

Understanding the relationship between Traumatic experiences and Compulsive Internet use through the lens of mentalization: A mediation analysis

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Abstract: This study aimed to investigate the association between history of traumatic experiences, compulsive Internet use, and reflective functioning in an Italian sample. The relationship between history of traumatic experiences and excessive Internet use was fully mediated by uncertain reflective functioning. Contrary to literature, no gender influence was found. Our preliminary findings provide additional insight into the psychological processes underlying excessive Internet use.

Keywords: Compulsive Internet Use, Traumatic Experiences, Reflective Functioning, Psychometrics, Mediation Analysis.

1. Introduction

Nowadays, the use of the Internet is an essential element in everyday life. Across the ages, it has become an environment more than a “tool” where a variety of common daily behaviors are situated. However, for a minority of individuals, Internet use can become problematic. Internet addiction (IA) is an emerging social and mental health issue that has significant variance ranging from 0.8%–26.7% dependent on measurement and target population [1,2]. The concept of IA, however, is still a very difficult concept to operationalize fully and clearly. The literature has increasingly focused on the analysis of the psychological and behavioral consequences induced by excessive Internet use [3,4]. The analysis of risk factors on the other hand is still much debated. A key factor is the presence of situational triggers, more particularly stressful life circumstances such as the presence of trauma [5,6]. This is consistent with the compensatory model of problematic Internet use which posits that individuals may engage in online activities as a coping strategy to escape from unpleasant events [7]. Age, gender, and personality characteristics act as key mediators, especially in adolescence [8,9].

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Recently, mentalization skills have also been identified as key factors in the relationship between trauma and addictive online behaviors [10].

Mentalization (or reflective functioning) refers to the capacity of an individual to recognize and understand their own mental states, as well as mental states of others [11]. Research has shown how a variety of traumatic events may negatively affect the development of mentalizing abilities, and this in turn may foster addictive behaviors [6,12]. This study aims to specifically examine the mediating role of mentalization in the relationship between the history of traumatic experiences and the excessive use of Internet.

2. Methodology

This is a cross-sectional study conducted online through a survey administered on the platform Google Forms. Data presented in this study are part of a broader investigation on the link among traumatic experiences, mentalizing abilities, and excessive Internet use. Hence, this study is a pilot of a larger research project.

2.1. Sample

The study included 502 subjects, aged between 16 and 57 years ($M = 23.79$, $SD = 4.28$). The participants (379 women and 123 men) completed an online survey between March 2020 and November 2020. In the online survey, we collected demographical information and administered three questionnaires: Traumatic Experience Checklist (TEC), Compulsive Internet Use Scale (CIUS), and Reflective Functioning Questionnaire, Italian version (RFQ). Confidentiality and anonymity were rigorously ensured by assigning code numbers instead of names on all questionnaires. The subjects were randomly recruited by a snowball convenience sampling method. The study was designed and carried out according to the Ethical Code of the Italian Association of Psychology (AIP), the European Code of Conduct for Research Integrity (ECCRI), and the 1964 Helsinki Declaration and its later amendments.

2.2. Measures

Traumatic Experience Checklist, only scale “a” (TEC, Italian version) [13], is a self-report measure addressing potentially traumatizing events. It is a reliable and valid self-report instrument that can be used in clinical practice and research. It is made up of 29 items, each of which has three different subscales: “a”, presence/absence of the trauma, “b”, the age in which the trauma occurred, and “c”, what impact they had on the subject (valuated on Likert scale: 1 = none, 2 = a little bit, 3 = a moderate amount, 4 = quite a bit, 5 = an extreme amount). In this study, we considered only the scale “a” as an indicator of the overall traumatic experience occurred (TEC total score).

The Compulsive Internet Use Scale (CIUS, Italian version) [14] is one of the most used and rigorously validated scales internationally to assess problematic Internet use (PIU). It is made up of 14 items, with a Likert response ranging from 0 to 4 (Never = 0, Rarely = 1, Sometimes = 2, Often = 3, Very often = 4).

The Reflective Functioning Questionnaire (RFQ-8, Italian version) [15] is a short self-report measure of reflective functioning (i.e., the ability to understand mental states of the self and others) that is presumed to capture individual differences in hypo- and hyper-mentalizing. The RFQ-8 [15] comprises eight items forming the two subscales “certainty about mental states” (RFQ_C) and “uncertainty about mental states” (RFQ_U). For the scoring, as the literature shows [16], we used the RFQu scale that consists of six items (e.g., “Sometimes I do things without really knowing why”), which are rated on a 7-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree). One item is reverse-scored (i.e., “I always know what I feel”). A high score on the RFQu indicates a lack of understanding of internal mental states including thoughts, emotions, and needs. This choice was dictated by the fact that the “u” scale seems to be the most selective in identifying low mentalization

abilities, which appears to be the most important intervening variable in the excessive behavior of Internet use.

2.3. Data analysis

Data were analyzed with IBM SPSS (version 21) and Jamovi software (2.25). Descriptive statistics were computed for all variables. The Independent Bayesian Factors (BF) were used to examine gender differences in TEC total score, CIUS, and RFQu. Intercorrelations between three test TEC total score, CIUS, and RFQu were evaluated using Pearson correlation coefficients. Simple regressions were performed to demonstrate whether and how TEC total score and RFQu, considered individually, could be good predictors of CIUS scores. Subsequently, we carried out a multiple regression to test their unique effect after controlling for gender. Finally, since the influence of TEC total score in the multiple regression model decreased, we opted for a Mediation Model computed using Jamovi software, exploring whether RFQu scores as a mediation factor can explain the relationship between TEC total score and CIUS.

3. Results

No effect of gender is found on the three scores of the questionnaires. The absence of gender differences is an innovative element, analyzed by Bayesian Factor (Table 1). The BF01 index indicates the ratio between the probability of correctness of H0 (male scores = female scores) and the probability of correctness of H1 (male scores ≠ female scores). Indices higher than 3 indicate a strong effect and a consequent strong equality between the groups (i.e BF01 CIUS = 8.62), while effects between 1-3 are moderate (i.e BF01 RFQu = 1.50, BF01 TEC total score = 4.05). The different sample size between males and females is controlled with the analysis. Bayesian Test t on TEC total score was done only for statistical correctness to demonstrate that in our sample there were no significant differences between males and females, affecting the regression analyses and subsequent mediation models (Table 1).

Correlation indices indicate a medium/low positive correlation between TEC total score, CIUS, and RFQu. The correlation between CIUS and RFQu is the highest one [r(502) = 0.38, p < .001]. Moreover, the correlations between the TEC total score and RFQu scores [r(502)= 0.135, p = .002] and between TEC total score and CIUS [r(502) = 0.124, p = .005] are lower.

Therefore, we explored the influence of TEC total score and RFQu as predictors on CIUS as the dependent variable. Firstly, a simple single regression was applied using TEC total score (model fit measures R = .124, R² = .015, p = .005) and RFQu (model fit measures R= .38, R² = .14, p=.005) as separate predictors, excluding gender, which in both cases was statistically not significant (for the RFQu, p = .54, TEC total score, p = .99). Then at multiple regression, in which both TEC total score and RFQu were included as predictors, net of the influence of the gender, only RFQu seems to be a good predictor (Model fit R= .38, R² = .15, p = .001). The TEC total score scores were not significant (p = .07).

Table 1: Descriptive statistics and gender differences (Bayesian Factor) for all investigated variables.

	Group	N	Mean	SD	BF ₀₁	error %
RFQu	Females	379	22.75	7.27	1.50	2.32e-5
	Males	123	21.29	7.57		
CIUS	Females	379	20.41	10.74	8.62	1.27e-4
	Males	123	20.24	11.66		
TEC total score	Females	379	3.79	3.01	4.05	6.13e-5

Males 123 3.40 2.99

For this reason, we hypothesized that between those three factors, there was a mediation relationship. TEC total score scores probably become significant predictors if mediated by the presence of hypomentalization (i.e., RFQu high scores). Mediation models allow you to explore whether a mediating variable can explain the relationship between two variables. In particular, mediation analysis can help to better understand the relationship between an independent variable and a dependent variable when these variables do not have an obvious direct connection, as demonstrated by the multiple regression results above. The path model below illustrates the mediation model. Here, TEC total score was the predictor, RFQu the mediation factor, and CIUS the outcome variable. While path c describes the direct effect of the predictor variable on the outcome variable, paths a and b together describe the indirect or mediated effect (Figure 1). If there is both an indirect and direct effect, it is called partial mediation. If there is an indirect effect but no direct effect, it is called full moderation.

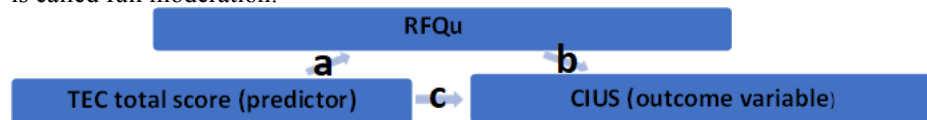


Figure 1: Path model of Mediation

Table 2: Mediation model

Effect	Label	Estimate	SE	Z	p
Indirect	TECa×RFQu×CIUS	0.182	0.0630	2.89	0.004*
Direct	TECa×CIUS	0.271	0.1516	1.79	0.074
Total	(TECa×CIUS)+ (TECa×RFQu)* (RFQu× CIUS)	0.453	0.1616	2.81	0.005*

Hence, high levels of TEC total score are strongly associated with high levels of CIUS only if higher levels of reflective functioning uncertainty acts as mediators. Our results show a full moderation model with a significant but indirect effect of traumatic experience on excessive use of the Internet ($p = .004$, at the 0.05 level bidirectional). TEC total score scores are good predictors of our model if mediated by the poor mentalizing capacity (high RFQu scores) (Table 2).

4. Discussion

The present study found a significant and positive association between presence of traumatic events, high levels of reflective functioning uncertainty, and an excessive use of Internet. This pattern of associations seems to be explained by a mediation model in which the relationship between the presence of trauma and an excessive use of Internet is fully mediated by uncertain reflective functioning. Contrary to previous data on specific forms of problematic Internet use [17,18], gender was not found to be a significant predictor of the pathways among those variables. This was an innovative result and may be explained considering the type and age of the reference sample. Indeed, most of the previous studies analyzed adolescents [12,19], while our research takes into consideration a population with a wide age range with a proportion of adolescents, young adults, and adults. Thus, it may be possible that with increasing age, the influence of gender as a mediator variable fades. Our study reports preliminary data which supports previous findings about the mediating role of hypomentalizing capacity (high scores on the RFQu) [5,12]. From a developmental point of view, the lack of the capability to reflect on and interpret one's own behavior and that of others based on intentional internal mental states such as beliefs, thoughts, and emotions is rooted in primary attachment relationships. It may be possible that unbearable mental states mostly related with cumulative traumatic experiences [13] jeopardize

representational processes of inner states. This process in turn reduces control mechanisms over goal-driven behaviors (i.e., including the use of the Internet), fostering compulsivity [20]. In line with this hypothesis, previous findings have found insecure attachment is a significant predictor of the excessive use of the Internet [21,22]. These findings give emphasis to the hypothesis that for individuals with a lack of mentalizing skills, the use of the Internet may be seen as a temporary withdrawal from painful events, related overwhelming feelings, and dissociated mental states that they are not able to regulate nor integrate in a coherent Self [23,24]. The findings of this study should be interpreted in light of several limitations: a numerical asymmetry in gender (379 females vs 123 males), a non-consideration of the hypermentalization processes, and the quality of traumatic experiences and related processes. Mentalization is a multifaced construct [25] that allows the subject to overcome stressful situations, Nonetheless, the “mentalizing profile” reflects contextual factors and individual differences in attachment patterns and dissociative processes. In this regard, future studies should take into consideration the influence that hypermentalization and pseudomentalization could have on the excessive use of the Internet and the relationship it could have with the presence or absence of trauma and stress [26]. It could be interesting to investigate the nature of traumatic experience (i.e., type of trauma, onset of trauma) instead of just their overall amount in further attempts to outline the existence of different developmental pathways of the excessive use of the Internet.

5. References

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