Short Communication

The impact of early parenting bonding on young adults' Internet addiction, through the mediation effects of negative relating to others and sadness

Argyroula E. Kalaitzaki [a,*], John Birtchnell [b]

[a] Social Work Department, Health and Social Welfare School, Technological Educational Institute of Crete, Estavromenos, P.O. Box 1939, GR 71004 Iraklio, Crete Greece
[b] Institute of Psychiatry, King's College London, 16 De Crespigny Park, Denmark Hill, London SE5 8AF, UK

HIGHLIGHTS

- The Greek-translated Internet Addiction Test is a three-dimensional instrument.
- A small proportion of the young adults (1%) were severely addicted to Internet.
- Negative relating mediates the path from father's parenting to Internet addiction.
- Sadness mediates the path from mother's parenting to Internet addiction.

ARTICLE INFO

ABSTRACT

The aim of the present study is the investigation of the potential role of negative relating to others, perceived loneliness, sadness, and anxiety, as mediators of the association between early parental bonding and adult Internet Addiction (IA). The factorial structure of the Internet Addiction Test (IAT) and the prevalence rates of it in a Greek sample will also be investigated. A total of 774 participants were recruited from a Technological Education Institute (mean age = 20.2, SD = 2.8) and from high school technical schools (mean age = 19.9, SD = 7.4). The IAT was used to measure the degree of problematic Internet use behaviors; the Parental Bonding Instrument was used to assess one's recalled parenting experiences during the first 16 years of life; the shortened Person's Relating to Others Questionnaire was used to assess one's negative (i.e. maladaptive) relating to others (NRO). Both exploratory and confirmatory factor analyses confirmed the three-factor structure of the IAT. Only 1.0% of the sample was severely addicted to the Internet. The mediated effects of only the NRO and sadness were confirmed. Negative relating to others was found to fully mediate the effect of both the father's optimal parenting and affectionless control on IA, whereas sadness was found to fully mediate the effect of the mother's optimal parenting on IA. Overall, the results suggest that parenting style has an indirect impact on IA, through the mediating role of negative relating to others or sadness in later life. Both family-based and individual-based prevention and intervention efforts may reduce the incidence of IA.

1. Introduction

Internet addiction (IA) has emerged as a rapidly growing problem in young people. Although official diagnostic criteria do not exist yet, IA can be defined as the excessive, obsessive–compulsive, uncontrollable, tolerance-causing use of the Internet, which also causes significant distress and impairments in daily functioning (Young, 1998, 1999).

Adolescents and young adults (e.g., college/university students) have been shown to be at risk of IA (Tsai & Lin, 2003). European prevalence estimates of IA vary widely in both adolescents (1% to 11%; Floros, Fisoun, & Siomos, 2010) and college students (6% to 35%; Frangos, Frangos, & Sotiropoulos, 2011; Ni, Yan, Chen, & Liu, 2009). Greek literature also lacks consensus; rates range from 1.5% (Kormas, Critselis, Janikian, Kafetzis, & Tsitsika, 2011) to 8.2% (Siomos, Dafouli, Braimiotis, Mouzas, & Angelopoulos, 2008). Internationally young addicts are predominantly male (Stavropoulos, Alexandraki, and Motti-Stefanidi, 2013; Widyanto & Griffiths, 2006).

The interpersonal factors that are associated with IA have received a fair amount of attention in the scholarly literature. The social skill model of problematic Internet use proposes that preference for online social interaction, rather than traditional face to face interaction, is a consequence of one's self-perception of social incompetence (Caplan, 2005). Studies have shown that a poor quality of interpersonal relationships may predispose adolescents to an increased risk of problematic Internet use (Milani, Osualdella, & Di Blasio, 2009). A positive association has

also been found between IA and social withdrawal/isolation (Douglas et al., 2008), low social self-efficacy (Iskender & Akin, 2010), and loneliness (Bozoglan, Demirer, & Sahin, 2013; Xiuqin et al., 2010). Anxiety (e.g., Shepherd & Edelmann, 2005) and depression have also been positively correlated with problematic Internet use (Dalbudak et al., 2013).

To the authors' knowledge, few studies as yet have assessed the role of self-perceived parenting style with IA (Floros & Siomos, 2013; Floros, Siomos, Fisoun, Dafouli, & Geroukalis, 2013; Xiuqin et al., 2010). Siomos et al. (2012) showed that parental bonding variables were the best predictors for IA. A widely-held assumption is that the early attachment patterns tend to be stable over time and predictive of an adult's interpersonal relationships with others (Bowlby, 1988; Phillips et al., 2013). In other words, an anxiously attached child will continue to have the same attachment style throughout life. The affectionless control (low care and high protection) is the most dysfunctional and harmful parenting style, which is likely to bring about interpersonal incompetencies in adult life (Bowlby, 1988).

Equally important to note is the association of a parental rearing style with symptoms of anxiety or depression (Meites, Ingram, & Siegle, 2012). In all, based upon these previous findings, it would be reasonable to assume that early parenting bonding is likely to predispose an individual to negative relating to others (NRO) in later life, self-perceived loneliness, sadness, and anxiety, which, in turn, may lead to the development of IA. To the authors' knowledge, no one study to date has tried to examine such a link before.

The present study first aims to test (1) the unidimensionality of the IAT, (2) the participants' Internet use prevalence rates, and (3) the impact of parenting bonding upon the IA, through the mediating role of NRO, loneliness, sadness, and anxiety. It is hypothesized that there is a negative indirect relationship between maternal and paternal optimal parenting styles and a positive indirect relationship between the maternal and paternal adverse parenting styles (i.e., affectionless control) and IA that is mediated by NRO, loneliness, sadness, and anxiety.

2. Method

2.1. Participants and procedures

Overall 774 participants were recruited: of these 62.9% were undergraduate students from the Technological Education Institute of Crete (27.5% were men and 72.5% were women; the mean age was 20.2, $SD = 2.8$). The remaining 37.1% were high school students from technical education schools (32.7% were men and 67.3% were women; their mean age was 19.9, $SD = 7.4$). Significantly more university students reported self-perceived loneliness compared with high-school students (31.1% vs. 23.8%, $\chi^2_{(1)} = 4.79$, $p = .032$). Internet addiction scores were also marginally higher for the university students ($M = 41.2$, $SD = 12.5$) compared with the high-school students ($M = 39.3$, $SD = 13.6$; $t = 1.961, p = .050$), but the percentage of mild, moderate, or severe users did not differ across the two samples. No other differences between the two samples were found.

Questionnaires were administered during regularly scheduled classes by the senior author. Participants were informed about the purpose of the study and their rights (i.e., anonymity, confidentially, and voluntary participation). The response rate was 97.4% for the University students and 98.6% for the high school students. There was no compensation for participation.

2.2. Measures

The demographics included questions on sex, age, and feelings of self-perceived loneliness ("*Do you feel lonely?*"), sadness ("*Do you frequently feel sad?*"), and anxiety ("*Do you feel that you are more stressed than your peers?*").

The Internet Addiction Test (IAT; Young, 1998) consists of 20 self-reported items, rated on a 5-item Likert scale, to determine the degree

of problematic Internet use behaviors. Scores were classified into mild (20–49), moderate (50–79), and severe (80–100) levels of IA (Young, 1998b). The Greek translation, which has good psychometric properties, was used (Siomos, Floros, Mouzas, & Angelopoulos, 2009). In the current study, the Cronbach alpha was .91.

The Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) is a 25 item self-report measure, rated on a 4-item Likert scale, of one's recalled parenting experiences during the first 16 years of life. Four types of bonding can be extracted: Optimal parenting (high care and low protection), neglectful parenting (low care and low protection), affectionate constraint (high care and high protection), and affectionless control (low care and high protection). Care reflects parental warmth and affection versus indifference and rejection and control reflects parental control and intrusion versus encouragement of autonomy and independence. The Greek-validated PBI, which has good psychometric properties (Avagianou & Zafiropoulou, 2008), was used. In the present study, the Cronbach alphas for the maternal and paternal care were .84 and .85, respectively and for the protection were .68 and .67, respectively.

The shortened Person's Relating to Others Questionnaire (PROQ3; Birtchnell, Hammond, Horn, De Jong, & Kalaitzaki, 2013) is a 48-item measure, rated on a 4-item Likert scale, of negative (i.e. maladaptive/dysfunctional) relating to others (NRO). NRO reflects one's inability to establish and maintain mutually satisfying relationships with others. Higher scores represent more relating deficits. The Greek translation has been found to be psychometrically sound (Birtchnell, Hammond, Horn, De Jong, & Kalaitzaki, 2013). In the current study the Cronbach alpha was .84.

3. Results

3.1. Factor structure of the IAT

An exploratory factor analysis, using the principal axis extraction method followed by a varimax orthogonal rotation, yielded three factors, accounting for 48.9% of the variance. The first factor ($\alpha = .85$) was labeled "withdrawal and social problems" (item nos. 3, 4, 10, 11, 12, 13, 15, 16, 19, 20), the second one ($\alpha = .81$) "time management and performance" (item nos. 5, 6, 8, 9, 17, 18), and the third ($\alpha = .61$) "excessive use" (item nos. 1, 2, 7, 14). Confirmatory Factor Analysis (CFA) was conducted to test the fit of the three-factor model (Model I) compared with the unidimensional one (Model II). The fit indices of both models are shown in Table 1. The incorporation of the error covariances between items 6–8 and 3–19 substantially improved both models' fit. The three-factor model (Ib) provided better fit, compared to the unidimensional (IIb).

3.2. Prevalence rates of IA

Overall, 25.6% of the respondents were involved in normal use, 51.0% were involved in mild Internet use, 22.4% in moderate use, and 1.0% in severe (addictive) use. Males had significantly higher overall IAT score (43.1) than females (39.4; $t_{(760)} = 3.611$, $p < .0001$). Significantly more men (1.8%) than women (0.6%) were severely addicted ($\chi^2_{(3)} = 14.960$, $p = .002$).

3.3. A mediation analysis of the impact of parenting bonding on IA

Siomos et al. (2012) have shown that affectionate control and optimal parenting were associated with higher and lower IA scores. For this reason, they were selected as the independent variables. The hypothesized effects of the independent variables on IA through the role of the mediators (NRO, loneliness, sadness, and anxiety) were examined through Structural Equation Modeling (SEM). Two alternative models were compared with the Robust Maximum Likelihood (RML) estimation method. In Model Ia, parental and maternal optimal parenting and affectionate control were assumed to have a direct effect on IA and an indirect