Turkish Journal of Psychology, June 2022, *37*(89), 101-104 DOI: 10.31828/tpd1300443320200911m000041

Summary
Problematic Internet Usage on Adolescents

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Introduction

The Internet is one of the most effective tools of mass media, influencing individuals and society the most. The widespread use of the Internet has gradually increased since 1990. While 51.7% of the world's population were internet users in 2017, this rate increased to 58.8% in 2019 (Internet World Stats, 2019).

Today's adolescents born into an online environment, may differ more than other age groups in terms of the many variables of the Internet, such as the meaning of the online environment, purpose, and speed of use. While the Internet does provide some opportunities for adolescents to develop in some areas such as sense of identity, competence, and social interaction (Greenhow ve Robelia, 2009; Köbler et al., 2010; Lenhart et al., 2001; Turkle, 1999; Zhao et al., 2008), and it may be particularly beneficial for socially anxious and isolated individuals as it allows them to make online connections to compensate for their lack of offline network.

Besides these positive effects, the Internet also causes cyberbullying (Livingstone ve Smith, 2014), pornography (Sabina et al., 2008), risks from interacting with strangers (Williams & Merten, 2011), and addiction problems such as problematic use (Spada, 2014). Theories that evaluate internet use with negative consequences address the issue in terms of excessive usage, negative cognition, negative impact on daily life, and nonfunctional use. Nonfunctional Internet use has been studied and named using different approaches. Beard and Wolf (2001) defined problematic Internet usage as "use of the Internet that creates psychological, social, school, and/or work difficulties in a person's life." This concept will be used in this article. The role of a number of predisposing and triggering variables in the development or maintenance of PIU has been addressed in the literature.

PIU and Parental Attachment

Adolescence is a period that should be handled with both changing self-perception, the process of identity development, and the attachment object, the attachment style. Even though research shows that attachment styles in childhood tend to continue into adolescence (Grossmann & Grossmann, 1991), adolescents strive to be less dependent on the caregiver (Allen & Land, 1999). The characteristics of desired attachment between adolescents and parents are safety, trust, and mutual understanding (Lei & Wu, 2007). In the research on adolescents' online activities and parental attachment, it has been shown that there are negative relationships between positive and high quality parental attachment and risky online behaviors (Cooper et al., 1998; Morsünbül, 2009; Sasson & Mesch, 2014; Ybarra & Mitchell, 2005) and inversely positive relationships between insecure parental attachment and risky and aggressive behaviors (Aksel & Kaplan, 2013; Bartholomew, 1990; France, 2000). Similarly, there is a negative relationship between higher levels of secure attachment between child- parent and excessive Internet usage (Chang et al., 2015; Lei & Wu, 2007). The literature shows a positive relationship between PIU and insecure attachment styles; a negative relationship with secure attachment and PIU. It is believed that determining variables that may play a mediating role between PIU and attachment styles is essential for the relationships between two variables in detail and for appropriate interventions.

PIU and Parental Mediation

Parental mediation is defined as the attitudes and behaviours of parents regarding their children's media use (Mendoza, 2009). In the literature, strategies of parental mediation include active mediation, restrictive mediation, co-viewing, and monitoring. Active mediation refers to the process of discussing certain aspects of programs with children, either during or after viewing (Valkenburg et al., 1999), restrictive mediation is defined as setting rules for viewing or prohibiting parents from viewing certain content; co-viewing refers to sharing the viewing experience (Valkenburg et al., 1999), monitor-

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ing is defined as reviewing children's online activities afterwards (Cabello-Hutt et al., 2017).

It is well known that the use of parental mediation strategies in adolescents differs from that in children (Cabello-Hutt et al., 2017; Chen & Chng, 2016). Parents use less monitoring (Gentile et al., 2012) and less restrictive mediation (Davies & Gentile, 2012) with adolescents than with children. This opinion may be related to parents' belief that adolescents have better self-control in Internet use than children (Lee, 2013) and are better able to cope with the negative effects of the Internet (Wang et al., 2005). However, research has shown that adolescents have less healthy media use habits than children (Davies & Gentile, 2012).

Effective parental mediation strategies are associated with positive output for adolescents. Parental mediation strategies are positively related to media violence exposure and higher academic achievement (Gentile et al., 2012). They are also associated with reductions in risky behaviors such as interacting with strangers in the online environment (Williams & Merten, 2011), online harassment (Khurana et al., 2015), cyberbullying (Chang et al., 2015; Khurana et al., 2015), and Internet addiction. In addition, research has shown the relationship between active mediation and critical thinking skills (Shin, Huh & Faber, 2012) and academic purpose of Internet use (Lee & Chae, 2007).

PIU and Impulsivity

Impulsivity has been variously defined as acting without adequate forethought or conscious judgment (Hinslie & Shatzky, 1940), human behavior without adequate thought (Smith, 1952), and the tendency to act with less forethought than most people of equal ability (Dickman, 1990). Impulsivity has been interpreted as one of the predictors of substance abuse, especially due to cognitive deficits (Hosking & Winstanley, 2011).

Research has found that impulsivity is related to problem behaviors, including addiction and suicidality (Coskunpinar et al., 2013; Curcio & George, 2011; Leung & Lee, 2012; Moeller et al., 2001). Some studies have also shown the relationship between impulsivity and PIU (Wang et al., 2017; Seyrek et al., 2017). Assuming that the prefrontal cortex of adolescents is not fully developed, this may affect the development of PIU and cause impulsive behavior.

As a result, PIU nowadays seems to be a concept that affects many aspects to adolescents and their parents. The main aim is to investigate personal and contextual factors such as parental mediation and impulsivity in order to avoid risks and increase the opportunities of the Internet for adolescents.

Method

The current study uses a causal-comparative model that examines the predictive power between endogenous and exogenous variables.

Participants

The sampling frame consisted of the three public secondary schools in Ankara, Turkey. Total of 708 adolescents (N_{girl}=369, N_{boy}=338; N_{11age}=144, N_{12age}=210, N_{13age}=202, N_{14age}=147) participated in the study. Before the data collection, legal permission regarding the application was obtained from the Ministry of Education and Ankara University.

Data Collection Tools

Data was collected with Relationship Scales Questionnaire (RSQ), Conners-Wells' Adolescent Self-Report Scale-Long Form_Hiperactivity/Impulsivity Subscale (CWASS), Nonfunctional Internet Usage Scale(NIUS), Parental Mediation for Internet Usage Scale(PMIUS).

Procedure

In the current study, SEM was used to test direct and indirect relationships between variables, and the two-step approach was used (Kline, 2005). Mediation structure was examined using Baron & Kenny's (1986) mediation priors, and the Chi-square test and fit indices were used.

Results

In the current study, the assumptions and measurement model were first tested. Then the hypothesis model and the alternative model were tested.

Testing of the Measurement Model

First, the relationships between observed and latent variables were tested with the measurement model. There were six latent variables and 57 observed variables in the measurement model. Fit of The measurement model to the data was good (χ^2 = 4498.76 *sd*= 1315, χ^2/sd = 3.42, *RMSEA* = .057, *NFI* = .90, *NNFI* = .93, *CFI* = .93, *RMR* = .12, *SRMR* = .05, *GFI* = .81, *AGFI* = .79). The results of the measurement model showed that the model provides sufficient conditions for SEM.

Analysis of the Hypothesis Model

The *t* values and standardization coefficients were examined to test the hypothesis model, and the proposed models were evaluated. In the first model, the relationship between fearful attachment and PIU (t = 1.43 , β = .07), dismissing attachment and PIU (t = 1.74, β = .11), fearful attachment and impulsivity (t = 0.56, β = .03) was not sig-

nificant. In addition, a path was recommended between impulsivity and parental mediation. The proposed path was added to the model. Non-significant relationships were removed from the model. In this model, the *t*-values were significant and the fit of the model to the data was good (χ^2 = 4501.31, *df* = 1318, *RMSEA* = .058, *SRMR* = .059, *NFI* = .90, *NNFI* = .93, *CFI* = .93, *GFI* = .81, *AGFI* = .79).

When the direct effects of the model were examined, PIU's most strongly predictive variable was impulsivity (β = .55, $p < .05$). Fearful (β = .13, $p < .05$) and dismissing attachment (β = .25, $p < .05$) had a positive correlation. Parental mediation had a negative correlation with PIU (β = -.27, $p < .05$). Fearful attachment (β = .15, $p < .05$) and dismissing attachment had a positive (β = .32, $p < .05$), parental mediation had a negative correlation (β = -.13, $p < .05$) with impulsivity. Fearful (β = .19, $p < .05$) and dismissing attachment (β = .14, $p < .05$) had a positive correlation with parental mediation.

The hypothesis model examined the mediating role of parental mediation and impulsivity in the relationship between PIU and attachment styles. Impulsivity and parental mediation exerted significant mediating roles between PIU and dismissing attachment was not significant (β = .11, $p > .05$). In other words, dismissing attachment was predicted by PIU with the mediating role of both parental mediation and impulsivity. The indirect effects were also examined, the effect of dismissing attachment through impulsivity on PIU (β = .18, $p < .01$) was stronger than the mediating role of parental mediation (β = -.03, $p < .01$). The mediating role was examined using the Chi-square test when the path from dismissing attachment to PIU was deleted; the change was significant at the Chi-square ($\Delta\chi^2 = 4.19$, $p < .05$). This result proved that model fit becomes worse when the path to be added to the model. Thus, the full mediation model for dismissing attachment was confirmed. It can be seen that the effect of dismissing attachment on PIU has been fully mediated through parental mediation and impulsivity.

Since there was no relationship between fearful attachment and impulsivity, the mediating role was examined only with parental mediation in the relationship between fearful attachment and the PIU. When parental mediation was added to the model, the path between fearful attachment and PIU became nonsignificant (β = .07, $p > .05$). When the path from fearful attachment to PIU was deleted at the same time, there was a significant value in the Chi-square ($\Delta\chi^2 = 2.35$, $p < .05$). It was concluded that the effect of fearful attachment on PIU was mediated through parental mediation.

Testing of the Alternative Model

Impulsivity as an independent variable, attachment styles, parental mediation, and impulsivity as dependent variables were added in the alternative model.

The t-values, standardization coefficients, and model suggestions were examined in the alternative model. The relationship between fearful attachment and PIU ($t = 1.86$, β = .08) was not significant. After removing this relationship from the model, model fit was good (χ^2 = 4556.27, *df* = 1319, *RMSEA* = .059, *SRMR* = .062, *NFI* = .90, *NNFI* = .93, *CFI* = .93, *GFI* = .80, *AGFI* = .79).

The direct effects accepted in the measurement model were identical in the alternative model and the hypothesis model. But the relationship between fearful attachment and PIU was not significant in the alternative model. When indirect effects were examined, the effect of impulsivity on PIU was higher when mediated through dismissing attachment (β = .03, $p < .05$) than by parental mediation (β = .02, $p < .05$).

Dismissing attachment and parental mediation exerted significant mediating roles between PIU and impulsivity (β = .55, $p < .05$) was reduced in the alternative model but did not disappear (β = .03, $p < .05$). This result indicated that dismissing attachment and parental mediation had a partial mediating role in the relationship between impulsivity and PIU.

When examining the changes in model fit, it was found that the Chi-square change was significant when the path from impulsivity to PIU was deleted ($\Delta\chi^2$ = 158.79, $p < .01$). The results have shown the partial mediating role of parental mediation and dismissing attachment in the effects of impulsivity on PIU. Also, the indirect effects have shown that the effect of impulsivity through dismissing attachment on PIU (β = .03, $p < .05$) was stronger than the mediating role model of parental mediation (β = .02, $p < .05$).

The hypothesis and the alternative models developed by the model development strategies were examined using the alternative model strategy. For this purpose, the model-data fits of the two models were compared. The aim was to determine the theoretical model that has the best fit to the data. The χ^2, RMSEA, and *SRMR* values were lower in the hypothesis model and the *GFI* values were higher than in the alternative model. Moreover, the mediating role was evident in the hypothesis model, whereas the relationship between two core variables (fearful attachment and PIU) was not found in the alternative model. Consequently, the hypothesis model was accepted in the current study.

Discussion

In this study, the effect of impulsivity, parental mediation, and attachment styles on PIU of adolescents was tested. For this purpose, a hypothesis model and an alter-

native model were tested. These two models were compared according to the model-data fit, and it was decided to accept the hypothesis model, which was found to be more compatible with the data. The findings obtained from the hypothesis model showed the full mediating role of impulsivity, and parental mediation in the impact of dismissing attachment on PIU; the effect of dismissing attachment through impulsivity on PIU was stronger than the mediating role of parental mediation. It is seen that the effect of fearful attachment on PIU was observed through parental mediation entirely. There was no relationship between fearful attachment and impulsivity.

The direct relationships in the hypothesis model showed a positive relationship between PIU and fearful and dismissing- attachment. The results of the study are consistent with the literature and theoretical basis. Attachment styles between parents and adolescents may be a factor in PIU.

There was a negative correlation between PIU and parental mediation. Studies on parental mediation strategies for Internet use and the theoretical basis of the subject indicate that all strategies, regardless of the type of strategy used, reduce the risk of risky behavior and Internet addiction (Chang et al., 2015; Khurana et al., 2015; Williams & Merten, 2011). The results of studies evaluating PIU and parental mediation show a negative relationship, which is consistent with the findings of this study (Chang et al., 2015; De Morentin et al., 2014; Padilla-Walker et al., 2018; Van den Eijnden et al., 2010). Consequently, the full mediating role of parental mediation in the relationship between both attachment styles and PIU indicates the importance of parental mediation.

The study found a positive correlation between PIU and impulsivity. In the studies related to PIU and impulsivity, a positive relationship between the two variables was also found (Akın, 2014; Cao et al., 2007; Park et al., 2013; Smith, 2014; Yen et al., 2009). The results of the study are consistent with both the theoretical basis and the findings of previous studies.

When the relationships between the independent and mediator variables were evaluated, a positive relationship was found between the fearful and dismissing attachment styles and impulsivity and parental mediation. The executive function problems associated with impulsivity affect the development of self-regulation skills. Self-regulation skills are related to the attachment style that exists between the child and the caregiver (Jacobvitz et al., 2004; Von der Lippe et al., 2010). Accordingly, the development of the self-regulating system can be achieved through repeated interaction with the caregiver. This repetition in the process of interaction should continue until the child acquires sufficient self-regulation skills (Nigg, 2006). The relationship between negative attachment styles and impulsivity identified in the current study is consistent with these explanations. The positive relationship between negative attachment styles and parental mediation does not appear to be consistent with the relevant literature and theoretical basis. As mentioned earlier, it is crucial to manage adolescents' Internet use through parental guidance and mediation strategies. Parents are important individuals in controlling and preventing adolescents' risky behaviors, time spent on the Internet, and PIU. It is known that adolescents with negative parental attitudes and negative family functioning have insecure attachment styles to their parents (Roelofs et al., 2008). The findings of this study can be interpreted to suggest that children with insecure attachment styles may perceive parental mediation strategies such as control/restrictive, co-viewing, and monitoring used by their parents as a form of punishment for their Internet usage. Specifically, behaviors associated with the restrictive mediation strategy may be used as punishment by parents. However, further studies are needed to evaluate the results in depth.

There was a negative correlation between the two mediator variables, impulsivity and parental mediation. Parental mediation strategies are protective factors for children who have problems with impulsivity like normal children (Chen & Chng, 2016; Nikkelen et al., 2016; Padilla-Walker et al., 2016). The anxiety and helplessness of parents who have children with ADHD are related to aggressive or opposing behaviors in children (Podolski & Nigg, 2001). Thus, when considering the parents of children with impulsivity problems, it is believed that an increase in the stress and strain they experience may negatively affect the parental mediation strategies that can be considered between the parents' behaviors.

The indirect effects obtained from the study showed the full mediating role of the parental mediator in the relationship between dismissing-fearful attachment and PIU; the full mediating role of the parental mediator in the relationship between fearful attachment and PIU. The first factor accounting for the indirect effect of dismissing attachment on PIU is impulsivity, and the second is mediation. The results indicate that the PIU is important for adolescents with negative attachment styles to account for parental mediation and impulsivity variables in intervention and prevention studies. Considering that the stress levels of parents of children with impulsive behaviors may increase, parenting support services are also critical.