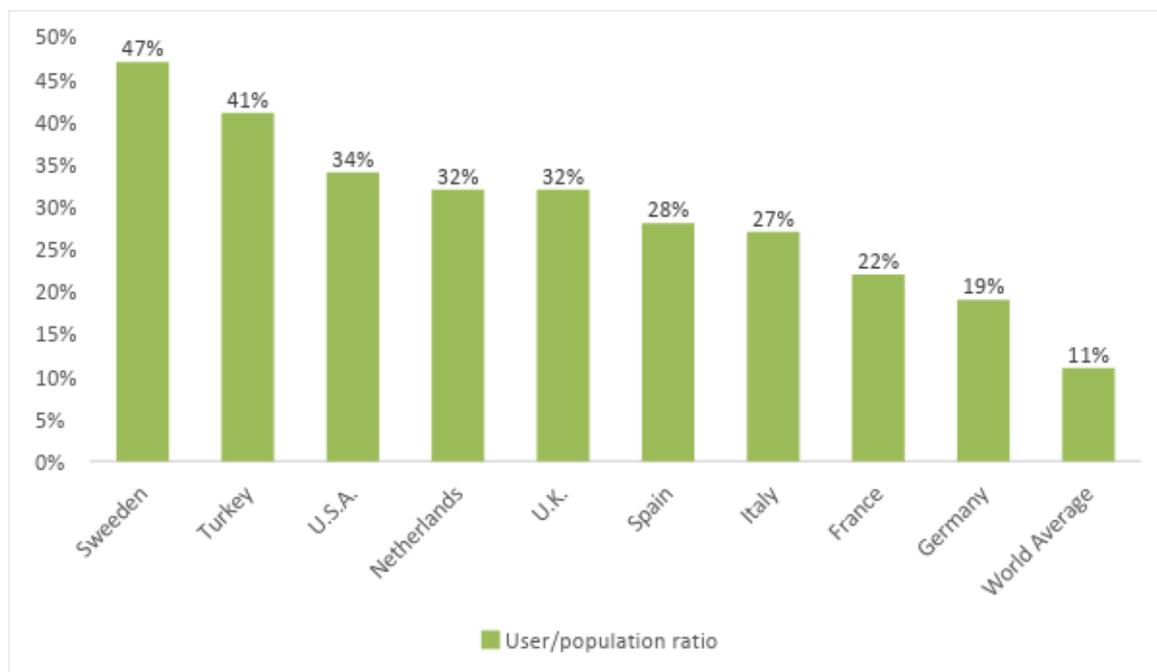


Figure 3. Instagram number of users/population ratio of some countries
(<https://wearesocial.com/blog/2018/01/global-digital-report-2018>)

Attractive features such as ease of access, no need to continuous power supply, the availability of a large number of applications, the ability to shoot and share videos instantly have made mobile devices more attractive than desktop and laptop computers. As seen in Figure 4, the use of computers in the world is leaving its place to mobile devices every passing day.

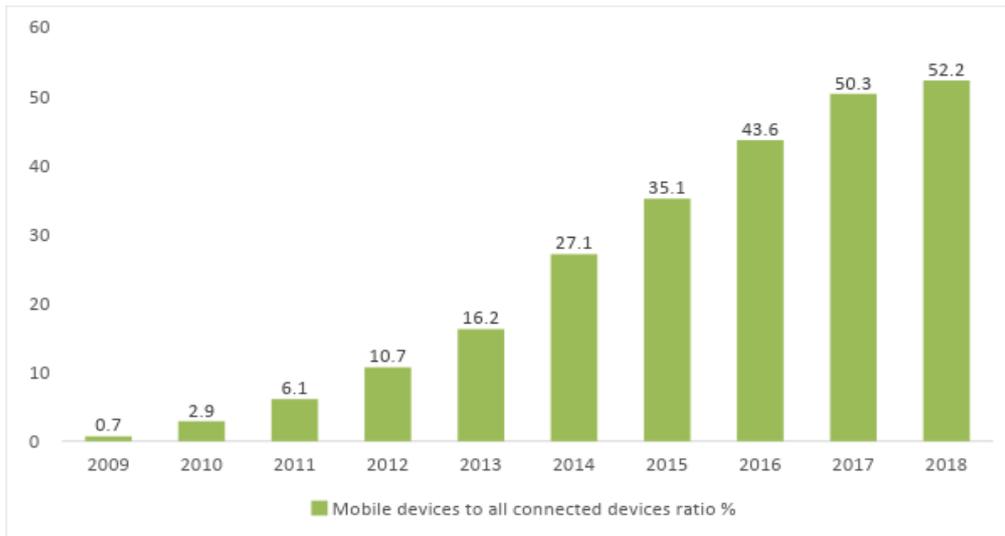


Figure 4. Percentage of mobile devices in total online devices by years (<https://wearesocial.com/blog/2018/01/global-digital-report-2018>)

Current statistics can be derived based on mobile applications as a result of widespread use of mobile devices. As it is seen in Table 1, social media tools have a clear advantage in using mobile applications.

Table 1. Mobile application statistics on January 2018 (<https://wearesocial.com/blog/2018/01/global-digital-report-2018>)

#	Ranking on monthly active users		Ranking on number of downloads	
	Application	Developer	Application	Developer
1	Facebook	Facebook	Facebook Messenger	Facebook
2	Whatsapp	Facebook	Facebook	Facebook
3	Wechat	Tencent	Whatsapp	Facebook
4	Facebook Messenger	Facebook	Instagram	Facebook
5	QQ	Tencent	Snapchat	Snap
6	Instagram	Facebook	UC Browser	Alibaba Group
7	Taobao	Alibaba Group	Shareit	Shareit
8	Alipay	ANT Financial	Uber	Uber Technologies
9	Wifi Master Key	Shanghai L.N.	Youtube	Google
10	Tencent Video	Tencent	IMO	IMO.IM

53% of seven and a half billion population of the world's can access the internet directly, and 49% can access the internet independently from the place through mobile devices. In Turkey, 67% of total population is connected to the internet. Turkey ranks 28th in the world with this rate. Turkey, has a 31,2Mbps average mobile connection speed which is the 14th fastest mobile connection over the World with an average of 21,3 Mbps on January 2018. Also Turkey is 14th country ranking by time spent online daily with seven hours 9 minutes.

Table 2. Most visited websites in January 2018 (<https://wearesocial.com/blog/2018/01/global-digital-report-2018>)

#	SimilarWeb ranking, based on total traffic of website			Alexa ranking, based on average daily visitors and page views		
	Website	Category	Average time (m:s)	Website	Category	Average time (m:s)
1	Google.com	Search	07:07	Google.com	Search	07:35
2	Facebook.com	Social	13:41	Youtube.com	Video	08:18
3	Youtube.com	Video	19:56	Facebook.com	Social	10:20
4	Baidu.com	Search	08:49	Baidu.com	Search	07:32
5	Xvideos.com	Porn	13:01	Wikipedia.org	Reference	04:16
6	Yidianzixun.com	Search	15:12	Reddit.com	Social	15:47
7	Google.co.in	Search	07:47	Yahoo.com	News	04:03
8	Sogou.com	Search	06:23	Google.co.in	Search	07:05
9	Xnxx.com	Porn	13:16	QQ.com	News	04:34
10	Yahoo.com	News	06:14	Amazon.com	Shopping	08:29

Many people are spending time online on these web platforms on a daily basis. Table 2 shows a statistics created by SimilarWeb and Alexa companies about the most visited web sites in the world in 2017.

2. ADDICTION AND RISKS

Users can share a lot of information on personal blogs, from make-up to recipes as they can produce information as a dictionary author. However, social media usage has started to bring some risks. The biggest risk is defined as online molestation especially for young people. More than twenty percent of the adolescents are unconsciously sharing half-naked photographs and have fallen into pedophilia. The young people who try to keep up with the pace of the online World have begun to cause various depressive symptoms trying to create a virtual personality in the foreground in this World and spending more time on social media. All social media users whether old or young are sharing inappropriate messages and content without thinking possible adverse effects in the future. The rapid movement of the virtual world causes forgetting what is shared even a few days ago. However, every share is a collective digital footprint left behind by the user. As a result, demographic-based ads are brought against the user by softwares that analyze the interests of the person (O'Keeffe and Pearson, 2018: 802).

2.1 Narcissistic Tendency

The individual in the social media tries to be at the forefront with hiding mistakes made in real life, covering up physical defects of body using some softwares. Whether willingly or not, he leaves his own self and begins to become more and more like the character he wants to be. In this direction, it can be said that social media has a tendency to feed ontologically narcissistic. Narcissism, which we can also associate with the concept of arrogance, points to the problematic situation of mythological character, lover of self, falling in love with his own image. Narcissism culture is spreading in media and popular culture and consumption culture forced by media. Culture spreading through mass media shines beauty, currency and fame, and constructs these values as objects of worship (Alanka and Cezik, 2016: 550). Social media has now become a significant factor in the body image of young men and women (Perloff, 2014: 363). Individual's efforts to create a virtual self events like increasing number of followers, fame, self-esteem and showing body are idolized in social media. The individual becomes lonely as ending collective membership of traditional society. Individual who becomes isolated from society, considers digital friendships as a treatment of loneliness and strangeness. Individual becomes selfish as a foreigner in the traditional society type. Everyone around the narcissist is only there to approve his beauty. Narcissists believe that, they are much better than others in terms of status, intelligence, creativity and beauty, and see themselves as special, prior and unique although they are not so. Continuous search for fame and desire to be famous are typical characteristics of the narcissist. People with a large number of followers are named as social media celebrities and phenomena. Therefore, the number of followers or friends is very important in the new media (Alanka and Cezik, 2016: 562).

2.2 Social and Mental Problems

The individual unawarely becomes lonely while trying to be different. According to some research, the individual who has become isolated begins to struggle with some psychological problems (Durualp and Çiçekçioğlu, 2013: 38). Today, users have problems in their functionalities in business, social and private areas due to the uncontrolled and over time internet use. Some complaints begun to develop because of the excessive use of internet such as mental occupation, recurrent thoughts on limiting and controlling internet use, make effort against access request, spend more time on internet each day, search and hijacking behavior when not available. Initially, a deep complex situation occurred because of the uncertain limitations of normal use, the exaggeration of the subject in the media, and the researches made with non-standardized measures (Şenormancı et al., 2010: 262). Researches show that; some emotional and behavioral disorders such as loneliness, social isolation, aggression, some general health problems and increase in depression symptoms have been occurring depending on the increase in internet usage (Kubey

et al., 2001: 368). Beside, Internet can lead to some consequences such as weakening of social relations and decrease in close friendship relations. On the other hand, obesity, sleep disturbances and epileptic seizures are accepted as physiological problems due to intensive internet use (Young, 2004: 406-408). It is stated that people who use the Internet intensively have less interaction with their family and friends, and they spend less time with them. Individuals who are barred from social relations frequently apply to the Internet to recreate and maintain personal relationships and prefer Internet instead of face-to-face communication (Inderbitzen et al., 1997: 339). In this context, there is potential to affect human life in a negative way and create addiction with inappropriate use of Internet. Surveys reveal that internet users are showing behaviours similar to people addicted to drugs, alcohol or gambling (Esen, 2010: 3).

2.3 Addiction

Addiction takes many different forms. Pragmatic addictive substances are drugs like cocaine, heroin, morphine. People also become addicted to alcohol, nicotine, caffeine which are legal drugs. In addition, forms of behaviours such as gambling, sex, food, shopping, Internet and gaming are count as popular culture addiction behaviours. (Sinnott-Armstrong and Pickard, 2013: 851) The use of term “Internet addiction” at first time is in 1996 by Goldberg. Internet addiction, also called pathological internet use, excessive internet use, compulsive internet use, problematic internet usage, can be defined as going to excessive nervous and aggressive state when deprived of using internet (Arsoy, 2009: 56). It has been found that individuals who have inappropriate relationships with other people are more risky in terms of internet addiction (Kalaitzaki and Birtchnell, 2014: 733). For the diagnosis of addiction which is a psychiatric syndrome, it is sufficient that only three of the following criteria are seen together;

- Tolerance development in the used substance
- The manifestation of withdrawal symptoms when the substance is cut or reduced
- Efforts to control or abandon the use of drugs
- Spend a lot of time to provide, use or leave the substance
- Adverse effects in social, occupational and personal activities because use of substance
- Taking the substance in a long time and higher quantities
- Continue use of substance despite the emergence or increase of physical or mental problems

Physical addiction is a physiological demand for the presence of the substance depending on the development of adaptation to the substance used. The psychological addiction is need to a substance to satisfy or solve the feeling of dependency according to the emotional nature of the person (<https://www.yesilay.org.tr/tr/bagimlilik/bagimlilik-nedir>). Table 3 shows five measures of addicted behaviour.

Table 3. Addicted behaviour measures (Griffiths, 1999: 248; Balcı and Gülnar, 2009: 8)

Criteria	Behaviour	Example
Draw attention	Substance has become the most important thing in individual's life and mind. It dominates emotions and behaviours.	Individual dreams to connect when he is not connected to social media.
Emotional change	Experience when reached substance	Individual has emotional activity when connected to social media.
Tolerance	Constantly increasing time spent for substance	The time spent on social media today is greater than before
Deprivation	Unpleasant sensations that occur when the action is not continued or suddenly stopped	When access to social media is obstructed, emotions develop such as nervousness, restlessness, trembling etc.
Recurrence	The tendency of substance to recur with previous patterns	Feeling like never been away after reconnecting social media after a long break

In this century, Internet is taking place of children's friends and the concept of "electronic friend" is emerging. Electronic friends preferred instead of real friends is bringing out children with weak social relationships (Selnow, 1984: 150). Some individuals may limit the use of the internet to the amount they need though, some have seen problems with their use in their work and social life, which they can not tolerate. It has been suggested that overuse of technology during adolescence may be associated with the risk of smoking and alcohol use, especially for children with alcohol-addicted parents (Şenormancı et al., 2010: 263). It is recognized as "peer pressure" that individuals in the same age group insist and encourage an action. The relationship between peer pressure and drug, alcohol and cigarette addiction was also found to be in line with internet addiction. (Esen and Gündoğdu, 2010: 30).

The DSM (Diagnostic and Statistical Manual of Mental Disorders), published by the American Psychiatric Association (APA), is an abbreviation of the diagnostic and statistical manual of mental disorders and includes descriptions, symptoms and other criteria for the diagnosis of mental disorders. The term "Internet addiction" was first time used and debated in 1996 and indicators for internet addiction were developed in line with criteria of alcohol addiction diagnosis in DSM-IV which is the 4th edition of DSM (Souza and Barbara, 1998: 2). The first measurement tool used to evaluate Internet addiction is the "Internet Addiction Test", which was developed by Young (Internet Addiction Test-IAT). The behavioral pattern that causes problems for individuals has begun to be defined as "pathological" or "problematic" with the reason that it is harmful or shows a significant deviation from normal (Griffiths, 2005: 194). While describing the behavior of Internet use at a problem level, different researchers used different expressions based on different causalities. These are "internet addiction", "pathological internet use", "problematic internet use", "excessive internet use", "compulsive internet use" and even "internetomani". As in all psychiatric disorders, the etiology of internet addiction is multifactorial. "Why not all internet users are going addicted?" is still an unanswered question. Several etiological models have been proposed to explain the disorder. The key event in the experience of the Internet and related technologies is the positive experience individual got. In other words, insist of maintaining occurs if the result is positive when a new feature of the internet is tested. The individual is conditioned to perform the activity more often in order to obtain a similar satisfaction with his first experience. This operant conditioning lasts until new technologies are found to obtain similar physiological response. Online individuals are also away from the problems that must be faced in real life. The most common cognitive assumptions in the process of new cognitive structuring are;

- I am only good on the internet
- I am not worthy when I am not on the Internet, but I am an important individual on the internet
- I fail when I am not on the Internet
- Nobody likes me when I am not on the Internet
- Internet is my only friend
- People are treating me badly except the internet environment

This new cognitive structure results with the use of pathological internet. Alone and depressed individuals have negative thoughts about their social qualification. Negative or harmful information can be easily hidden as a result of flexibility provided computer-mediated communication rather than face-to-face communication.

2.3 Dopamine Driven Feedback

According to the hypothesis of incompleteness, individuals who do not provide enough satisfaction with natural awards (water, food, sexuality) are directed towards the items and behaviors that stimulate the

reward mechanism(Bozkurt et al., 2016: 240). The most important chemical that drives the prize mechanism is dopamine.

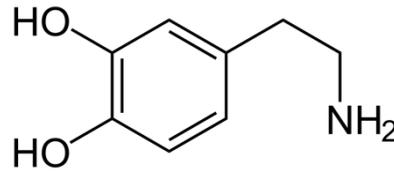


Figure 5. Chemical structure of dopamine

The dopamine is chemically expressed as $C_2H_{11}NO_2$ as in figure 5. It is a neuro-chemical created in various parts of the brain and is critical for all kinds of brain functions including thinking, carrying, sleeping, mood, attention, motivation, seeking and rewarding. The dopamine is responsible for pleasure feeling. When a person eats, drinks or performs a pleasurable action, dopamine is stimulated in his brain to repeat the action. For example an individual who ever played slots, he'll be experienced the intense anticipation while those wheels are turning. The moments between the lever pull and the outcome provide time for his dopamine neurons to increase their activity, creating a rewarding feeling just by playing the game. Unexpected rewards increase the activity of dopamine neurons, acting as positive feedback signals for the brain regions associated with the preceding behavior. As learning takes place, the timing of activity will shift until it occurs upon the cue alone, with the expected reward having no additional effect. And should the expected reward not be received, dopamine activity drops, sending a negative feedback signal to the relevant parts of the brain, weakening the positive association (Haynes, 2018).

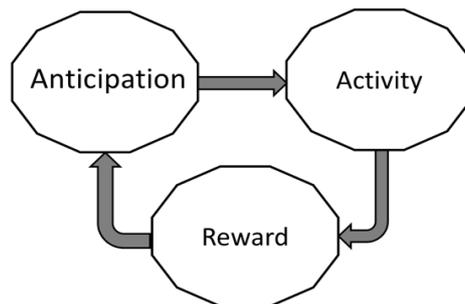


Figure 6. Dopamin loop

Robert Sapolsky has told about the idea of "magical maybe". According to this idea; the individual may or may not find a notification when looking on the phone. There is a large increase in dopamine levels when the indication is seen. The dopamine disappears quickly after the mental sensation is experienced. Then the brain starts searching for dopamine again, the individual repeatedly feels request of looking at the phone screen. This is the cycle of dopamine loop as shown in Figure 6 and 7 (Kotler, 2017).

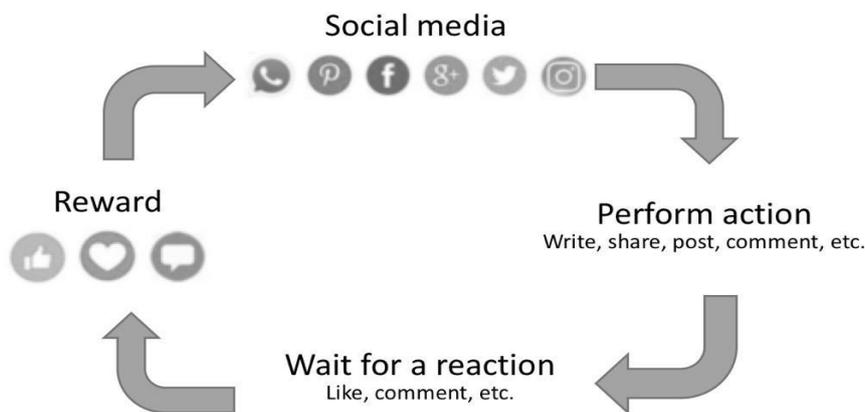


Figure 7. Social media dopamin loop

In late 2017, former Facebook president Sean Parker expressed fears over what the social network is “doing to our children’s brains.” It was developed to be addictive, he said, describing Facebook as a “social-validation feedback loop” that exploited weaknesses in the human psyche. A few weeks later, Chamath Palihapitiya, who worked on Facebook between 2007 and 2011, told about a tremendous amount of guilt in Stanford Business School event in November 2017 regarding Facebook; “I think in the back, deep, deep recesses of our minds, we kind of knew something bad could happen. We have created tools that are ripping apart the social fabric of how society works. That is truly where we are. If you feed the beast, that beast will destroy you. If you push back on it, we have a chance to control it and rein it in. It is a point in time where people need a hard break from some of these tools and the things that you rely on. The short-term, dopamine-driven feedback loops that we have created are destroying how society works. No civil discourse, no cooperation, [but] misinformation, mistruth. This is a global problem, not just about Russian ads. My solution is I just don’t use these tools anymore, I haven’t for years. It’s created huge tension with my friends...I guess I kind of innately didn’t want to get programmed. I also don’t allow my children to use social networks”. This confession of Facebook employees proves the dopamine cycle thesis. Due to dopamine receptor deficiency, impulsive and compulsive behaviors, alcohol and substance addiction, pathological gambling and addictive behaviors tend to predominate. An increase occurs in rewarding and reward seeking behaviors. Using Internet imitates the stimulation of alcohol, cigarettes, and other substances, giving a quick reward with a short delay and causes motivation to more reward seeking behavior. The data obtained by neuroimaging are increasing for internet addiction. In a study, functional magnetic resonance imaging (fMRI) was performed while showing game images to online game addicts. According to brain’s control group, right orbitofrontal cortex, right nucleus accumbens, bilateral anterior cingulate and medial frontal cortex, right dorsolateral prefrontal cortex and right caudate nucleus activation were observed. Activation was observed in similar regions and it was also supported by other studies. These areas are the rewarding areas, and the results show that the same addiction to substance can share the same neuro-biological mechanisms with the extreme gaming demands of online gaming addiction. Another single photon emission computed tomography (SPECT) study similarly showed reduced dopamine carrier levels in the striatum region of the brain of individuals with internet addiction. These results also confirm the hypothesis of lack of a prize in addiction etiology.

Table 4. Epidemiological data of some Internet addiction research (Bozkurt et al., 2016: 242)

Author	Region	Samples	Criteria	Frequency	Gender
Lin et al.	Taiwan	3616 Students	Chen	15,3	M>F
Wang et al.	China	14296 Students	Young	12,2	M=F
Greenfield	U.S.A.	17251 Random participants	Online survey	5,7	M=F
Whang et al.	Korea	13588 Random participants	Young	3,5	M=F
Adiele et al.	Nigeria	1022 Students	Young	3,3	M>F
Kaltiala-Heino	Finland	7229 adolescent	Pathological gambling	1,7 (M) 1,4 (F)	M>F

Studies which are shown in Table 4 made by large number of people shows that excessive internet use is associated with depression, death and suicidal thoughts, low self-esteem, loneliness and social isolation, and depression scale scores were higher in Internet addicts(Bozkurt et al., 2016: 242).

Table 5. Symptoms of dopamine irregularity syndrome (Güleç et al., 2008)

Main symptom	Accompanying symptoms
Nonmotor on ve off periods	Inappropriate happiness, depression, suicidal tendency, psychomotor disorder, lassitude, perspiration, pain in the abdominal region
Hypersexuality	Increased libido, violent sexual behavior, penile erections, leaning on pornography
Pathological gambling	Serious financial losses
Agression	Not tolerating criticism, anger explosions, jealousy, tendency to violence
Punding	Storing, stacking, repeating an ordinary action many times
Other	Compulsive shopping, compulsive eating, aimless circulation

This chemical, also known as the hormone of happiness among the people; also plays a role in realizing important transactions in daily life such as moving, learning, concentration. Table 5 shows the symptoms occur with lack or excess of dopamine. It is known that long-standing excess of dopamine causes hallucinations and long-standing lack of dopamine causes major irreversible damage to the nervous system and diseases such as Parkinson and schizophrenia. Symptoms of dopamine irregularity are similar to manic symptoms. The manic person speaks a lot, jumps between the subjects, can never draw attention to a subject, thinks fast, increases attention, does not miss the tiny details, but can not keep his attention on a certain subject long time. Manic episode treatment is done with drugs that decrease dopamine in the brain. Bipolar disorder is diagnosed if the patient shows both manic and depressive symptoms. The patient is very active, very energetic, has a high sexual desire, finds himself very intelligent and beautiful, but at the same time he gets tired of being drowned, worried about a slightest thing, cries for no reason, sometimes thinks "Better if I died." The social media addict is overactive in social networks. He likes the virtual character he creates and tries to make many virtual friends. He tends to welcome his sexual impulses with his friends in social networks. However, this social overactivity causes person to get away from real world, see himself as worthless and to become vulnerable and unhappy in real world. This situation brings him to bipolar disorder.

3. CONCLUSIONS

Social media today restrict human-human interaction in digital environment. This digital global environment has no civil discourse, a lot of unreality, misinformation, and insecurity. This problem is not limited to a country, it has become a global problem. Using social media ads and sponsored publications, bad people are now able to manipulate large numbers of people to believe what they believe in. Social media companies are working on monitoring and directing the psychology of the permanent mass population. Many people in the world have found themselves in this dopamine cycle, with or without awareness. Figures like heart, thumb, etc. which have no meaning in daily life are triggering some chemicals in human brain and people are made to feel happy with these figures. Although there are age-limits established by law for harmful habits such as alcohol, gambling and smoking in almost all countries in the World, non of them have age restriction for any technological device (Kotler, 2017). Many studies show that one of the most common consequences of social media addiction is the relationship problem. Each passing year, long-term and stable marriages are declining worryingly. Because, it has become possible to meet foreign people and live online emotional connections around the world 24 hours a day, 7 days a week using social media. People can easily communicate the subjects which are difficult to talk with parents or spouses freely with their digital friends who are never known or seen before in real life. In fact, a conversation with a social media friend can easily turn to a degree that even sexual fantasies can be shared quickly. Married individuals are able to cheat their spouses with the concept of "virtual deception" and the feeling of trust in the family is disappearing day by day (Young, 2004: 405). In a research made in the German city of Würzburg, a total of 7,827 reports of 205 daily needs of individuals between the ages of 18 and 85 were recorded and it was found that social media is the weakest link when it comes to resistance to habits (Hofmann et al., 2012: 7). The main factor that triggers addiction to social media is free accessing unlike smoking and alcohol.

Today, clinics opened to service in private and public hospitals for the treatment of social media addiction. First, it is investigating whether there is another psychological disorder underlying the addiction in the course of the treatment. First of all, the story of the person who applied with the addiction complaint should be examined carefully, especially in terms of hypomania and mania. Usually, mood stabilizing pharmacotherapy applies as similar in treatment applied in the treatment of bipolar disorder if pharmacologic treatment is to be administered. Another option is to apply psychotherapy in addition to or independently of pharmacotherapy. Psychotherapy uses the strategy of struggling with negative emotions such as frustration, fear, restlessness, assuming that social media addiction usually emerges as a behavioral pattern to compensate for areas where individual fails in real life (Arısoy, 2009: 60). This study shows that

people all over the World are spending a lot of time using social media and social media tools. The results of neurological and psychiatric tests on social media users show that similar biological and psychological symptoms of alcohol, cigarette and drug addicts are seen in active social media users. The intensive use of social media is damaging to the social functioning of the individual and society in some areas.

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