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Extended Abstract

Internet Addiction in Young Adults in Turkey: Loneliness and Virtual-Environment Loneliness

Durmuş Ümmet¹
Marmara University

Füsun Ekşi²
İstanbul Medeniyet University

Abstract

The purpose of this research is to reveal the relationships in Turkey between young adults' loneliness in real life and loneliness in virtual environments, as well as to reveal the predictive effect of real-life and virtual loneliness on Internet addiction. The Internet Addiction, UCLA Loneliness, and Virtual-Environment Loneliness Scales were used in order to collect data. A total of 237 students, whose average age was 20.64 and were continuing their education at Marmara and İstanbul Medeniyet Universities, constituted the study group of the research. The statistical analyses that were performed showed a positive meaningful relationship for real-life loneliness with the Virtual Environment Loneliness Scale's sub-dimensions of virtual sharing and virtual socialization, and a negative meaningful relationship with its sub-dimension of virtual loneliness. According to the survey, real-life loneliness and virtual-environment loneliness (through all sub-dimensions) significantly predict Internet addiction in young adults (loss of control, tolerance development, and deterioration in social relations). Suggestions have been made through a discussion of the obtained findings related to the literature and other studies.

Keywords

Internet addiction • Addiction • Virtual environment loneliness • Loneliness • Young adults

1 Correspondence to: Durmuş Ümmet (PhD), Department of Educational Sciences, Marmara University, Göztepe Kampüsü Kadıköy İstanbul 34722 Turkey. Email: dummet@marmara.edu.tr

2 Department of Educational Sciences, İstanbul Medeniyet University, İstanbul 34700 Turkey. Email: eksifusun@gmail.com

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One of the most basic human needs is establishing satisfying relationships with other people; in other words, to feel that one belongs with other people. According to [Maslow \(1970\)](#), whose widely accepted view suggested that under human behaviors are the needs that an individual feels to be lacking, after the requirements of human physiology and safety are addressed, one looks for ways and begins to exhibit behavior to address these needs by feeling things such as the need for friendship, companionship, being loved, getting married, and becoming a parent. This requirement is so powerful that individuals struggle to eliminate this need in many parts of their daily life because it is a social instinct that humans are born with ([Morgan, 1998](#)). In reality, people's intense efforts have in one sense been assessed as a subject of extensive research in psychology to be an avoidance of the phenomenon of loneliness.

[Jung \(2012\)](#) defined loneliness as an experience that is revealed when elements which are important for an individual cannot be transmitted to other people, or when one's opinions are found to be inappropriate for other people. Loneliness generally is viewed not as a feeling in individuals; it is seen as a phenomenon different from being alone and as an unexplained fear, problem, or hopelessness that can be seen sometimes for a short while and sometimes for longer ([Duy, 2003](#); [Jones, 1981](#); [Öz, 2010](#); [Özatça, 2009](#)). Similarly, the feeling of loneliness is expressed as an unwanted and unpleasant experience accompanied by feeling different than other people and by feeling anxiety, anger, and sadness ([Russell et al., 1980](#)); it appears to be more intense in adolescence and young adulthood, although it exists as a feeling that can be seen in almost every period of human life. Young adults start their university or business life as high school ends; this also brings together the start of their relationship with a new social surrounding. This new social structure, along with providing one with important personal developments, also can be the cause for being alone. When individuals feel loneliness or are unable to tell with whom in their environment they can share their feelings, they are unable to feel the existence of self, of a social group they can be safe and secure in, or with whom they can get a sense of belonging and closeness around ([Cutrona, 1982](#); [Erözkan, 2009](#); [İmamoğlu, 2008](#)). In parallel with this view, [Weiss \(1973\)](#) stated that loneliness does not come from being alone but from the lack of a certain set of relationships that are clearly needed. In other words, there may be a lack of intimate connections, friendships, or other social bonds.

Loneliness as a phenomenon that is perceived more in young adults may be closely associated with the tasks that are developing during this period. According to [Erikson \(1984\)](#), developmental tasks that are expected from individuals in this period are gathered in social areas such as feeling that one belongs to a group, choosing a spouse, preparing for marriage, and establishing and maintaining close and satisfying relationships with people. Staying alone or avoiding relationships that lead to establishing closeness are dangerous situations at this stage. These can open the way

to important personal problems in one's identity. According to the similar perspective of Sullivan (as cited in [Geçtan, 1998](#)), who emphasized interpersonal relationships in understanding the individual, loneliness occurs as an experience where a person's basic need for interpersonal closeness is unable to be met or is unpleasant and the individual does everything possible to avoid it; if one cannot establish close relations, one falls into an intense loneliness accompanied by despair.

Much research is found that shows the close relationship of an individual's experience of feeling loneliness with negative psychological indicators. These studies have focused mostly on lower life-satisfaction, academic and social failure, negative social behavior, suicidal tendencies, low self-esteem, and more ([Akbulut & Yılmazel, 2012](#); [Akyol, 2013](#); [Casale & Fioravanti, 2011](#); [Doğrusever, 2015](#); [Gümüş, 2000](#); [Koçak, 2008](#); [Odacı, 1994](#); [Pancar, 2009](#); [Sinkkonen et al., 2014](#); [Yılmaz & Altınok, 2009](#)). Another issue widely discussed in relation to the feeling of loneliness that has been attracting much attention in recent years is *Internet addiction*. In the findings of many of the studies on this subject ([Erdoğan, 2008](#); [Hamburger & Artzi, 2002](#); [Gu, 2012](#); [Kelleci & İnal, 2010](#); [Whang, Lee, & Chang, 2003](#)), loneliness has been identified as an important determinant in Internet addiction.

Internet addiction can be defined in general as excessive use of the Internet; it is the inability to resist the desire to use it, loss of the importance of time spent without being connected to it, extreme nervousness and aggression when deprived of it, and increased deterioration of one's business, social, and family life ([Young, 2004](#)). Internet addiction becomes an important concept to contemplate because of the way that it has come to encapsulate our lives in recent years. While Internet usage was limited to a small group of people in the business world and academic circles 20 to 25 years ago ([Schoenfeld, 2011](#)), children and young people these days are surely experiencing the Internet in their daily lives more or less in all modern societies with the ability to access it. The main thing to focus on here is for how long and the purpose for which computers and the Internet are used; in other words, it is the meaning that one fastens to the time one spends on the Internet. Perhaps this is the most important criterion to distinguish whether someone is addicted to the Internet or not ([Ekşi & Ümmet, 2013](#)). [Young \(1999\)](#), while collecting the criteria for Internet addiction under 8 headings, argued that of these eight criteria, a person could be regarded as addicted who matched five of them. These criteria are: (a) excessive thoughts related to the Internet, thinking about the Internet; (b) an increasing proportion of Internet use is expected for pleasure; (c) unsuccessful attempts at quitting or decreasing Internet use; (d) restlessness, depression, or anger occur in the absence of Internet usage; (e) being online longer than planned; (f) experiencing problems with family, school, work, and friends due to excessive Internet usage; (g) lying to others (family, friends, therapist, etc.) about time spent on the Internet; (h) using the Internet to get away from negative feelings or to escape from problems.

Explanations made on the subject of Internet addiction discuss such kinds of addiction as cybersex, cyber-relationships, net, information-searching, and online-games (Gönül, 2002; Mikowski, 2005; Young, Pistner, O'Mara, & Buchanan, 2000). Actually, the kinds of Internet addiction also point to the effort of somehow escaping from loneliness by initiating and maintaining a social relationship. Some of the factors that make the Internet attractive can be listed as being able to establish relationships through the Internet that could not happen in real life, being able to communicate risk-free with other people, expressing one's thoughts and feelings freely, and while masking, showing one's identity how one wants to be seen, being able to hide one's true identity, and being able to get in contact whenever one wants (King, 1996).

According to Kim, LaRose, and Peng (2009), individuals who are alone or who don't have effective social skills while having an effective conversation with others show the behaviors of compulsive Internet use. Additionally, because of this use, they begin to experience problems that are born from loneliness and a lack of social skills, as well as other life issues. These individuals are buried in virtual loneliness while breaking from the social life that face-to-face communication maintains; they are literally trapped in a virtual world. The individual also lives in a state of loneliness more intensely through the Internet and quickly becomes supported by the facilities of the Internet (Kraut et al., 1998). Individuals may also enter a continuous virtual loneliness while escaping from or avoiding virtual relationships and communication. The individual is now in their own state and in a position without borders (such as sites, settlements, worlds, rooms, fields); they can isolate themselves from the situation of time, responsibility, relationships, and communication. They can get away from society without discomfort, maybe even enjoying it; they can enter a state of loneliness while ignoring the relationships that they established in the virtual environment they had entered while also leaving society behind (Korkmaz et al., 2011). In this context, sometimes in order to adapt to the changes that somehow result from a rapidly evolving society, social values, and technological developments, mankind pays the cost of trying with loneliness and its related problems (Körler, 2011). As previously mentioned, one of these problems is Internet addiction; almost all research that has addressed individuals' sense of loneliness with this addiction indicated a high correlation between loneliness and Internet addiction.

The primary objective of this study is to determine whether or not a correlation exists between real-life loneliness and virtual-environment loneliness (virtual socializing, virtual networking, and virtual loneliness). Another goal of the study is to also examine the predictive impact of loneliness in real life and loneliness in the virtual environment on Internet addiction (loss of control, tolerance development, deterioration in social relations).

Method

Study Group

The study group of the research was composed of students who were continuing their education in İstanbul at Marmara and İstanbul Medeniyet Universities during the 2014-2015 school year who agreed to participate voluntarily. A total of 237 students comprised the study group between the ages of 18 and 26 ($\bar{x} = 20.64$); 70 were male (29.5%) and 167 were female (70.5%).

Data Collection Tools

Internet Addiction Scale. The Internet Addiction Scale, designed by [Han and Jerusalem \(2001\)](#) and adapted to Turkish culture by [Şahin and Korkmaz \(2011\)](#), was used to measure the participants' levels of Internet addiction. The adaptation of the scale was carried out through data collected from 468 individuals of different ages. To determine validity, exploratory and confirmatory factor analyses were performed, and item-difficulty discrimination was calculated. At the end of the factor analyses, 19 items and 3 factors (loss of control, tolerance development, and deterioration of social relations) were identified. All items were determined to be distinctive according to their relation to the factor with which they belonged. Internal consistency reliability was calculated to determine the scale's reliability. The total scores for the internal coefficients of the scale were calculated as Cronbach's alpha = 0.858, Spearman-Brown = 0.767, and Guttman split-half = 0.765. Additionally, Cronbach's alphas related to the sub-dimensions were seen as *loss of control* = 0.904, *tolerance development* = 0.887, and *social-relations deterioration* = 0.926.

UCLA Loneliness Scale (UCLA-LS). UCLA-LS, which aims to determine an individual's general state and level of loneliness, is an instrument consisting of 20 items (10 straight and 10 reverse items). This scale is self-evaluating, using 4-point Likert-type responses. The total score a person receives from the scale is obtained while totaling the points from the forward- and reverse-scored items. A high total score received on the scale indicates a high level of loneliness. The UCLA-LS, which aims to measure loneliness (being an important problem that is experienced in social relations in everyday life) through social and emotional dimensions, was first developed by [Russell, Peplau, and Ferguson \(1980\)](#). Later it was revised to its current form after [Russell et al. \(1980\)](#) reviewed it. The scale was first used while translated to Turkish by [Yaparel in 1984](#). [Demir \(1989\)](#) later conducted a reliability and validity study of the scale's translation; internal consistency was found as 0.96, and the test-retest correlation coefficient was found as 0.94.

Virtual Environment Loneliness Scale (VE-LS). This instrument was developed by [Korkmaz et al. \(2014\)](#) to determine individuals' levels of loneliness in virtual

environments because it was a subject that had not yet been adequately discussed in the literature. Data was collected from 354 individuals for its first administration and from 141 individuals for its second; all were university students under the age of 30. In order to investigate the scale's validity, exploratory and confirmatory factor analyses, item-total correlation factor, corrected correlation, and item discrimination were calculated. To investigate the reliability of the scale, its internal consistency coefficient and level of stability were calculated. As a result, the scale was a 5-point Likert-type scale consisting of 20 items that could be grouped under three scale factors: virtual socializing, virtual sharing, and virtual solitude. The correlation between two equal-halves = .506, Spearman-Brown reliability coefficient = 0.662, Guttman split-half value = 0.662, and Cronbach's alpha reliability coefficient = 0.816 were determined as the total points of the scale. Cronbach's alpha values related to the sub-dimensions were seen as virtual socializing = 0.842, virtual sharing = 0.809, and virtual loneliness = 0.614.

Procedure

Research data were collected from students who participated in the research using the indicated data collection tools. Students were given a guideline before the application; implementation took approximately 25 minutes.

Data was entered after collection into the SPSS program, and the sub-dimensions were calculated while taking into account the scale's reverse-scored items; in order to view the assumption of the data's normality, skewness and kurtosis values were reviewed. In order to see if the distribution was normal, because the number of people in the study group exceeded 50, the Kolmogorov-Smirnov normality test ($Z = .833, p = .492$) was performed. Assumption of normality can be stated provided that the obtained value is greater than .05 (Büyüköztürk, 2003). Afterwards, in order to view the multicollinearity properties of the data, tolerance and variance inflation factors (VIF) were examined. VIF values of 10 or higher are considered to have strong collinearity (Smith & Campbell, 1980). VIF values ranged between 1 and 2.1; the tolerance values ranged from 0.46 to 0.79. These findings showed no issue with multi-collinearity between variables. Pearson product-moment correlation coefficients were calculated to test the relationships between variables in the research, then hierarchical regression analysis was conducted to determine the extent that the UCLA-LS and VE-LS (sub-dimensions of virtual socializing, virtual sharing, and virtual loneliness) predicted Internet addiction. The purpose of using the technique of hierarchical regression was to predict the dependent variable based on multiple independent variables (predictors) associated with the dependent variable, such as real life loneliness and virtual environment loneliness being two or more explanatory variables (Büyüköztürk, 2003; Kalaycı, 2006).

Findings

Pearson correlation coefficients were calculated in order to be able to see the relationship of university students' UCLA-LS and VE-LS scores with Internet addiction. According to the calculations, a positive, meaningful relationship was primarily observed to exist with real-life loneliness and the two sub-dimensions of virtual socializing and virtual sharing from the VE-LS. Namely, as an individual's real-life loneliness level increases, so too do the levels of virtual sharing and socializing increase. Additionally, a negative meaningful relationship was observed between the scores of the virtual loneliness sub-dimension with the scores received from the UCLA-LS. Meaningful relationships were determined to exist for both the UCLA-LS and also the VE-LS (in the negative direction for the sub-dimension of virtual solitude and the positive direction for the sub-dimensions of virtual socializing and sharing) with all of the sub-dimensions of the participants' Internet addiction (loss of control, tolerance development, deterioration of social relations; $p < .01$).

After the correlation analyses, multiple-hierarchical regression analysis was conducted in order to determine the contributions that the UCLA-LS and VE-LS (sub-dimensions: virtual socializing, virtual sharing, and virtual loneliness) made in predicting Internet addiction (sub-dimensions: loss of control, tolerance development, and deterioration of social relationships). Each sub-scale of Internet addiction was dealt with separately, and the model was tested as follows for the three sub-dimensions: In the hierarchical regression analysis that was performed in two blocks, the model was developed by adding the UCLA-LS in the first stage and the VE-LS (sub-dimensions: virtual socializing, sharing, and loneliness) in the second phase.

In the first stage of regression analysis, the UCLA-LS scores were shown to significantly predict the loss of control scores from the Internet Addiction Scale ($F = 23.493$, $p < .001$). The results of the performed hierarchical regression analysis determined that the UCLA-LS statistically predicted the Internet Addiction Scale's *loss of control* together with the VE-LS (virtual socializing, sharing, and loneliness) at a significant level ($F = 9.515$, $p < .001$). While the UCLA Loneliness Scale explained 9.1% of the total variance alone in the first stage, the UCLA and the Virtual Environment (virtual socializing, sharing, and solitude) Scales together explained 14.1% of the total variance.

The results from the regression analysis that was performed to view the UCLA Loneliness Scale's predictability of variables for the scores of *tolerance development*, and *Internet addiction* showed a meaningful level of predictability ($F = 48.823$, $p < .001$). In the results of the performed hierarchical regression analysis, the UCLA Loneliness Scale together with the sub-dimensions (virtual socializing, sharing, and solitude) from the Virtual-Environment Loneliness Scale were determined to predict

at a statistically significant level the tolerance development scores from the Internet Addiction Scale ($F = 9.488, p < .001$). While the UCLA-LS explained 17.2% of the total variance alone in the first stage, the UCLA-LS together with the VE-LS together explained 25.9% of the total variance.

In the regression analysis, the UCLA-LS was seen to predict the Internet Addiction Scale's *deterioration of social relationships* scores at a significant level ($F = 67.534, p < .001$). In the hierarchical regression analysis results, UCLA-LS and VE-LS (virtual socializing, sharing, and loneliness) together were determined to predict at a statistically significant level the scores for the Internet Addiction Scale's *deterioration of social relationships* ($F = 38.687, p < .001$). While UCLA-LS explained 22.3% of the total variance by itself in the first stage, UCLA-LS together with VE-LS (virtual socializing, sharing, and loneliness) were able to explain 40.0% of the total variance.

Discussion

Within the framework of the research objectives, positive meaningful relationships were found between the sub-dimension scores of virtual socializing and virtual sharing with the scores of the UCLA Loneliness Scale according to the Pearson correlation analysis results that were performed so as to be able to see the relationships between university students' UCLA-LS scores and the sub-dimensions of Virtual-Environment Loneliness Scale. This finding shows that as the individual's real-life loneliness level increases, so too do the features of virtual socializing and virtual sharing increase. Additionally, a negative meaningful relationship was found between individuals' sub-dimension scores of VE-LS and the scores they received from the UCLA-LS. This finding shows that as individuals' sense of loneliness in everyday life increases, the sense of loneliness they feel in the virtual environment decreases. When the obtained findings are taken together, in order for those who are either unable to find or cannot develop self-satisfying relationships in social environments (in other words, those who are left alone to face the feeling of loneliness), to be able to rid themselves of this negative feeling, they are clearly seen to attempt socializing and sharing in virtual environments. Humans are social beings, and their social aspect must be satisfied somehow. A feeling of belonging is one of the most powerful human needs, and descriptions and studies continue to put forth that failure to meet a desired sense of belonging is experienced as a heaviness (Erözkan, 2009; Kraus, 1993; Kılınç & Sevim, 2005; Peplau & Perlman, 1982; Weiss, 1973). This also supports the finding (Çorapçıoğlu, 1998) of negative relationships between the number of friends and social sharing opportunities a person has with loneliness. When troubleshooting this powerful need to establish social relationships, virtual environments have now become the easiest area of access for adolescents and youths. Possibilities of satisfaction, which have been defined as ease of technological access and *social*

sharing sites, and a sense of belonging that has not been met in social environments is eliminated in virtual environments, perhaps also without even feeling the need to endeavor this way.

Meaningful relationships were found in a positive direction between UCLA-LS scores and all sub-dimensions of the Internet Addiction Scale (loss of control, tolerance development, and deterioration of social relations), which was another aim of the research. This finding illustrates the relationship of Internet addiction with the sense of loneliness that is in one's social life. The statistical analysis that was performed also showed a high positive correlation between all sub-dimensions of the Internet Addiction Scale and individuals' scores for virtual socializing and social sharing. In other words, as individuals increased their levels of socialization in the virtual environment and their virtual sharing behaviors, they more greatly experienced addiction to the Internet. A negative meaningful relationship was found in the analyses between the scores for the sub-dimension of virtual solitude and all the dimensions from the Internet Addiction Scale. This obtained finding similarly shows that there is an opposite impact on Internet addiction for individuals who don't experience a sense of loneliness in the virtual environment; it shows that those who aren't experiencing the feeling of loneliness in the virtual environment are mostly addicted to the Internet. Regarding these relationships, in order to see the effect of the predictor on each sub-dimension of the Internet Addiction Scale together with the scores from the UCLA-LS and VE-LS, the effect on each sub-dimension of the Internet Addiction Scale was analyzed separately. Firstly, as a result of the hierarchical regression analysis that was performed to see the predictor effect on *loss of control*, which is the first sub-dimension of the Internet Addiction Scale, the UCLA-LS scores were seen in the first stage to have a meaningfully predictive effect; in the second stage where the VE-LS scores were included, the level of this predictor effect increased. This findings shows that young adults who feel a sense of loneliness in real life and who socialize in virtual environments experience greater loss of control. In parallel with this, while participants' levels of real-life loneliness predicted significant tendencies towards *tolerance development* towards Internet addiction, the second phase that included analysis of the VE-LS scores was determined to significantly increase the effect of this predictor. Finally, the predictor effect on the scores from the Internet Addiction Scale sub-dimension *deterioration in social relations*, which the UCLA-LS scores predicted at a significant level in the first stage, was determined have a considerably substantial increase when the VE-LS scores were included in the second stage of analysis.

All of these findings indicate the important effect that social relationships established in virtual environments and that young adults' feelings of loneliness in real life have on Internet addiction. These obtained findings show parallels with many research findings. Many studies which point to meaningful relationships between

Internet addiction and the phenomenon of loneliness (Ayas & Horzum, 2013; Demirer et al., 2013; Engelberg & Sjöberg, 2004; Ezoe & Toda, 2013; Halley et al., 2014; Kim et al., 2009; Kurtaran, 2008; Özcan & Buzlu, 2007; Nalva & Anand, 2003) have emphasized the strong influence that loneliness has over Internet addiction on the entire population, regardless of being a child, adolescent, or young adult. Additionally, one point to focus on is that these studies were also in different countries. In Turkey, as in many parts of the world, loneliness is also an obvious driving factor in Internet addiction. As discussed earlier, when the universal social needs that an individual desires and is born with feel incomplete, one can resort to virtual environments to fill this need, and this need can go on endlessly in virtual environments. This situation may become increasingly indispensable, even reaching the point of addiction.

Research findings that show negative relationships between an individual's Internet addiction and perceived sufficiency of social support (Balkan, 2011; Chen & Long, 2007; Esen & Siyez, 2011; Özcan & Buzlu, 2005; Yeh, Ko, Wu, & Cheng, 2008) also supports the results of the current study. *Social support* that people can rely on in their surroundings, that gives them value, that is interested in them, and that is defined as an individual's asset, is an important factor in the loneliness that an individual feels. Therefore, individuals with strong social support in their social environment and who feel they belong with people do not feel a sense of loneliness. In the framework of this information, individuals who have adequate social support could be argued to not have the need to turn to cyberspace, or that even if they turned that way, their Internet usage would not reach the level of addiction. Additionally, another subject that is considered to support this view are the studies that have shown positive relationships between Internet addiction and social anxiety (Doğrusever, 2015; Erwin et al., 2004). Studies that have indicated individuals were unable to form satisfying relationships in social life because of social anxiety show that more and more individuals like this are Internet addicts. Moreover, findings from studies that have shown individuals who have low life satisfaction experience loneliness (Çeçen, 2007; Tuzgöl-Dost, 2007; Yılmaz & Altınok, 2009), together with findings from research that have shown individuals who have low life satisfaction are highly dependent on the Internet (Demir et al., 2015; Morsümbül, 2014), just like the results of this study, clarify the impact of loneliness on Internet addiction.

These research findings have revealed the significant level of effect that the relationships between young adults' levels of real-life and virtual-environment loneliness have, as well as the effect these two variables have on Internet addiction. These findings should be able to shed light on families and experts who are interested in the cause, process, and treatment of Internet addiction. In the frame of these results, field experts and families can help keep children away from Internet addiction by increasing their social support and somehow eliminating youths' sense of loneliness. Also in the context of schools, students can be kept away from Internet addiction by strengthening their social aspects

and by allowing them to establish bonds with each other that fulfill them in their social life. Lastly, this study was conducted using quantitative research methods. The use of qualitative or mixed-type research methods are thought to be able to contribute to the knowledge in order to examine the subject more deeply though causes and processes.

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