



The Relationship between Cyberspace Activity and Personality Disorders: A Systematic Review

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ABSTRACT

Aims: Nowadays, cyberspace is present in different parts of human life. Various activities such as share information, exchange ideas, interaction with others, conduct business and etc. take place in cyberspace. Activity in cyberspace has caused personality disorders. Research has been done in this field that shows the relationship between cyberspace activities and personality disorders. The purpose of this systematic review article is to analyze these researches and find out this relationship.

Methods: Using the systematic literature review process, this article seeks to determine whether cyberspace activities can cause personality disorders in individuals. The literature search was based on a search for the keywords “cyberspace” and “personality disorder”. Electronic literature databases, including Emerald, ProQuest, PubMed, SAGE etc. were investigated to find the relationship between cyberspace activity and personality disorders. 24 studies were found about this subject.

Results: Our findings indicated that few studies addressed to this topic. We found out that participants with excessive use of the Internet, for example people with Internet Addiction (IA), are more likely to develop personality disorders. For instance some papers reported a significant positive association in all clusters of PD, between having IA in individuals and having personality disorders, with regard to the clusters of personality disorders.

Conclusion: The results of this study indicate the effect of cyberspace activity on personality disorders. Finally, these findings need to be interpreted with caution due to the partly few numbers of studies on this topic.

Keywords: Cyberspace; Personality disorder; Networking; Mental health

INTRODUCTION

Cyberspace is a global and dynamic domain characterized by the combined use of electrons and the electromagnetic spectrum, whose purpose is to create, store, modify, exchange, share, extract, use, eliminate information, and disrupt physical resources [1]. In other definition, cyberspace is a time-dependent set of interconnected information systems and the human users that interact with these systems [2]. The word became popular in the 1990s when the use of the Internet, networking, and digital communication were all growing dramatically; the term cyberspace was able to represent the many new ideas and phenomena that were emerging. As a social experience, individuals can interact, exchange ideas, share information, provide social support, conduct business, direct actions, create artistic media, play games, engage in political discussion, and so on, using this global network. The term cyberspace has become a conventional means to describe

anything associated with the Internet and the diverse Internet culture [3]. For the purpose of this study, the use of “cyberspace activity” is for “Internet use”. The Internet has become the fastest, most widespread, most efficient, and most suitable technology of our time. It attracts an ever-increasing number of users from all around the world [4]. In 2021, out of 7.93 billion people in the world, 5.25 billion people used the Internet and cyberspace. This number has increased by about 1,355% from 2000 to 2022 [5]. In parallel with this development, the presence in these spaces has a different communication format. This difference caused growing concern about the consequences of social networks, their presence, and their use [6]. Improper and excessive use of the Internet and cyberspace activity can lead to negative effects on family relationships, daily activities, physical problems, mental disorders, and personality disorders [7].

Personality is the way of thinking, feeling, and behaving that makes a person different from other people. An individual's personality

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is influenced by experiences, environment (surroundings, life situations), and inherited characteristics. A person's personality typically stays the same over time [8]. According to Allport's theory, human personality is a closed and unique system. Here, interpersonal relations, culture, and roles are sources that provide information about human personality, but not directly. Individuals' motives, traits or tendencies, and personal style are the most important parts of personality [9]. All personality psychologists use the term "personality" to refer to psychological qualities that contribute to an individual's enduring and distinctive patterns of feeling, thinking, and behaving [10]. A personality disorder is a way of thinking, feeling, and behaving that deviates from the expectations of the culture, causes distress or problems functioning, and lasts over time [8]. There are 10 specific types of personality disorders: 1. Antisocial personality disorder 2. Avoidant personality disorder 3. Borderline personality disorder 4. Dependent personality disorder 5. Histrionic personality disorder 6. Narcissistic personality disorder 7. Obsessive-compulsive personality disorder 8. Paranoid personality disorder 9. Schizoid personality disorder 10. Schizotypal personality disorder. Personality disorders are long-term patterns of behavior and inner experiences that differ significantly from what is expected. The pattern of experience and behavior begins by late adolescence or early adulthood and causes distress or problems in functioning. Without treatment, personality disorders can be long-lasting [11]. People under 18 are typically not diagnosed with personality disorders because their personalities are still developing [12].

Technology is changing almost every facet of our evolving modern lives, and its benefits are countless. But as technological advances continue to dramatically change the way we live, they can also have significant effects on our mental health, often redefining normal versus abnormal behavior [13]. Individuals' identity in cyberspaces is "digital identity". The land, indigenous languages, national culture, and race do not determine the identity of individuals in cyberspace. However, limited sectional interests and a variety of topics make people together and form their identities [14].

Studies show that psychological issues related to the overuse of technology will continue to grow in the digital age, as will the importance of understanding the impact of technology on mental health and psychological well-being. The modern digital world offers nonstop technology from which it is almost impossible to unplug, and it is increasingly evident that many psychological problems can be caused or exacerbated by such technology [13]. Bai, Lin, Chen and Gelder carried out an experiment in a virtual clinic of internet-induced disturbances in which in 60% of cases, internet overusing and psychological disorders, overlapped each other. Orzack reported that those with Internet use had at least one of mental or personality disorder. Furthermore, some of them had either an addiction record or drug dependency, some were bipolar; others had committed suicide or had severe violence records, mood and anxiety disorders, hyperactivity, insomnia, and paraphilia have been observed as well. Simon added schizoid personality disorder to this list. Black, Sare and Schlosser observed mood disorders, drug abuse, anxiety disorders, impulsive control disorder, and personality disorders in 16 men and women who were heavy Internet users [4]. Internet use was seemingly linked to a reduction in face-to-face contact, increased social isolation, stress, depression, and sleep deprivation. It was also claimed to facilitate offensive and harmful behavior, arguably detrimental to mental health [15]. By increasing the flood of incoming demands on time and energy, the darker side of technology (in the form of connectivity, accessibility,

and information overload) can have significant negative effects on mental health [13]. Research into technology's effects on mental health is still emerging; however, as said various studies and significant anecdotal evidence from mental health professionals and experts in other fields point to numerous effects related to technology overload [16,17]. These effects may be direct or may increase the severity of other presenting mental health issues. Relevant issues resulting from too much technology use impact a person on multiple levels and in multiple areas including affective, cognitive, and behavioral concerns [18].

In the psychological field, the Internet has transformed some of our regular behaviors, which have been enriched due to the new contexts we live in (i.e., online, off-line, and both), and opportunities have emerged (e.g., working remotely *via* the Internet from home or any other place, to enjoy streaming TV shows online through laptops, smartphones, etc.). Individuals now manage themselves in online and offline domains indistinctively using many devices and apps. The psychology of the Internet (or Cyberpsychology), therefore, is studying the relationship between ICT and the psychological mechanisms, covering both positive and negative issues in cyberspace which is digitally and humanistic mediated [19]. The co-occurrence of psychiatric disorders with IA has been revealed by a body of patient studies. Mental disorders, at least Axis-I disorders, have been found to co-occur with pathological Internet use. These studies reported the associations with attention deficit hyperactivity disorder (ADHD), depression, hostility or aggression, obsessive-compulsive symptoms, and anxiety disorders. Although there are some studies that discuss personality traits as risk factors for developing IA, published data on personality disorders and their association with IA are rare [20]. Black, Belsare, and Schlosser examined 21 participants who reported excessive computer use by word-of-mouth and psychiatric comorbidities, finding 52% of them having any personality disorder with the highest frequencies in borderline, narcissistic, and antisocial personality disorders [21]. Bernardi and Pallanti assessed different comorbidities and dissociative symptoms among 15 outpatients of Internet addicts, finding 14% of the IA group having borderline, 7% having obsessive-compulsive, and 7% having avoidant personality disorders [22]. Floros, Siomos, Stogiannidou, Giouzevas, and Garyfallos examined 50 college students who presented for the treatment of IA and found 38% of the clinical sample presented any personality disorder [23]. Another one issued a large sample consisting of 556 participants and focused on the association of IA and personality disorders with stratifying analyses by gender. This study found higher rates of personality disorders in the group with IA (27.4%) than in the group without IA (13.9%; $p < 0.01$). In particular, it showed that the Internet-addicted group had higher frequencies of borderline, narcissistic, avoidant, and dependent personality disorders when compared to the non-addicted group [24]. In the present study, we searched to collect the evidence already presented in the literature about the subject. On the other hand, this study seeks to investigate the possibility of personality disorders in individuals, due to the use of the Internet and cyberspace activities.

METHODOLOGY

The systematic literature review used in this study is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline suggested for navigating a systematic review [25]. The protocol used to conduct this review is detailed below.

Eligibility criteria

In this systematic literature review, the main focus is on the use of cyberspace or the Internet, which has been studied at the subclinical level. For being included in this systematic literature review, studies had to: (a) investigate and have empirical evidence of the possible relation between activity in cyberspace and using the internet with psychiatric disorders and personality disorders; (b) involved adults aged 18 or older (c) be published in a peer-reviewed academic journal, and (d) be available in English.

Information sources and search strategy and selection process

In this SLR, a formalized research method is used that would have trustworthy conclusions. The steps are documented below:

- Databases were selected and searched in February 2022: Emerald, Google Scholar (GS), ProQuest, PubMed, SAGE, Springer and Taylor and Francis.
- The search was keyword based. Two reviewers (SM and AA) evaluated the title and searched keywords related to the main question or objectives. Then each researcher independently reviewed titles and abstracts of the first 100 records and discussed inconsistencies until consensus was obtained [25].
- Researchers independently assessed titles and abstracts of the previous step.
- In the next step the reviewers read the introduction, figures and tables titles, and conclusions of the papers [26].

The keywords searched for were: “cyberspace+personality disorder” or “cyberspace activity+personality disorder” or “internet use+personality disorder”. No limits were added to the database searches (Table 1).

Table 1: Search terms within the databases (Date of the last search: 26-28 February 2022).

Database	Keywords	First selection (Abstract)	Second selection (Introduction)
Emerald	115	2	1
GS	2520	17	9
ProQuest	1246	3	2
PubMed	639	17	5
SAGE	629	3	2
Springer	155	3	2
Taylor & Francis	100	4	1
Total	5404	49	22

Study quality

The search strategy explained above was applied to each database. First duplicate articles were eliminated, then the titles and abstracts of the studies were double screened. Two reviewers (SME and AA) checked the titles, abstracts, and full-texts of the initial search results independently. Those articles assessed as ineligible by both reviewers were excluded [27]. The search selection process is shown

in the Figure 1.

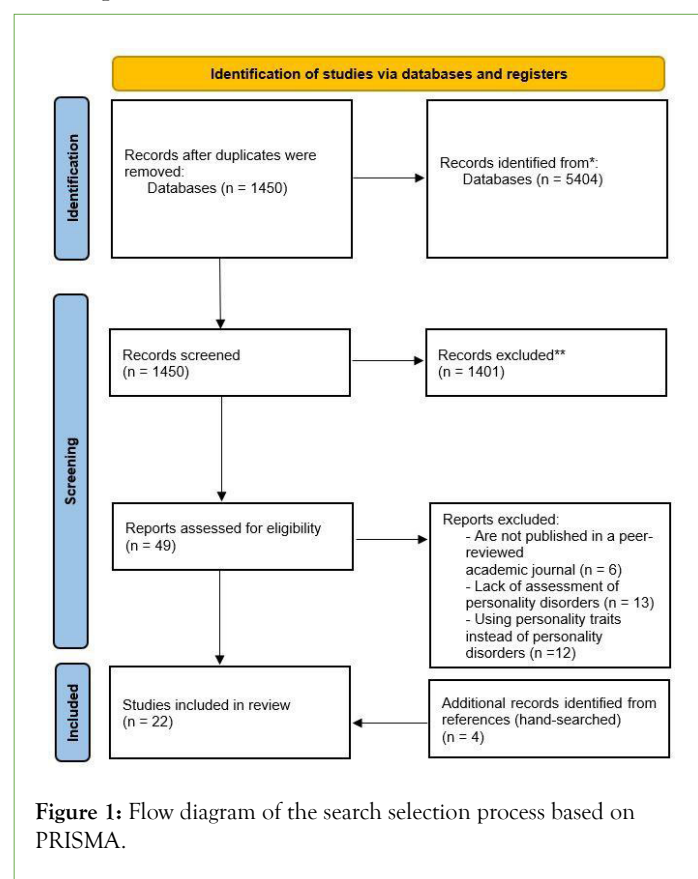


Figure 1: Flow diagram of the search selection process based on PRISMA.

The studies were evaluated using the AXIS tool, a quality assessment tool [28] that contains 20 items for which there are three response options (“yes,” “no,” or “don’t know”) to evaluate study quality and reporting with “yes” scored as 1, and “no” or “don’t know” scored as 0. After responding to items quality score is generated. The following guidelines were used [29-38]: scores indicating low quality=1-7; scores indicating medium quality=8-14; scores indicating high quality=15-20. The quality score for each study of this systematic literature review is presented in Table 2.

Table 2: Initial information of studies included in the systematic review (n=22).

Authors	Country	Journal	Sample characteristics age=M (SD)	Quality rating (/20)
Taylor et al. (2016) [30]	USA	Journal of Research in Interactive Marketing	N=674 students at a large public university Age=33 (14.1)	15
Derbyshire et al. (2013) [31]	USA	Comprehensive Psychiatry	N=2108 College students Age=22.6 (5.07)	16
Mahmudnia et al. (2010) [4]	Iran	International Journal of Psychology	N=1237 university students Age=12 (24) and 23 (46)	13
Shapira et al. (2000) [32]	USA	Journal of Affective Disorders	N=20 Individuals with problematic internet use Age=36 (12)	14

Lenzenweger et al. (2006) [12]	USA	Biological psychiatry	N=5692 adults Age=nr	16
Floros et al. (2014) [23]	Greece	Addictive Behaviors	N=50 College students Age=21.03 (3.15) and 22.64 (4.52)	14
Farahani et al. (2018) [33]	Iran	Iranian J Psychiatry	N=401 university students Age=25.3 (4.6)	15
Zadra et al. (2016) [20]	Germany	Journal of Behavioral Addictions	N=15,023 general population Age=32.9 (12.4)	13
Wegmann et al. (2016) [34]	Germany	Frontiers in psychology	N=485 general population Age=23.95 (4.96)	14
Wu et al. (2016) [24]	Taiwan	The Journal of Nervous and Mental Disease	N=562 College students Age=19.73 (1.10) and 19.94 (0.76)	15
Mittal et al. (2007) [35]	USA	Schizophrenia Research	N=69 adolescents Age=14.38 (1.84)	16
Sindermann et al. (2018) [36]	Germany	Journal of Behavioral Addictions	N=468 university students and adults in the university Age=29.64 (14.15)	13

RESULTS

Study characteristics

The primary search output was a total of 5404 documents. With double screening of the title and the abstract, 20 studies fit the inclusion criteria. Four additional papers were identified with a manual search of the reference list of the key studies. Since most of the 22 articles were published between 2014 and 2021, it shows the increasing scientific interest on this research subject. The studies were produced as: 7 in USA, 3 in Germany, 2 in Iran, one each in Italy, Greece, UK and Taiwan. University and college students were the most commonly used samples, 5 studies used adults and general population as samples, two studies focused on adolescents, one study used a sample of individuals with problematic internet use and one study used a sample of Italian native speakers. Almost all articles were published by multiple authors and none of them was in more than one article. None of the journals presented more than one publication.

Certainty of evidence

Some results show that participants with excessive use of the Internet, for example people with Internet Addiction (IA), are more likely to develop personality disorders. Zadra et al. found that in their total sample, there were clear differences showing that individuals with IA have more often personality disorders than individuals without IA ($p \leq .001$). In keeping with these results, by analyzing having any personality disorder, no significant differences between the subgroups with different Internet main

activities, were observed (computer games 28.0%, social networks 28%, and others 33.3%; $p=.90$). Similarly they reported a significant positive association in all clusters of PD, between having IA in individuals and having personality disorders, with regard to the clusters of personality disorders. More specifically, the differences were found in Cluster C ($p<.01$) and Cluster B ($p<.01$) as well as in Cluster A ($p<.05$). More consistent results were found by Binary logistic regression of all factors, showing that in the prediction of IA only having any personality disorder was considerable ($p<.05$) [20]. Some other studies examined and compared the rate of all the PDs in the IA and non-IA group. For the entire sample as a whole, 20 (27.4%) of the 73 in the IA group and 67 (13.9%) of the 483 in the non-IA group received a diagnosis of at least 1 PD. The IA group showed a higher PD frequency compared with the non-IA group ($\chi^2=8.79$, $p<.01$). They reported that, in the comparison with the non-IA group, the IA group represented a significantly higher frequency of borderline ($n=9$, 12.3%; $\chi^2=15.50$, $p<.001$), narcissistic ($n=4$, 5.5%; $\chi^2=15.12$, $p<.001$), avoidant ($n=12$, 16.4%; $\chi^2=12.07$, $p<.01$), and dependent PD ($n=7$, 9.6%; $\chi^2=7.74$, $p<.01$) [24].

DISCUSSION AND CONCLUSION

The aim of this review was to examine and evaluate quantitative researches on possible relationship between activity in cyberspace and internet use with personality disorders. Some studies reported that patients with a comorbid Axis I or II disorder showed higher general psychopathology than those without comorbidity. Also scores of IAD measure of patients with a comorbid Axis I disorder is higher than other patients with IAD. More consistent results show the higher rate (29.6%) of personality disorders among participants with IA in comparison to participants without IA (9.3%). Depending on the data found in the studies there are findings show the linkages between IA and personality disorders based on that individuals with IA showed a higher frequency of personality disorders of all clusters and on the contrary, finding that believe individuals with IA more often suffer from personality disorders, especially Cluster C and Cluster B personality disorders. It is because cluster C includes avoidant, dependent, and obsessive-compulsive personality disorders so individuals with these disorders show anxiety and fear (American Psychiatric Association, 2013). Because of obscurity of online applications, users can take part in communities with no risk of being exposed to the interpersonal struggles and personal criticism in face-to-face situations. The results of the studies in this systematic review indicates a higher frequency of narcissistic PD in both sexes in the IA group compared with the non-IA group. As it was said the obscurity of the online environment let users to control the information about themselves and it serves as a self-promoting platform to strengthen a sense of self. Found in the studies, there were a higher frequency of borderline, dependent and avoidant in female students with IA compared with those without IA. Thus, for instance the constant need of reassurance from others in individuals with dependent PD, leads them to crave Internet and fulfill what they cannot in real life.

In conclusion, people that are socially inhibited and have limited real-life connections might find social networking sites to be beneficial because of the easy access to interpersonal interaction without the demands of face-to-face affinity and intimacy. Because of this easy interpersonal communication people may spend more time on the Internet, leading to excessive or addictive Internet use.

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