Confirmation of the Three-Factor Model of Problematic Internet Use on Off-Line Adolescent and Adult Samples

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Abstract

As the Internet became widely used, problems associated with its excessive use became increasingly apparent. Although for the assessment of these problems several models and related questionnaires have been elaborated, there has been little effort made to confirm them. The aim of the present study was to test the three-factor model of the previously created Problematic Internet Use Questionnaire (PIUQ) by data collection methods formerly not applied (off-line group and face-to-face settings), on the one hand, and by testing on different age groups (adolescent and adult representative samples), on the other hand. Data were collected from 438 high-school students (44.5 percent boys; mean age: 16.0 years; standard deviation = 0.7 years) and also from 963 adults (49.9 percent males; mean age: 33.6 years; standard deviation = 11.8 years). We applied confirmatory factor analysis to confirm the measurement model of problematic Internet use. The results of the analyses carried out inevitably support the original three-factor model over the possible one-factor solution. Using latent profile analysis, we identified 11 percent of adults and 18 percent of adolescent users characterized by problematic use. Based on exploratory factor analysis, we also suggest a short form of the PIUQ consisting of nine items. Both the original 18-item version of PIUQ and its short 9-item form have satisfactory reliability and validity characteristics, and thus, they are suitable for the assessment of problematic Internet use in future studies.

Introduction

THE INTERNET HAS rapidly gained popularity and became a widely used tool immediately after its introduction. Besides its invaluable benefits, parallel to its spread, more reports have arrived on the problematic way it is being used all around the world. Initial news from the United States[1] was followed by publications that reported the presence of problematic Internet use in Europe[2–5] and Asia.[6,7] Studies have shown unambiguously that excessive Internet use is strongly associated with different somatic,[8] mental,[9–13] and interpersonal problems[14–16] and correlates with other types of addictions as well.[17,18]

These observations, beyond the simple description of the phenomenon and the exploration of the characteristics of persons with problematic use, motivated a growing amount of research targeting the revelation of possible causal factors and background dynamics of problematic use from the aspects of different theoretical approaches.[19–25] The interpretation and comparison of the results of the aforementioned

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studies, however, are hindered by the fact that there is not a single, universally accepted measure of the phenomenon that would be regarded as psychometrically valid. Accordingly, these results are largely incidental because the validity and reliability of the measuring tools are not verified.

Since 1996, based on different theoretical considerations, many measures have been developed and applied for the assessment of problematic Internet use. Several of these questionnaires, however, have not or have hardly ever been applied once they were created. Such measures are, for example, Brenner's Internet-Related Addictive Behavior Inventory,[8] the Generalized Problematic Internet Use Scale,[26] the Online Cognition Scale,[20] the Internet Addiction Scale,[27] and the Chinese Internet Addiction Inventory.[28] Recently, Meerkerk et al. created a questionnaire measuring a single factor with promising psychometrical characteristics, named the Compulsive Internet Use Scale.[29] At the same time, there were hardly any psychometric data on the most widely used Internet Addiction Test by Young[30–33] or the eight-item Diagnostic Questionnaire also created by Young.[34]

Conclusively, the aforementioned measures are actually lacking analysis on their reliability and validity that could confirm the pertinence of their employment. They were not a subject of psychometrical testing; therefore, we cannot be sure whether they give the same results in the case of different methods of data collection (e.g., paper-and-pencil survey, online survey, and telephone interviews) or when applying them in different cultural contexts.[35,36] A confirmatory approach was applied only in the cases of a few measures[20,26,28,32]; however, some of them were criticized for having used too small or homogeneous samples.[37] Jia and Jia emphasized the importance of discriminant validity of the scales, and they reconstructed the Online Cognition Scale.[38] Overall, we can state that there are as yet no confirmatory analyses with reassuring results executed on multidimensional measures.

We can conclude that the reliability and validity of the measures suitable for the assessment of different components of problematic Internet use are not supported by sufficient data. A suitable measure should fit the following requirements:

(1) *Comprehensive*, examining more, possibly all, aspects of problematic Internet use;
(2) *Short*, to be able to assess the more impulsive population as well and to fit into time-limited surveys;
(3) Reliable and valid for *different methods of data collection* (e.g., online, paper-and-pencil self-rating, and face-to-face);
(4) Reliable and valid for *different age groups* (e.g., adolescents and adults);
(5) *Cross-culturally* reliable and valid;
(6) Validated on clinical samples; could also serve as a basis for defining cutoff scores for dependence.

Recently, we have created such a questionnaire that, concerning our initial results, fulfils the first two criteria.[39] The Problematic Internet Use Questionnaire (PIUQ) includes 18 items and three subscales (obsession, neglect, and control disorder). Chronbach's alpha turned out to be 0.87 (Chronbach's α of the subscales is 0.85, 0.74, and 0.76, respectively). The test–retest correlation of the PIUQ is 0.90.

The objective of the present study was a wider examination of the applicability of the PIUQ concerning the aforementioned aspects, points (3) and (4). Thus, our objective was to test whether the PIUQ keeps its ideal psychometrical indices in cases of different types of data collection methods and different age groups. Therefore, we analyzed the psychometric properties of the PIUQ on off-line samples of both adolescents and adults. It also has to be emphasized that this study is the first normal population survey of problematic Internet use that allows us to estimate this problem in a representative general population sample.

Methods

Participants and procedure

Sample 1—adolescents. Eight general high schools were invited to participate in the study. Schools were selected to represent a wide variety of high schools in terms of location and socioeconomic characteristics of their neighborhood. For each high school, one second- and one third-year class were randomly selected. The participants were asked to complete the questionnaire in their classrooms within one class session; therefore, the sample characteristics reflect the composition of the participating classes. After the parental consent procedure, subjects were informed both verbally and in a written form that participation in the study was voluntary and anonymous.

Of the 457 students who answered the questionnaire, data for 19 participants were dropped because of the high number of missing values. The final sample was composed of 438 high-school students (195 boys and 243 girls). The mean age of the students was 16.02 years (standard deviation [SD] = 0.69 years, age range: 15–17). The higher proportion of girls in this sample was in accordance with gender distribution in general high schools in Hungary.[40]

Sample 2—adults. The target population of the survey was the total population of Hungary between 18 and 64 years of age (6,703,854 persons). The sampling frame consisted of the whole resident population with a valid address according to the register of the Central Office for Administrative and Electronic Public Services on January 1, 2006 (6,662,587 persons). Data collection was executed on a gross sample of 3,183 persons, stratified according to geographical location, degree of urbanization, and age (overall, 186 strata) representative of the sampling frame. Subjects were surveyed with the so-called "mixed method" via personal visits. Questions on background variables and introductory questions referring to specific disorders were asked in the course of face-to-face interviews, whereas symptom scales, including the PIUQ, were self-administered paper-and-pencil questionnaires. These questionnaires were returned to the interviewer in a closed envelope to ensure confidentiality. Subjects were informed both verbally and in a written form that participation in the study was voluntary and anonymous. Data were collected between March 5 and April 6, 2007. The net sample size was 2,710 (response rate: 85.1 percent). A total of 1,023 persons (37.7 percent)—those who reported weekly or more frequent Internet use—were asked to fill out an additional questionnaire (see later) regarding their Internet use and 963 (94.1 percent) agreed to answer these questions. The mean age of the respondents was 33.6 years (SD = 11.8 years, age range: 18–64) and 49.9 percent of the sample were males.

Measures

"Problematic Internet use" was measured by the three-factor PIUQ.[39] In our previous study, items of Young's Internet Addiction Test[30] or their modifications were amended with further items to cover the content of problematic Internet use. The PIUQ was created after factor analysis and comprehensive psychometric analysis of these 30 items.[39] The PIUQ consists of three six-item factors. Subjects use a five-point scale to estimate how much the given statement is true for them (Table 2). The obsession subscale reflects on obsessive thinking about the Internet (daydreams and fantasies) and, on the other hand, mental withdrawal symptoms caused by the lack of Internet use. The neglect subscale refers to the neglect of everyday activities and essential needs. Finally, the control disorder subscale contains items covering difficulties in controlling Internet use.

Statistical analysis

SPSS 16.0 and Mplus 6.0 were used for statistical analyses. We applied a confirmatory factor analysis framework to confirm the measurement model of problematic Internet use. Because of the serious deviation from normal distribution, we have treated the responses to each item as ordinal indicators and used the robust weighted least square (WLSMV) estimation method recommended by Brown[41] and Muthén and Muthén.[42] We compared two nested measurement models, namely one-factor and the originally proposed three-factor structure with one second-order factor (Fig. 1), for both samples. We included the one-factor solution here because high correlations (0.468–0.513) among the three subscales were found.[39]

To test the model fit, multiple indices were selected, namely an absolute fit such as chi-square (χ^2) value, fit adjusting for model parsimony such as root-mean-squared error of approximation (RMSEA), fit relative to a null model such as comparative fit index (CFI), and Tucker-Lewis index (TLI). Satisfactory degree of fit requires that CFI and TLI are larger than 0.95. An RMSEA value below 0.05 indicates excellent fit,

a value <0.08 indicates adequate fit, and a value above 0.10 signifies poor fit. Note that in case of the robust WLSMV estimation method, confidence intervals (CI) were not calculated.

Model fit was also compared between two nested models; however, the difference in χ^2 values for nested models estimated with WLSMV was not distributed as χ^2,[41] and moreover, the calculation of model degree of freedom (df) was not the same as in confirmatory factor analysis solutions estimated with maximum likelihood method. The computation of the df in WLSMV was not straightforward (see the formula in the work of Muthén and Muthén[42]). χ^2 difference tests were performed with Mplus 6.0.

Because of the lack of cutoff score and golden standard to determine problematic use, a latent profile analysis was performed with 1–3 clusters to define the latent classes that can help to identify the cluster of problematic use. The latent profile analysis[43] is a latent variable analysis with a categorical latent variable and continuous manifest indicators such as scores of obsession, neglect, and control disorder scales. In the process of determination of number of latent classes, we used the Bayesian Information Criteria Parsimony Index, the minimization of cross-classification probabilities, entropy, and the interpretability of clusters. In the final determination of the number of classes, we also used the likelihood-ratio difference test (Lo-Mendell-Rubin adjusted test), which compares the estimated model with a model that has one class less than the estimated model (Muthén and Muthén[42]). A low p value (<0.05) indicates that the one-class-less model is rejected in favor of the estimated model.

For the sake of practical use in large samples, a shorter version of PIUQ is needed. The item-to-total correlations for the three subscales of the PIUQ were computed in both adult and adolescent samples, and a one-factor exploratory factor analysis was separately performed for each subscale to obtain factor loadings. We selected three items per subscale to achieve high item-to-total correlations and factor loadings while maintaining construct content coverage.

Results

Testing the measurement model

Before testing the measurement model of PIUQ, we calculated the basic statistics of items and inter-item correlations, which are presented in the Appendix.

Fit indices of single-factor and three-factor solutions for both samples are presented in Table 1. The absolute fit index (χ^2) for both models in both samples was significant ($p < 0.001$), but this index was too sensitive in case of large samples.[44] We have also not applied the χ^2/df ratio as a measure of degree of fit, as advised by the literature recently.[45] It is especially not recommended in the case of WLSMV estimation method, as in this case the χ^2 value is adjusted for mean and variance and also df is calculated in a way different from that in ML estimation.[41,46] As shown in Table 1, the other fit indices of the one-factor solution reveal less or marginally adequate fit to the data. However, the fit indices of the three-factor solution indicate a good fit.

Statistical comparison of the two nested models with χ^2 difference test revealed that the three-factor solution has significantly closer fit to the data than the one-factor solution in both adolescents and adults (in the adolescent sample, χ^2
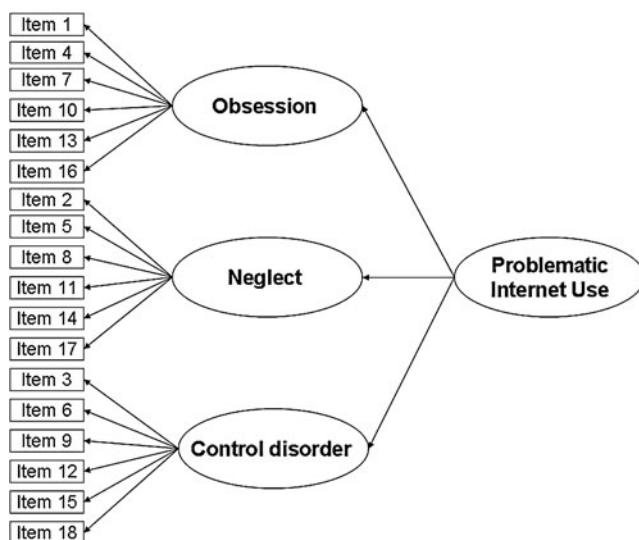

FIG. 1. Three-factor model of problematic Internet use (see the wording of each item in Table 2).

TABLE 1. FIT INDICES OF THE CONFIRMATORY FACTOR
ANALYSIS TESTING THE ONE- AND THREE-FACTOR MODELS

	Adolescents		Adults	
	1 factor	3 factors	1 factor	3 factors
χ^2	516.6	396.5	819.4	663.0
df	135	132	135	132
TLI	0.931	0.951	0.944	0.956
CFI	0.939	0.958	0.951	0.962
RMSEA	0.080	0.068	0.072	0.065

df, degrees of freedom; TLI, Tucker-Lewis index or nonnormed fit index; CFI, comparative fit index; RMSEA, root-mean-squared error of approximation.

different test = 92.2, df = 3, $p < 0.001$; and in the adult sample, χ^2 different test = 123.9, df = 3, $p < 0.001$). Therefore, the three-factor solution more closely represents the data covariance matrix than the one-factor solution in both age groups.

Standardized estimates of factor loadings of the three-factor solution are presented in Table 2. All factor loadings are above 0.40, and the range of loadings is between 0.44 and 0.89 in the adolescent sample and 0.62 and 0.92 in the adult sample. Factor loadings of primary factors on secondary factors are also high in both the adolescent and adult samples (obsessions, 0.85 and 0.91; neglect, 0.98 and 0.99; control disorder, 0.92 and 0.93, respectively). Table 2 also presents means, SD for the subscales, and Chronbach's alpha for the subscales and the total scale.

TABLE 2. STANDARDIZED ESTIMATES OF FACTOR LOADINGS OF THREE-FACTOR SOLUTION
FOR EACH ITEM OF PROBLEMATIC INTERNET USE QUESTIONNAIRE

	Obsession		Neglect		Control disorder	
Items	Adolescent	Adult	Adolescent	Adult	Adolescent	Adult
1. How often do you fantasize about the Internet or think about what it would be like to be online when you are not on the Internet?	0.690	0.773				
4. How often do you daydream about the Internet?	0.710	0.791				
7. How often do you feel tense, irritated, or stressed if you cannot use the Internet for as long as you want to?	0.824	0.857				
10. How often do you feel tense, irritated, or stressed if you cannot use the Internet for several days?	0.870	0.852				
13. How often does it happen to you that you feel depressed, moody, or nervous when you are not on the Internet and these feelings stop once you are back online?	0.879	0.913				
16. How often do you dream about the Internet?	0.706	0.902				
2. How often do you neglect household chores to spend more time online?			0.802	0.822		
5. How often do you spend time online when you'd rather sleep?			0.682	0.693		
8. How often do you choose the Internet rather than being with your partner?			0.638	0.795		
11. How often does the use of the Internet impair your work or your efficacy?			0.790	0.731		
14. How often do people in your life complain about you spending too much time online?			0.844	0.774		
17. How often do you choose the Internet rather than going out with somebody to have some fun?			0.664	0.713		
3. How often do you feel that you should decrease the amount of time spent online?					0.792	0.762
6. How often does it happen to you that you wish to decrease the amount of time spent online but you do not succeed?					0.866	0.863
9. How often do you try to conceal the amount of time spent online?					0.821	0.861
12. How often do you feel that your Internet usage causes problems for you?					0.656	0.652
15. How often do you realize saying, when you are online, "just a couple of more minutes and I will stop"?					0.724	0.701
18. How often do you think that you should ask for help in relation to your Internet use?					0.444	0.925
Chronbach's α	0.76	0.84	0.78	0.77	0.75	0.77
Mean	8.3	7.3	8.9	8.0	9.0	7.9
Standard deviation	2.9	2.6	3.3	2.8	3.6	2.7

Empty cells represents the factor loadings that are fixed to 0; all other factor loadings are significant at least at $p < 0.001$. Chronbach's alpha of the total Problematic Internet Use Questionnaire is 0.89 on the adolescent sample and 0.91 among the adults.

TABLE 3. FIT INDICES FOR THE LATENT PROFILE ANALYSIS OF THE THREE DIMENSIONS
OF PROBLEMATIC INTERNET USE QUESTIONNAIRE

Number of latent classes	AIC	BIC	SSABIC	Entropy	L-M-R test	p Value
Adult sample						
1	4329.7	4358.9	4339.9			
2	1870.9	1919.6	1887.9	0.983	2377	0.0073
3	444.4	512.6	468.2	0.964	1382	0.0679
Adolescent sample						
1	2509.0	2533.5	2514.4			
2	1505.5	1546.3	1514.6	0.969	972	0.0002
3	1091.9	1149.1	1104.7	0.948	405	0.0585

AIC, Akaike Information Criteria; BIC, Bayesian Information Criteria; SSABIC, Sample Size Adjusted Bayesian Information Criteria; L-M-R test, Lo-Mendell-Rubin adjusted likelihood ratio test value; p value, p value associated with L-M-R test.

Latent profile analysis

Using the factor scores of three dimensions of PIUQ, we performed a latent profile analysis with 1–3 classes in both samples. The fit indices and test values are presented in Table 3. The AIC, BIC, and sample-size-adjusted BIC continuously decreased as more latent classes were added. However, in case of the inspection of entropy, the two-latent-class solution reached the maximum level. These considerations and the examination of the Lo-Mendell-Rubin adjusted likelihood ratio test values and their level of significance support the two-latent-class solution in both the adult and adolescent samples.

The mean scores and latent classes are presented in Figure 2. One of the two classes represents the majority of Internet users (89 percent of adult and 82 percent of adolescent users). This class can be characterized with a low level of problematic use. The means of total score on the PIUQ are 21.39 (SD = 3.76, 95 percent CI: [21.14–21.64]) in the adult sample and 22.78 (SD = 3.89, 95 percent CI: [22.38–23.19]) in the adolescent sample. The smaller classes in both groups represent the minority of Internet users (11 percent of adult users and 18 percent of adolescent users) with high scores on the three factors of PIUQ. The mean total score on the PIUQ of provisionally problematic users is 41.09 (SD = 7.37, 95 percent CI: [39.68–42.51]) in the adult sample and 41.23 (SD = 6.94, 95 percent CI: [39.67–42.78] in the adolescent sample. Therefore, until a more established cutoff score is determined, we rec-

ommend to use 41 points as a cutoff score for the distinguishment of problematic Internet use.

Constructing the brief version of the PIUQ

We constructed the brief version of PIUQ with the inspection of the item-to-total correlations for the three subscales of the PIUQ in both samples. We also separately performed one-factor exploratory factor analyses for each subscale to obtain factor loadings. Three items per subscale were selected to achieve high item-to-total correlations and factor loadings while maintaining construct content coverage. In the brief version, obsession subscale consists of items 7, 10, and 13, neglect subscale consists of items 2, 5, and 14, and control disorder subscale contains items 3, 6, and 9. Chronbach's alpha of the full brief scale is 0.84 in the adult sample and 0.87 in the adolescent sample. On the basis of a previous latent profile analysis, we also calculated the provisional cutoff score, which is 22 in both samples.

Discussion

Confirmatory factor analysis conducted on the two samples and in different types of data collection methods undoubtedly supported the original three-factor model of the PIUQ against the other possible one-factor solution. In the case of the three-factor model, all indices were satisfactory in
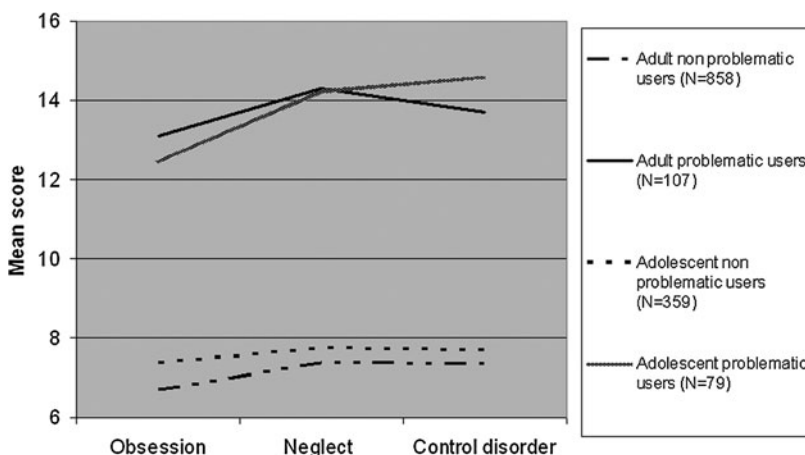

FIG. 2. Latent profile analysis on the three factors of the Problematic Internet Use Questionnaire.

both the sample of adolescents interviewed in groups and the sample of adults interviewed individually. Therefore, we could cross-validate the measurement model of PIUQ on two independent samples.

The most difficult point in the assessment of problematic Internet use and dependence seems to be the exact definition of cutoff scores. This problem, however, unfortunately remains unresolved until we will have, on one hand, consensual diagnostic criteria, and on the other hand, these tools will be validated on clinical samples regarding these diagnostic criteria. In the present study, we have made attempts to identify latent classes that represent the nonproblematic and problematic use of Internet in our adult and adolescent samples; however, in the future, there is an inevitable need for the clinical validation of questionnaires applied in Internet research. Different authors define cutoff points between nonproblematic, problematic, and pathological Internet use according to several different principles. Early approaches were based on theoretical considerations in this aspect; e.g., on Young's Diagnostic Questionnaire, five scores out of the overall eight indicated dependence.[34] Others used the highest 10 percent (decile) as a cutoff point.[47] We proposed another approach in which the latent profile analysis is applied to identify distinct subgroups of individuals.[43] In the present case, latent profile analysis can be regarded as a person-oriented framework that seeks subtypes of Internet users who exhibit similar patterns of Internet use characteristics. We could identify a distinct group of Internet users who are presenting high endorsement with items measuring the symptoms of problematic Internet use. Eighteen percent of adolescent users and 11 percent of adult users can be characterized with problematic use, and this result is in good accordance with the approach that identifies cutoff points with the highest 10 percent of users.[47]

It is no doubt, however, that the results of this method are only for the given sample and are not generalizable to other samples. However, the only comforting solution would be to define consensual diagnostic criteria and if relevant questionnaires were validated parallel to their clinical investigation. Inclusion of Internet addiction in the Appendix of DSM-V[48] in fact signifies a great step forward.

In the present case of unclear diagnostic criteria and missing clinical validation, it is important, however, to be careful when interpreting scores, especially cutoff scores, of different measures including the PIUQ. This is one reason for emphasizing that PIUQ—at the present moment—is not a diagnostic tool assessing Internet addiction, but a valid and reliable tool for the assessment of the problematic nature of one's Internet use. What we can say at the moment is that the PIUQ is an adequate measure of problematic Internet use on samples of different age groups just as on samples obtained by diverse methods of data collection. Based on the inspection of the item-to-total correlations and the exploratory factor analysis, the brief version of the PIUQ has also been created. This nine-item version, which conserved the factorial structure of the long form of the questionnaire, can be advantageous, especially in surveys with narrow timeframes. Cross-cultural testing of the questionnaire, however, is yet an objective for future studies and testing the questionnaire on clinical samples is also a significant task for the future.

Disclosure Statement

The authors declare that they do not have any interest that could constitute a real, potential, or apparent conflict of interest with respect to his/her involvement in this publication. The authors also declare that they do not have any financial or other relations (e.g., directorship, consultancy, or speaker fee) with companies, trade associations, unions, or groups (including civic associations and public interest groups) that may financially gain or lose from the results or conclusions in this study.

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Appendix

TABLE A1. INTER-ITEM CORRELATIONS, MEANS, AND STANDARD DEVIATION OF THE ITEMS IN BOTH SAMPLES

Items no.	Obsession						Neglect						Control disorder						Mean[a]	SD
	1.	4.	7.	10.	13.	16.	2.	5.	8.	11.	14.	17.	3.	6.	9.	12.	15.	18.		
Obsession																				
1.		0.55	0.39	0.36	0.31	0.29	0.40	0.25	0.29	0.26	0.32	0.33	0.31	0.37	0.31	0.24	0.41	0.12	1.92	1.06
4.	0.62		0.52	0.43	0.41	0.36	0.46	0.30	0.20	0.37	0.34	0.25	0.27	0.35	0.32	0.22	0.28	0.07	1.56	0.81
7.	**0.47**	**0.47**		**0.53**	**0.48**	**0.33**	**0.50**	**0.39**	**0.25**	**0.36**	**0.40**	**0.33**	**0.34**	**0.46**	**0.51**	**0.18**	**0.38**	**0.14**	1.33	0.70
10.	**0.45**	**0.49**	**0.62**		**0.49**	**0.27**	**0.51**	**0.41**	**0.48**	**0.50**	**0.48**	**0.25**	**0.29**	**0.41**	**0.47**	**0.24**	**0.40**	**0.14**	1.29	0.64
13.	**0.40**	**0.44**	**0.54**	**0.57**		**0.45**	**0.38**	**0.26**	**0.53**	**0.38**	**0.34**	**0.35**	**0.23**	**0.37**	**0.50**	**0.31**	**0.30**	**0.15**	1.12	0.45
16.	0.37	0.46	0.39	0.44	0.63		0.30	0.22	0.37	0.31	0.33	0.42	0.21	0.27	0.50	0.27	0.24	0.17	1.09	0.44
Neglect																				
2.	**0.50**	**0.39**	**0.43**	**0.44**	**0.33**	**0.26**		**0.57**	**0.21**	**0.53**	**0.51**	**0.32**	**0.46**	**0.51**	**0.40**	**0.26**	**0.42**	**0.13**	1.89	0.97
5.	**0.33**	**0.35**	**0.30**	**0.35**	**0.23**	**0.15**	**0.50**		**0.13**	**0.45**	**0.49**	**0.27**	**0.43**	**0.44**	**0.28**	**0.21**	**0.38**	**0.11**	1.88	1.04
8.	0.34	0.40	0.42	0.22	0.47	0.50	0.47	0.29		0.09	0.19	0.43	0.25	0.40	0.33	0.26	0.18	0.23	1.11	0.49
11.	0.35	0.36	0.41	0.44	0.28	0.19	0.48	0.27	0.34		0.47	0.16	0.33	0.39	0.42	0.39	0.47	0.19	1.44	0.75
14.	**0.29**	**0.38**	**0.45**	**0.48**	**0.40**	**0.13**	**0.49**	**0.42**	**0.48**	**0.32**		**0.32**	**0.38**	**0.44**	**0.40**	**0.27**	**0.50**	**0.21**	1.42	0.83
17.	0.28	0.33	0.41	0.39	0.37	0.39	0.36	0.32	0.44	0.24	0.34		0.30	0.33	0.38	0.23	0.36	0.13	1.22	0.65
Control disorder																				
3.	**0.34**	**0.24**	**0.30**	**0.33**	**0.19**	**0.05**	**0.48**	**0.42**	**0.11**	**0.43**	**0.48**	**0.20**		**0.68**	**0.44**	**0.34**	**0.40**	**0.18**	1.58	0.92
6.	**0.41**	**0.40**	**0.39**	**0.39**	**0.26**	**0.06**	**0.53**	**0.50**	**0.07**	**0.49**	**0.48**	**0.21**	**0.64**		**0.44**	**0.36**	**0.42**	**0.20**	1.44	0.84
9.	**0.36**	**0.34**	**0.46**	**0.42**	**0.46**	**0.30**	**0.41**	**0.26**	**0.41**	**0.40**	**0.52**	**0.34**	**0.39**	**0.42**		**0.32**	**0.44**	**0.21**	1.35	0.79
12.	0.19	0.25	0.26	0.33	0.31	0.16	0.27	0.19	0.26	0.35	0.29	0.17	0.30	0.26	0.35		0.34	0.41	1.31	0.68
15.	0.26	0.29	0.40	0.38	0.30	0.12	0.43	0.42	0.35	0.32	0.43	0.20	0.42	0.44	0.33	0.26		0.25	1.98	1.18
18.	0.18	0.23	0.29	0.35	0.51	0.57	0.20	0.12	0.36	0.42	0.32	0.31	0.15	0.25	0.49	0.39	0.22		1.32	0.76
Mean[b]	1.37	1.28	1.24	1.31	1.12	1.09	1.49	1.66	1.20	1.25	1.30	1.25	1.58	1.43	1.17	1.22	1.60	1.05		
SD[b]	0.73	0.64	0.60	0.71	0.44	0.40	0.80	0.89	0.54	0.61	0.68	0.65	0.90	0.79	0.52	0.61	0.91	0.29		

Below the diagonal, the correlations are derived from the adult sample; above the diagonal, the correlations are derived from the adolescent sample. Items belonging to the nine-item brief scale are shown in boldface.

[a]Adolescent sample, $N = 438$; correlations > 0.09 are significant at $p < 0.05$.

[b]Adult sample, $N = 963$; all correlations are significant at $p < 0.05$.

SD, standard deviation.