Examination of Turkish University Students’ Internet Addiction in Relation to Their Parental Attachment Styles and Sociodemographics

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Abstract
The purpose of this study was to examine university students’ Internet addiction in relation to their parental attachment and sociodemographics. The participants consisted of 402 university students aged 17 to 25 years, 249 (61.9%) of whom were female and 153 (38.1%) of whom were male. The participants completed a questionnaire comprising the Parental Bonding Instrument (PBI), the Internet Addiction Test–Short Version (IAT-SV), and a personal information form. The data were analyzed using the Pearson product-moment correlation coefficient, multiple regression analysis, and one-way analysis of variance (ANOVA). The results of the one-way ANOVA suggested that students whose fathers had low educational levels were more likely to have higher Internet addiction scores than those students whose fathers had high educational levels. The results of the Pearson product-moment correlation coefficient suggested that university students’ Internet addiction scores were negatively correlated with their age, grade point average, maternal care, maternal overprotection, paternal care, and paternal overprotection. However, the results of a stepwise regression analysis suggested that the most important predictors of Internet addiction scores were maternal overprotection and paternal overprotection; the results also suggested that age, grade point average, maternal care, paternal care, and father’s educational level did not explain the additional variance in Internet addiction scores above and beyond the maternal overprotection and paternal overprotection scores.

Keywords
parental attachment, Internet addiction, university students, maternal attachment, Turkey

Introduction
Computers and the Internet have become indispensable tools of life in today’s technological age. The Internet supports cognitive and social development and provides individuals with rich learning environments. By giving ample opportunities for information and communication, the Internet is an important tool that helps individuals learn, socialize, and access information through a variety of different sources (Çevik & Çelikkaleli, 2013). Unfortunately, the rapid spread of the Internet and its increased usage have also resulted in some negative effects. The increasing frequency of Internet usage, the uncontrolled use of the Internet, especially among children and young people, and the loss of control while using the Internet negatively affect the lives of users (Zorbaş & Dost, 2014).

From the day that we began using the Internet, it changed our lives and is likely to continue to do so in the future. While facilitating life, the Internet has also brought with it some disadvantages, one of the most significant of which is Internet addiction (Arısoy, 2009; Young, 2004). This type of addiction is defined as the unavoidable desire to overuse the Internet, the declining importance of any activity that does not involve using the Internet, excessive nervousness and aggression in the case of Internet deprivation, and the gradual deterioration of one’s professional, social, and family life (Young, 2004).

For many people, the concept of addiction conventionally means the use of substances such as alcohol, cannabis, cocaine, and heroin. However, there are also nonsubstance addictive behaviors such as gambling, shopping, watching television, and video gaming. Behavioral addictions, similar to alcohol/substance addictions, also display signs of...
physical and psychological addiction, which are the main components of addiction (i.e., salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse; Griffiths, 2000). Internet addiction as a behavioral addiction has a prevalence of 6% to 14% (Black, Belsare, & Schlosser, 1999). In addition, 38% of those Internet addicts also suffer from substance abuse disorders, 33% suffer from mood disorders, 10% suffer from anxiety disorders, 14% suffer from psychotic disorders, and 25% suffer from depression or dysthymia (Odaabaşıoğlu, Öztürk, Genç, & Pektaş, 2007).

Young people, given their developmental characteristics and the responsibilities, constitute a significant risk group in terms of problematic Internet usage and Internet addiction (Odaabaşı, Kabakçı, & Çoklar, 2007; N. Şimşek, Akça, & Şimşek, 2015). However, it is equally irrational to ban children or young people from the Internet and deprive them of the opportunities of this technology because of its inherent dangers. Rather, it would be a more rational approach to inform them about healthy Internet usage. Research in Turkey has indicated that risky Internet usage can be seen in young people, especially in cases of attention-deficit/hyperactivity disorder (ADHD), social phobia, mild depression, or a family predisposition to addiction (Gönül, 2002). As an important tool of information technology, the Internet provides easy and rapid access to information and facilitates access to information that is needed in everyday life or for education (Bayzan & Özbilien, 2012). The Internet opens the door to a wide variety of sources of information beyond the normal physical possibilities and helps us to go beyond the spatial and temporal limits to meet people on a global scale (E. Şimşek & Sali, 2014). In addition, students use the Internet for a wide range of purposes, including school work (e.g., research and homework), entertainment, watching videos, video gaming, sharing with friends on social networks, reading or watching the news, and downloading music or movies. Many parents buy computers and pay for a home Internet connection to provide educational opportunities for their children and to prepare them for the “information age”; however, they are also concerned about the negative effects of computer and Internet usage on their children (Arnas, 2005). Individuals who are predisposed to Internet addiction have low tolerance thresholds for dealing with their sense of emptiness and their individual needs. This situation leads them to consider the Internet to be a mental shelter wherein they can hide their feelings of anxiety and frustration. Individuals use the Internet to get rid of their feelings of anxiety and loneliness; however, this usage traps them in a vicious cycle (Balci & Gülmar, 2009).

As a growing trend in Turkey, Internet usage has increased dramatically among young people in recent years and has become an important part of their lives. According to the Household Use of Information Technology Survey that was conducted by the Turkish Statistical Institute (TurkStat) in 2013, 16- to 24-year-olds had the highest rate of Internet usage at 90.7% (94.7% male, 86.5% female) (TurkStat, 2018a). Thus, young people constitute the largest group of Internet users in Turkey. In addition, it is not surprising that young people also seem more likely to have problems associated with Internet usage (Arcak, Dinç, Yay, & Griffiths, 2018; Yüksel & Yılmaz, 2016). This is especially concerning because, while trying to set goals for their future, young people are likely to end in failure if they are prone to overusing the Internet. The high prevalence of Internet addiction among young people and the related excessive, uncontrolled, and unintended use of the Internet can negatively affect the development of their personal skills, thereby resulting in poor social development, low self-esteem, social anxiety, and aggressive behavior (Cömert & Kayran, 2010; Moreno & Kolb, 2012). Thus, young people seem to be at considerable risk. Previous research has shown that Internet addiction is more common among young users and has underscored the need for research on this issue (Arısoy, 2009; Chou, Condron, & Belland, 2005; Odaabaşıoğlu et al., 2007; Tsai & Lin, 2003).

Youth, as a critical transition from adolescence to adulthood, is one of the most important periods of life. It is a dynamic time in which physical and psychological changes occur and adult roles and responsibilities are attained. Similarly, the university years may bring about many problems in addition to the confusion of adolescence, such as separation from home and family, adaptation to a new environment, getting ready for future employment, and uncertainty about finding a job (Topkaya, Şahin, & Meydan, 2017). In trying to keep up with the times, young people are likely to use the Internet in their everyday lives in an uncontrolled manner. In Bowlby’s (2003) attachment theory, early childhood interaction with the primary caregiver forms the basis of children’s early relationships and takes part in shaping their later development as adults. Accordingly, while children’s physical needs are being satisfied by their caregiver, a social and psychological connection is established between them and, thereby, children satisfy their psychological needs with the conception of “the self and the other.” The concept of attachment refers to the presence of an emotionally positive and helpful bond between infants and their parents or caregivers. Children who have developed a secure attachment to their parents grow up to be individuals who are autonomous, are capable of expressing intimacy and their need for support while sincerely supporting others, and do not seek approval from others. Accordingly, individuals with secure parental attachment are meticulous in establishing long-term relationships. They have great respect for and confidence in themselves and others (Bowlby, 2003).

Although peer attachment is more prominent during adolescence, the family, which provides the greatest contribution to the psychosocial development of adolescents and young people, is still important. In fact, the relationship between young people and their parents is considered to be a determining factor in their behavior (Doğan, 2016). Inadequacies in the attachment relationship with their parents can lead to various problems in the personality traits and
interpersonal relationships of young people. In a similar vein, unsatisfied basic psychological needs in childhood are likely to foster unhealthy personality traits, while satisfied childhood needs lead to psychologically healthy adults (Bowlby, 2003). Adolescents who develop a sense of trust with their parents experience a healthier transition into adulthood by using their parents as a safe shelter in their search for identity, which is an important developmental task of adolescence. However, for those with an insecure parental attachment, the transformation of adolescence, along with the pressures of identity and socialization, may cause them to experience internalization (depression or anxiety) or externalization (substance abuse, antisocial behavior, etc.) disorders (Doğan, 2016). Adolescents with a secure parental attachment have higher levels of social–emotional competence and are less aggressive compared with those with an insecure parental attachment (Rice, 1990). Previous research has indicated a negative relationship between Internet addiction and a secure parental attachment and a positive relationship between Internet addiction and an insecure parental attachment (indifferent, fearful, and obsessive) (Lin, Ko, & Wu, 2011; Morsünbül, 2014; Şenormancı, Şenormancı, Güçlü, & Konkan, 2014; Shin, Kim, & Jang, 2011). A study conducted with college students in China revealed that Internet-addicted students generally lack family attention (Huang et al., 2009). Young people use the Internet to deal with their depressive symptoms and to alleviate their psychological tension (Tsai & Lin, 2003), as well as a means of coping with their emotional problems (Yen et al., 2011). People with insufficient social support are more prone to Internet addiction because their lack of social support can cause them to resort to the Internet (Batıgün & Kılıç, 2011).

Because students tend to use the Internet more and employ it to socialize more often than do other groups, they are considered a risk group for Internet addiction. However, there is a limited volume of research on the association between Internet addiction and sociodemographics among university students in Turkey (Aslan & Yazıcı, 2016; Balcı & Gülnar, 2009; Gümüş, Şıpkın, Tuna, & Keskin, 2015). In addition, no previous research has investigated the association between parental attachment and Internet addiction among university students. Against this background, the goal of this study is to investigate the association between Internet addiction and parental attachment, as well as to discuss the sociodemographic data on Internet addiction in light of the results of previous research, according to which individuals with a secure parental attachment should have no Internet addiction problems. Thus, this study is of crucial importance because it focuses on the association between Internet addiction and parental attachment and stresses the importance of parental attachment on one’s life.

Young people from 15 to 24 years of age comprise 16.1% of the total population of Turkey (TurkStat, 2018b). In this developing country with a large population of young people, a number of factors, including the increasingly widespread use of the Internet, the uncontrolled growth of cybercafés, and unemployment, set the stage for the unhealthy use of the Internet and Internet addiction. Despite this environment, the mutual love bond between parents and children can contribute to people’s futures and help create a sense of trust in their relationships with other people. Therefore, a secure parental attachment facilitates healthy psychological development. However, insecure or interrupted attachment relationships lead to personality problems and mental disorders (Brown & Wright, 2003). Keeping this in mind, the results of this study will contribute to the existing literature by providing a deeper understanding of the relationship between Internet addiction and different parental attachment styles. It is hoped that this study will also make substantial contributions to fostering positive parental attachment styles, as well as taking preventive actions and precautions with respect to healthy Internet usage by young people.

The main purpose of this study is to investigate Internet addiction among university students in terms of their parental attachment styles and some sociodemographics (e.g., age, parental educational level, and grade point average [GPA]). In line with this purpose, answers to the following questions were sought:

1. Do students’ Internet addiction scores differ by age, as well as maternal and paternal educational levels?
2. Is there a significant correlation between students’ Internet addiction scores, maternal care, maternal overprotection, and GPA?
3. Do students’ parental attachment styles, GPA, and age predict their Internet addiction?

**Method**

**Research Design**

A correlational research design was used in this study to examine Internet addiction among university students in terms of their parental attachment styles and some sociodemographics.

**Participants**

The data were collected from 418 students who were studying in various departments of the Faculty of Education of Ondokuz Mayıs University in the fall term of the 2017 to 2018 academic year. A total of 16 questionnaires that were incomplete or improperly filled out were excluded from the analysis, which was carried out using the data obtained from the remaining 402 respondents. The age range of the participants varied from 17 to 25 ($M = 20.82, SD = 1.32$) years. Of the participants, 249 (61.9%) were female and 153 (38.1%) were male. There were 86 (21.4%) first-year students, 111 (27.6%) second-year students, 110 (27.4%) third-year students, and 95 (23.6%) fourth-year students. For the
educational level of the respondents’ mothers, 199 (49.5%) attended primary school, 92 (22.9%) attended secondary school, and 111 (27.6%) were high-school graduates or higher. Of the respondents’ fathers, 98 (24.4%) were primary school graduates, 97 (24.1%) completed secondary school, 141 (35.1%) attended high school, and 66 (16.4%) were university graduates. The respondents’ GPAs varied from 1.77 to 3.90 ($M = 3.04; SD = 0.42$).

**Measures**

**Parental Bonding Instrument.** The Parental Bonding Instrument (PBI) was developed by Parker, Tupling, and Brown (1979) to build on Bowlby’s (2003) attachment theory that stresses the critical importance of the social bond between the child and the caregiver for normal development. The scale makes a retrospective assessment of how people perceive their relationship with their parents. The scale consists of 25 items and two subscales, namely, parental care and overprotection or control. The scale is scored on a 4-point Likert-type scale ranging from 0 (very unlike) to 3 (very like). Respondents score each item on the basis of how they remember their parents’ behavior during their first 16 years. Respondents can separately assess their mother and father. A high score on the care subscale suggests that parents are warm, understanding, and accepting, while a low score suggests that they are cold and distant. A high score on the control/overprotection subscale suggests that parents are perceived as too controlling and not allowing their children to have autonomy. All items in this subscale are reverse scored.

The PBI was adapted into the Turkish language by Kapçı and Kılıç (2006) using a sample of university students. The results of the exploratory factor analysis (EFA) testing the construct validity of the scale yielded a two-factor structure for both the maternal and paternal bonding forms. In the adaptation study, the items relating to control in the original control/overprotection subscale were loaded onto the care factor; therefore, this factor was renamed “care/control.” The other factor was renamed “overprotection” because it includes items relating to parents’ overprotective behavior. Cronbach’s alpha coefficient was computed to be .89 for the paternal bonding form and .87 for the maternal bonding form. Cronbach’s alpha of the overprotection subscale was .70 for both the maternal and paternal bonding forms, whereas that of the care/control subscale was .90 and .91 for the maternal and paternal bonding forms, respectively. The test–retest reliability coefficient was computed to be .90 for the maternal bonding form and .89 for the paternal bonding form. With respect to the subscales, the test–retest reliability coefficient was .91 for the care/control subscale in the maternal bonding form and .90 in the paternal bonding form, whereas it was .64 for the overprotection subscale in the maternal bonding form and .78 in the paternal bonding form (Kapçı & Kılıç, 2006). In the present study, Cronbach’s alpha was .90 for the maternal bonding form and .89 for the paternal bonding form.

Cronbach’s alpha was .87 for the care/control subscale in both the maternal and paternal bonding forms, whereas it was .78 for the overprotection subscale in the maternal bonding form and .74 in the paternal bonding form.

**Internet Addiction Test–Short Version.** The Internet Addiction Test (IAT) was developed by Young (1998) and later shortened by Pawlikowski, Alstötter-Gleich, and Brand (2013). The Internet Addiction Test–Short Version (IAT-SV) is a 5-point Likert-type scale consisting of 12 items. The IAT-SV was adapted into Turkish by Kutlu, Savçı, Demir, and Aysan (2016) using a sample of adolescents and university students. The results of the EFA yielded a single-factor structure for both adolescents and university students. The single-factor structure of the scale was tested using confirmatory factor analysis (CFA). The goodness-of-fit index (GFI) in the CFA showed a good fit for both university students, $\chi^2 = 144.930$, $df = 52$, root mean square error of approximation (RMSEA) = .072, root mean square residual (RMR) = .70, GFI = .93, adjusted GFI (AGFI) = .90, comparative fit index (CFI) = .95, incremental fit index (IFI) = .91, and adolescents, $\chi^2 = 141.934$, $df = 51$, RMSEA = .080, GFI = .90, CFI = .90, IFI = .90. Cronbach’s alpha coefficient was computed to be .91 for university students and .86 for adolescents. The test–retest reliability coefficient was .93 for university students and .86 for adolescents. A high score on the IAT-SV indicates high Internet addiction. Cronbach’s alpha coefficient was determined to be .89 in the present study.

**Personal Information Form.** A personal information form was used to identify the respondents’ sex, age, grade level, mother’s educational level, father’s educational level, and GPA.

**Procedure**

Ethical permission was obtained from the Social Studies and Humanities Research Ethics Committee of Ondokuz Mayis University (Resolution No. 2017/220–225). The measurement instruments were applied to students who were studying in various departments of the Faculty of Education of Ondokuz Mayis University in the fall term of the 2017 to 2018 academic year and were given in their classrooms. The instruments were only used after the “Informed Voluntary Consent Form” was read aloud in each classroom by the researcher. Information was thereby given about the purpose of the research, the application procedure, and the principles of privacy and voluntary participation. The data were then collected from students who volunteered to be involved in the research. The entire procedure took approximately 20 to 25 min.

**Statistical Analyses**

The data were analyzed using IBM SPSS V23 software. Prior to the data analysis, an initial analysis was carried out,
in line with the recommendations of Tabachnick and Fidell (2014), to examine the accuracy of the data, the missing data, the outliers, and the statistical assumptions. The results of the analysis of the minimum and maximum values and frequencies showed that all values were within the expected range. However, due to the limited number of university graduate mothers \((n = 15)\) found in the results of the frequency analysis of the mother’s educational level variable, that variable was reclassified as primary school graduate, secondary school graduate, and high-school graduate or higher. No missing data were found in the data set. In line with the results of the analysis of univariate outliers, five outliers for the age variable were deleted from the data set, and a univariate outlier for the maternal care subscale was deleted from the data set (Tabachnick & Fidell, 2014).

One-way analysis of variance (ANOVA) was used to analyze the differences in respondents’ Internet addiction scores in terms of the variables of sex, mother’s educational level, and father’s educational level. When the results of one-way ANOVA were significant and an independent variable had three or more groups, Tukey’s honestly significant difference (HSD) test was used. Pearson’s product-moment correlation coefficient was used to analyze the strength and direction of the association between Internet addiction scores, respondents’ age, maternal care, maternal overprotection, paternal care, paternal overprotection, and GPA. To identify the variables that were the best predictors of Internet addiction, a stepwise regression analysis was run to analyze the predictive capacity of the sociodemographic variables, maternal care, maternal overprotection, paternal care, and paternal overprotection. Stepwise regression is a type of multiple regression analysis that is used to overcome possible multicollinearity problems if the predictor variables are highly correlated (Hair, Black, Babin, & Anderson, 2014; Tabachnick & Fidell, 2014), as is the case in the present study (see Table 2). In stepwise regression, the variable that is most highly correlated with the predictor variable is first added to the model, and then the variables that meet a set of statistical change criteria (\(F\) change) are added to the model. Stepwise regression analysis is often used to identify from among a large number of predictor variables, the variable or variables that best predict the predicted variable (Hair et al., 2014; Ho, 2014; Pituch & Stevens, 2016; Tabachnick & Fidell, 2014).

Prior to the analysis, the assumptions of normality, homogeneity of variance, linearity, normality of regression errors, homoscedasticity, and multicollinearity were also tested (George & Mallery, 2014; Hair et al., 2014; Ho, 2014). The assumption of normality was checked using skewness and kurtosis values on the basis of the sample size (George & Mallery, 2014; Pituch & Stevens, 2016). The data showed a near-normal distribution. According to the results of Levene’s test for the sex variable, the assumption of homogeneity of variances was rejected; thus, the results of Welch’s \(F\)-test were reported in this study (Hinton, McMurray, & Brownlow, 2014). The assumption of linearity was tested using scatter diagrams that were created for the association between Internet addiction scores, age, maternal care, maternal overprotection, paternal care, paternal overprotection, and GPA. A linear association was found between the variables. The normality of regression errors was tested using histograms that were created with standardized regression residuals. Regression residuals showed a near-normal distribution. Finally, the assumption of homoscedasticity was tested using scatter diagrams created with standardized regression residuals and standardized prediction predicted values. The test results showed that the assumption was accepted. The significance level was set at \(p < .05\) in the statistical analysis.

**Results**

Table 1 shows the mean Internet addiction scores and standard deviation values relating to the variables of the respondents’ sex, mother’s educational level, and father’s educational level. In addition, a series of one-way ANOVAs, the results of which are presented in Table 1, was carried out to determine whether there was a significant difference in Internet addiction scores in terms of sex, mother’s educational level, and father’s educational level.

As shown in Table 1, Internet addiction scores did not significantly differ by sex, \(F(1, 283.12) = .17, p > .05, \eta^2 = .00\), or mother’s educational level, \(F(2, 399) = .17, p > .05, \eta^2 = .01\). However, Internet addiction scores significantly differed by father’s educational level, \(F(3, 398) = 4.21, p < .01, \eta^2 = .03\). Differences in these scores have a low effect size, and the variable “father’s educational level” accounts for approximately 3% of the variance in Internet addiction scores (Cohen, 1992). According to the results of Tukey’s HSD test, which was run to identify the source of the difference, the mean Internet addiction scores of university students with university-graduate fathers \((M = 23.86)\) were significantly lower than those of university students with primary school-graduate \((M = 28.35)\), secondary school-graduate \((M = 27.76)\), and high school-graduate fathers \((M = 27.32)\). There was no significant difference between the other groups.

Table 2 shows the results of Pearson’s correlations that were run to identify the associations between Internet addiction scores, age, maternal care, maternal overprotection, paternal care, paternal overprotection, and GPA.

As shown in Table 2, Internet addiction scores have a low negative correlation with age \((r = -.14, p < .01)\), GPA \((r = -.10, p < .01)\), and maternal care \((r = -.29, p < .001)\) but a medium-level negative correlation with maternal overprotection \((r = -.36, p < .001)\), paternal care \((r = -.31, p < .001)\), and paternal overprotection \((r = -.35, p < .001)\) (Cohen, 1992). In addition, there was a very high positive correlation between maternal care and overprotection scores \((r = .75, p < .001)\) and between paternal care and overprotection scores \((r = .78, p < .001)\).
To identify the variables that are the best predictors of Internet addiction, a stepwise regression analysis was carried out using the father’s educational level, age, GPA, maternal care, maternal overprotection, paternal care, and paternal overprotection variables. Sex and mother’s educational level were not included in the stepwise regression analysis because they were uncorrelated with Internet addiction scores.

Table 3 shows the change statistics of the stepwise regression analysis. Table 4 shows the results of the stepwise regression analysis.

As shown in Table 3, the stepwise regression analysis was completed in two steps. The maternal overprotection scores that entered the equation in the first step accounted for approximately 13% of the change in Internet addiction scores, \( F(1, 400) = 59.84, p < .001, \Delta R^2 = .13 \). Apart from the maternal overprotection scores, the paternal overprotection scores that entered the equation in the second step accounted for approximately 3% of the change in Internet addiction scores, \( F(1, 399) = 16.16, p < .001, \Delta R^2 = .03 \). In the last model, both variables were found to be significant predictors of Internet addiction, together accounting for approximately 16% of the change in Internet addiction scores, \( F(2, 399) = 39.14, p < .001, \Delta R^2 = .16 \). The last model has a medium effect size (Cohen, 1992). The variables of maternal overprotection, \( \beta = -24, r(399) = -4.33, p < .001 \), and paternal overprotection, \( \beta = -22, r(399) = -4.02, p < .001 \), were negatively correlated with Internet addiction. In other words, when other variables were kept constant in this sample, the respondents with high maternal and paternal overprotection scores had low Internet addiction scores.

**Discussion**

Internet addiction occurs when its overuse begins to adversely affect individuals’ everyday lives, moods, and social relationships. This study investigated university students’ Internet addiction in terms of their parental attachment styles, GPA, parents’ educational levels, and age. First, Cronbach’s alpha coefficients of the measuring instruments were

| Table 1. Descriptive Statistics and One-Way ANOVA Results. |
| --- |
| n | M | SD | df₁, df₂ | F-value | p-value | η² | Post hoc |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sex** |  |  |  |  |  |  |  |
| 1. Female | 249 | 27.25 | 7.96 | 1,283.12 | 0.17 | .678 | .00 |
| 2. Male | 153 | 26.88 | 9.35 |  |  |  |  |
| **Mother’s educational level** |  |  |  |  |  |  |  |
| 1. Primary school | 199 | 27.44 | 7.85 | 2,399 | 1.30 | .274 | .01 |
| 2. Secondary school | 92 | 27.72 | 8.39 |  |  |  |  |
| 3. High school and higher | 111 | 26.02 | 9.64 |  |  |  |  |
| **Father’s educational level** |  |  |  |  |  |  |  |
| 1. Primary school | 98 | 28.35 | 8.37 | 3,398 | 4.21 | .006*** | .03 |
| 2. Secondary school | 97 | 27.76 | 8.81 |  |  |  |  |
| 3. High school | 141 | 27.32 | 8.67 |  |  |  |  |
| 4. University | 66 | 23.86 | 7.18 |  |  |  |  |

Note. ANOVA = analysis of variance.

* *p < .05.
** *p < .01.
*** *p < .001.

| Table 2. Pearson’s Correlation Analysis Results. |
| --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| --- | --- | --- | --- | --- | --- | --- |
| 1. Age |  |  |  |  |  |  |  |
| 2. GPA | -.22*** |  |  |  |  |  |  |
| 3. Maternal care | .16** | 0.00 |  |  |  |  |  |
| 4. Maternal overprotection | .20*** | 0.08 | .75*** |  |  |  |  |
| 5. Paternal care | .14** | -0.02 | .52*** | .41*** |  |  |  |
| 6. Paternal overprotection | .14** | 0.06 | .47*** | .55*** | .78*** |  |  |
| 7. Internet addiction | -.14** | -.10* | -.29*** | -.36*** | -.31*** | -.35*** |  |  |
| M | 20.82 | 3.04 | 26.83 | 27.55 | 25.22 | 26.79 | 27.11 |
| SD | 1.32 | 0.42 | 6.58 | 6.02 | 7.14 | 6.54 | 8.51 |

Note. GPA = grade point average.

*p < .05. **p < .01. ***p < .001.
Cronbach’s alpha coefficient of the PBI was computed to be .90 for the maternal bonding form and .89 for the paternal bonding form. Cronbach’s alpha of the care/control subscale was .87 for both the maternal and paternal bonding forms, whereas that of the overprotection subscale was .78 for the maternal bonding form and .74 for the paternal bonding form. Cronbach’s alpha of the IAT-SV was calculated to be .89. Given the results, both scales had high reliability. Accordingly, both scales were suitable and reliable for this sample group.

The analysis results yielded no significant difference between university students’ Internet addiction scores and sex. While this is consistent with Aslan and Yazıcı (2016), it differs from other studies that have reported a significant correlation between Internet addiction and sex (Batıgün & Kılıç, 2011; Odacı & Kalkan, 2010). According to the analysis results, there was no significant difference between university students’ Internet addiction scores and their mother’s educational level, while there was a significant difference between their Internet addiction scores and their father’s educational level. University students with university-graduate fathers had lower Internet addiction scores than those students with primary-, secondary-, or high school-graduate fathers. Similarly, Batıgün and Kılıc (2011) reported a high frequency of Internet addiction in children with mothers with high educational levels. However, the existing literature also includes studies reporting that parents’ educational levels have no effect on students’ Internet behavior (Liau et al., 2005; Zorbaş & Dost, 2014). Accordingly, the result of the present study partially supports previous research, and it suggests that parents are better able to adapt to the Internet age as their educational level increases. In other words, with the Internet rapidly becoming an important part of human life, parents with a higher level of education can be more effective in guiding their children’s Internet usage.

In addition, the analysis results showed that university students’ Internet addiction scores were negatively correlated with their age, GPA, maternal care, maternal overprotection, paternal care, and paternal overprotection. Previous research has discussed how young people who lack the necessary family support have high levels of Internet addiction (Batıgün & Kılıç, 2011; Chak & Leung, 2004; Zırlıoğlu, 2011). Similarly, Çevik and Çelikkaleli (2013) discovered that adolescents who experience a negligent parental attitude have higher levels of Internet addiction compared with those who experience tolerant, democratic, and authoritarian parental attitudes. The rate of Internet usage was reported to be high in young people with parents with permissive attitudes, while it was low in young people with parents with democratic attitudes (Valcke, Bonte, De Wever, & Rots, 2010). The present study found an increase in Internet addiction scores for the respondents who remembered their mothers being more overprotective during their first 16 years. However, there was a decrease in Internet addiction scores for those respondents who remembered their fathers being more overprotective.

| Model    | $R$  | $R^2$ | Adjusted $R^2$ | SE estimate | $\Delta R^2$ | $\Delta F$ | $df_1$ | $df_2$ | p-value  |
|----------|------|------|----------------|-------------|--------------|------------|--------|--------|----------|
| Model 1  | .36  | .13  | .13            | 7.94        | .13          | 59.84      | 1      | 400    | .001***  |
| Model 2  | .41  | .16  | .16            | 7.80        | .03          | 16.16      | 1      | 399    | .001***  |

* *** $p < .001$.

| Model          | Unstandardized coefficients | Standardized coefficients |
|----------------|-----------------------------|---------------------------|
|                | $B$  | SE | $\beta$ | t-value | p-value |
| Model 1 (Constant) | 41.15 | 1.86 | 22.15 | .001*** |
| Maternal overprotection | -0.51 | 0.066 | -0.36 | -7.74 | .001*** |
| Model 2 (Constant) | 44.09 | 1.97 | 22.40 | .001*** |
| Maternal overprotection | -0.34 | 0.08 | -0.24 | -4.33 | .001*** |
| Paternal overprotection | -0.29 | 0.07 | -0.22 | -4.02 | .001*** |

* ** $p < .01$. *** $p < .001$. ** * $p < .05$.
addiction scores for those who recalled their mothers being more caring. This result is in agreement with the literature. Accordingly, young adults whose parents were indifferent and negligent during their childhood have unmet emotional needs. When parents fail to care about their children and satisfy their emotional needs, the children may have to meet these needs in different ways during their young adulthood. The Internet can be one way of doing this. It seems that when young people perceive their mothers’ behavior during childhood to be uncaring and negligent, they are likely to overuse the Internet. In addition, the study found that perceived maternal overprotection during childhood generally increases Internet addiction compared with perceived paternal overprotection. Parents who adopt overprotective child-rearing attitudes show too much “care” for their children, try to satisfy all their needs, and do not let them do anything on their own in case something bad happens to them. Such overprotective behavior negatively affects the development of the child’s personality, thereby resulting in an overdependent, timid, shy, and insecure personality (Yavuzer, 2005). The relationship that is established between mothers and children during childhood is important. Young people who receive maternal care and love tend to feel secure and accept all kinds of their mothers’ educational actions (Yavuzer, 2005). However, because the role of the father in the family is generally considered to be meeting the material needs of the family, it is most often the mother who bears all the responsibilities and duties relating to the development and education of the children (Yavuzer, 2005). Against this background, it seems that both maternal and paternal care and overprotection have an effect on the increase in children’s Internet addiction. The analysis results showed a negative correlation between university students’ Internet addiction levels and their GPA. Accordingly, the more Internet-addicted university students are, the lower their GPA. This result is consistent with earlier findings that showed that Internet addiction has a negative effect on students’ academic performance (Akdag, Sahan-Yilmaz, Ozhan, & Ismail, 2014; Frangos, Fragkos, & Kiohos, 2010; Yang & Tung, 2007). Students’ academic success is largely dependent on their health and time management (Akhter, 2013). When students spend most of their time on the Internet (Griffiths, 2000), such excessive and irregular Internet usage negatively affects the students’ academic life due to substantial energy and time loss, game- and fun-oriented Internet usage, and ready-made downloadable school assignments, thereby leading to laziness and lower academic performance (Taş, 2016). As the earlier findings suggest, Internet addiction seems to be an important factor affecting academic performance. Thus, this study supports evidence from previous studies. According to the results of the stepwise regression analysis, maternal overprotection and paternal overprotection were the best predictors of Internet addiction. Thus, university students with higher maternal and paternal overprotection scores had lower Internet addiction scores. Kalaitzaki and Birtchnell (2014) also argued that parenting styles influence Internet addiction in young people. Similarly, Batigün and Kılıc (2011) found that young people with authoritarian fathers had higher levels of Internet addiction compared with those with tolerant fathers. In this context, it seems that young people whose parents are overprotective and overcontrolling are likely to have withdrawn and introverted personalities. This relationship may explain why young people go online to establish social connections. A recent study of Taiwanese young people reported that those with caring parents are less likely to be Internet addicted, whereas those with less caring parents are more likely to be Internet addicted (Chang et al., 2015). When parents treat their children in an overprotective and controlling manner during their young adulthood, it may cause young people to get angry and eventually turn to other ways of connecting, including virtually. The Internet, in particular, is the most appealing choice for young people because it provides the opportunity to establish relationships, which they have failed to establish at home, with others and allows young people to share and speak freely. This is a risky situation for young people; however, given that they like to take risks in this age period, it may result in an attraction to technology addiction. The finding that overprotective parental attachment styles predict Internet addiction is an important issue that should be addressed in future research.

Limitations of the Study

The present study had a number of limitations; in particular, it was carried out at a state university and in a limited time frame, it involved people of a specific age and educational level, it used self-report scales, and it reached a limited sample group, all of which limit the generalizability of the results. In addition, because the study was based on the principle of voluntary participation, some variables (such as sex and grade level) could not be equally represented. The association between Internet addiction and academic success was investigated. However, the cognitive and social development that influences students’ academic performance was not taken into consideration. Although the literature includes many studies that separately investigate the variables employed in the present study, it lacks a study that investigates all of them. Future research on these issues may contribute to the literature by recruiting a larger sample group, different age groups, and individuals with different levels of education.

Conclusion

Based on the results of the study, it seems that overprotective parental attitudes, as perceived by young people during their childhoods, are particularly effective in increasing the risk of Internet addiction among young people. Therefore, parents must take responsibility to reduce this risk. In particular, they
should provide their children with the necessary social support and be informed about controlling their children’s Internet usage. However, careful attention should be paid to achieving a proper balance because parental overprotection and overcontrol may cause children to go to cybercafés and use smartphones more frequently.

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