



## Full length article

## Adolescent problematic Internet use: Is a parental rating suitable to estimate prevalence and identify familial correlates?

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## ABSTRACT

**Background:** High prevalence estimates for adolescent problematic Internet use have been reported. The objective of the present study was to estimate the prevalence of adolescent problematic Internet use first-time based on parental assessment instead of adolescents' ratings and additionally, to identify familial correlates.

**Methods:** We investigated a representative sample of 1000 parents of adolescents (aged 12–17 years) with a standardized questionnaire measuring problematic Internet use and familial aspects. The statistical analyses were limited to 964 cases, because 36 of the adolescents have never used the Internet. To estimate the prevalence of problematic Internet use we conducted a latent class analysis. We used logistic regression analyses to identify familial correlates.

**Results:** The prevalence estimate for adolescent problematic Internet use in Germany was 4.7% [95% Confidence Interval (CI): 3.4–6.1%]. Lower family functioning [Odds Ratio (OR): 0.66, CI: 0.55 to 0.78] and a higher frequency of parent-adolescent-conflicts (OR: 4.51, CI: 3.05 to 6.68) were associated with problematic Internet use.

**Conclusion:** In an observational study, we found first indications that parental assessment can be suitable for estimating the prevalence of problematic Internet use in adolescents. With regard to familial correlates we found substantial accordance with results based on adolescents' self-reports.

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## 1. Introduction

The Internet offers many positive activities for adolescents, be it for school (e.g., information search) or for leisure activities (e.g., entertainment facilities, games or internet-based communication). Nonetheless, a growing concern has arisen regarding problematic use of the Internet, especially for adolescents (e.g., Greydanus & Greydanus, 2012). According to Spada (2014), problematic Internet use can be conceptualized '... as an inability to control one's use of the Internet which leads to negative consequences in daily life' (p.3). Davis (2001) presented a cognitive-behavioral model of pathological or problematic Internet use suggesting a distinction between generalized problematic use ('... multidimensional overuse of the Internet')

and specific problematic use ('... related to only one aspect of the Internet') (p. 188). To date, the majority of published surveys (just like the present study) refer to generalized problematic Internet use. Numerous investigations and several reviews (e.g., Kuss, Griffiths, Karila, & Billieux, 2014) have focused specifically on problematic Internet use in adolescents. The published findings were typically based on adolescents' self-reports.

On a global scale, the reported prevalence estimates for adolescent problematic Internet use vary between 0.8% (Italy, Poli & Agrimi, 2012) and 26.7% (China, Shek & Yu, 2012). Generally, prevalence estimates in Asian countries are higher compared to European countries (e.g., Kuss et al., 2014). The most comprehensive survey in Europe was presented by Durkee et al. (2012). Data on adolescent problematic Internet use (measured by the Young Diagnostic Questionnaire, YDQ, Young, 1998a) were collected in ten European countries and Israel. The lowest prevalence estimate for the European nations was reported for Italy (1.2%) and the highest

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for Slovenia (5.8%), whereas Germany (4.8%, 95% confidence interval or CI is 3.8–6.0%) ranked in between (Durkee et al., 2012). In two other studies, the Compulsive Internet Use Scale (CIUS, Meerkerk, Van Den Eijnden, Vermulst, & Garretsen, 2009) was applied to assess problematic Internet use in representative samples of German adolescents. Rumpf et al. (2014) observed a prevalence of 4.0% (CI: 2.7–5.7%) and Wartberg, Kriston, Kammerl, Petersen, and Thomasius (2015) of 3.2% (CI is 2.4–4.1%). Tsitsika et al. (2014) investigated adolescent problematic Internet use in seven European countries with the Internet Addiction Test (IAT, Young, 1998b). They reported the highest prevalence estimates (1.7) for Greece and Romania, while the prevalence in Germany was lower (0.9%, CI: 0.6–1.4%; Tsitsika et al., 2014). Thus, the range of prevalence estimates for problematic Internet use in German adolescents in epidemiological studies so far has been between 1% and 5%. These substantial differences can be assumed to be caused by the various assessment measures used in different surveys. To the best of our knowledge, in epidemiological studies worldwide all prevalence estimates for adolescent problematic Internet use so far have been based on self-assessments of the youth.

Several familial aspects were identified in cross-sectional studies as being associated with adolescent problematic Internet use (findings from longitudinal surveys are rarely available). In some cross-sectional investigations lower family functioning was related to problematic Internet use in adolescents (e.g., Ko, Yen, Yen, Lin, & Yang, 2007). Furthermore, in a longitudinal study Yu and Shek (2013) identified good family functioning as a negative predictor or protective factor for the development of problematic Internet use 2 years later. But 5 years after the first assessment, family functioning was no longer a predictor for problematic Internet use in the same sample (Shek & Yu, 2016). Further on, in some (cross-sectional) surveys lower parental monitoring was statistically associated with problematic adolescent Internet use (e.g., Yen, Ko, Yen, Chang, & Cheng, 2009). According to the findings of Van Den Eijnden, Spijkerman, Vermulst, Van Rooij, and Engels (2010), parental rules about the time of Internet use tend to promote problematic Internet use in youth, while rules regarding the content of Internet use may help prevent it. Moreover, Li, Li, and Newman (2013) observed parental behavioral control (restrictions) may prevent adolescent problematic Internet use, whereas parental psychological control (love withdrawal) facilitates it. Furthermore, a higher frequency of parent-adolescent conflicts was related to adolescent problematic Internet use (e.g., Yen, Yen, Chen, Chen, & Ko, 2007). All these results were based on adolescents' self-reports. So far, only one published survey (Wartberg et al., 2015) reports associations between problematic Internet use in adolescents and familial correlates from the parent's point of view.

### 1.1. Research questions

The objective of this explorative study was to estimate the prevalence of adolescent problematic Internet use based on parental ratings, which so far has not been attempted in an epidemiological survey. Due to the absence of a cut-off point for the adapted and standardized instrument we applied, we conducted a latent class analysis (LCA) to estimate the prevalence. Furthermore, our goal was to determine an optimal cut-off point for the adapted questionnaire based on the findings of the LCA. Additionally, we attempted to identify associations between familial correlates and adolescent problematic Internet use from a parent's point of view. Due to the absence of suitable empirical findings, we abstain from constructing any hypothesis, but explored instead the following research questions:

What is the prevalence of adolescent problematic Internet use in Germany based on parents' reports?

What is the appropriate cut-off point for the standardized instrument for parental assessment of adolescent problematic Internet use?

Which familial correlates are associated with adolescent problematic Internet use from the parents' point of view?

## 2. Methods

### 2.1. Participants

The representative sample included 1000 parents in Germany with an adolescent child aged 12–17 years. The sample consisted of 567 mothers (56.7%) and 433 fathers (43.3%). The mean age of adolescents was 14.21 ( $SD = 1.61$ , range: 12 to 17) and the mean age of the parents was 47.08 ( $SD = 6.32$ , range: 31 to 75) years. Altogether, 88 percent of the interviewed parents lived in one household with a partner or spouse. In total, 41% of the parents had achieved 'Abitur' (high educational level), 38% 'Realschulabschluss' (medium educational level), and 20% had achieved 'Hauptschulabschluss' or left school without qualification (low educational level). Overall, 86 percent of the persons in the sample were employed.

### 2.2. Measures

#### 2.2.1. Parental assessment of adolescent problematic internet use

To assess problematic Internet use, we translated the established Young Diagnostic Questionnaire (YDQ, Young, 1998a) into German and adapted the measure by rewording the items to survey a parental rating instead of a self-report ('Parental version of the Young Diagnostic Questionnaire', PYDQ, psychometric properties of the instrument were reported by Wartberg, Kriston, Kegel, & Thomasius, 2016). The PYDQ consists of eight items (binary response format: 0 = 'no', 1 = 'yes'). According to Strittmatter et al. (2014), the criteria of problematic Internet use assessed by the YDQ and PYDQ are: 'preoccupation' (item 1), 'tolerance' (item 2), 'loss of control' (item 3 and item 5), 'withdrawal' (item 4), 'risk or lose relationships or opportunities' (item 6), 'lies to conceal extent of involvement' (item 7) and 'dysfunctional coping' (item 8). By summing up the values of all eight items of the questionnaire, a PYDQ sum score (range: 0 to 8) was calculated with a higher sum indicating higher risk levels of adolescent problematic Internet use.

#### 2.2.2. Family functioning

Family functioning was measured using the Family APGAR (Smilkstein, 1978). APGAR is an acronym for the five domains of family functioning (Adaptability, Partnership, Growth, Affection, and Resolve) being assessed by the instrument. The measure consists of five items with a 3-level response format (0 = 'hardly ever', 1 = 'some of the time', 2 = 'almost always'). The Family APGAR is scored by summing the values for the five items for a 'total score' (ranging between 0 and 10). A higher total score indicates a greater degree of satisfaction with family functioning.

#### 2.2.3. Parental involvement in adolescent internet use

Moreover, we applied single questions to measure three different aspects of parental involvement in adolescent Internet use (monitoring, regulations, and parent-child-conflicts). Using a 4-level response format (1 = 'strongly agree', 2 = 'tend to agree', 3 = 'tend to disagree', 4 = 'strongly disagree'), the parents were asked to rate their monitoring of adolescents' Internet use (a lower rating indicates a higher monitoring). Also, parents were asked if they tried to influence the Internet use of their adolescent with rules (1 = 'strongly agree', 2 = 'tend to agree', 3 = 'tend to disagree', 4 = 'strongly disagree'; a lower rating indicates more parental Internet rules). Furthermore, parents were requested to rate how

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