

Online challenges that emerge as a public health issue for adolescents: Assessment of psychiatric comorbidity and the importance of parenting

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Received: 14/06/2021– Accepted: 20/07/2021

DOI: 10.15761/0101-60830000000315

ABSTRACT

Background: Online Challenge is neither an application nor an internet-based game; instead, users receive a link to it via chat groups on social media. Our aim is to identify the potential differences between the normal population and youth drawn to online challenges. These potential differences are the examining the parenting skills of parents of children who participate in the challenges and determining underlying psychopathologies through structured clinical interviews.

Method: A questionnaire-based cross-sectional study was used to obtain further in-depth information on the comorbid psychopathology of children who play the BWC and on the parenting skills. The Development and Well Being Assessment and Alabama Parenting Questionnaire was applied to the children and their families in both the control and case groups.

Results: Two groups of children and parents were recruited: a clinical sample (case) group ($n = 34$) and a community sample (control) group ($n = 141$). Attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), specific phobia and CD (conduct disorder) were significantly more frequent in the clinical sample than in the community sample. The median scores for the Alabama Parenting Questionnaire (APQ) parental involvement, positive parenting, and poor monitoring/supervision subscales were significantly lower in the clinical sample than in the community sample.

Conclusion: As far as we know, this study is the first to examine comorbid psychopathologies of online challenge-style games and parenting skills. We believe that as research into these subject increases, it will assist mental health professionals to develop prevention strategies and to manage cases resulting from the Blue Whale Challenge (BWC) and other online challenges that pose a serious threat to mental health and that have driven many young people to suicide worldwide.

Turan B / Arch Clin Psychiatry. 2021;48(6): 245-249

Keywords: online challenges; blue whale challenges; mental health; parenting

Introduction

With the accessibility of the internet and the popularity of online games, internet use has increased significantly among adolescents, so much so that it has become pathological in some cases. In fact, an affliction called Internet Gaming Disorder (IGD) was added to the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), and researchers quickly began studying it [1]. However, the phenomenon of online challenges has become a topic of discourse, they are also called cyberbullying and it has become a major public health problem around the world [2]. The Internet undoubtedly provides new information and easy social networking but also has risks of cyberbullying, cyber victimization, internet addiction, internet fraud, and other health risks [3]. These challenges, which circulate on social media under the guise of an online game, actually differ from other online communities. Such “challenge communities” can be defined as interactive platforms that establish communications with target users through social

media applications. Young users with an interest in technology and access to the internet are assumed to have considerable interest in challenge communities.

The occasionally fatal Blue Whale Challenge (BWC) is neither an application nor an internet-based game; instead, users receive a link to it via chat groups on social media. BWC went viral in early 2016 and became a social network phenomenon in many countries. In the challenge, users must complete 50 different daily tasks, most of them violent, over 50 days. The tasks include making superficial cuts on one’s arms and legs, remaining isolated for a certain period, listening to music at a high volume, and viewing horror videos. At the end of the fiftieth day, the individual is instructed to jump from a great height or hang themselves. The challenge has led to self-harm and suicide among adolescents around the world [4].

The literature on this and related topics is constantly expanding due to growing interest in the subject and contains many studies of the effects of digital games on adolescents. Based on these studies, we know that digital games increase the propensity for violence,

addiction, insufficient physical exercise and sedentary lifestyles, obesity due to poor dietary choices, declines in academic success, and mental problems in children and adolescents [5,6]. There have also been studies on the comorbidity of IGD and attention-deficit/hyperactivity disorder (ADHD), conduct disorders (CD), depression, and anxiety, which are among the most common childhood psychiatric disorders [7].

Besides psychobiological, demographic, and sociocultural factors, parental influence also plays a significant part in comprehensive evaluations of children with such issues. Researchers have long studied parental attitudes and the quality of familial relationships as a preventive factor against psychopathologies associated with addiction and impulsivity [8,9]. Previous studies have determined that IGD is linked to parental support [10], parental divorce or separation [11], single parent families [12], and families with high levels of familial conflict and discord [7]. Some studies have emphasized the importance of parental monitoring, attitudes, and rules regarding digital games [13-15].

However, since cases of BWC victimization are relatively new, they have not yet been studied quantitatively, and the literature on the potential psychobiological mechanisms involved is therefore extremely scarce. A recent qualitative study of the psychobiological determinants of the BWC phenomenon found that victims were mostly teenagers and young adults and that young individuals with complicated upbringings and negative life experiences became targets more easily [5]. An analysis of the game's instructions suggests that the program is a motivational one involving elements of induction, habituation, and self-harm [5]. It follows those online challenges fall somewhere on a spectrum between IGD and impulsivity.

The negative consequences of BWC, different forms of which continue to pop up every day and pose a danger to society, and theories about how BWC influences adolescents led us to examine why adolescents are predisposed toward such behavior. To our knowledge, there are currently no studies in the literature on the potential psychopathologic comorbidities and parental attitudes associated with BWC. Our aim in this study was therefore to identify the potential differences between the normal population and youth drawn to online challenges, examine the parenting skills parents of children who participate in the challenges, and determine underlying psychopathologies through structured clinical interviews. Moreover, we also aimed to compare these dimensions with a healthy community sample. We assume that children with this trend will have more comorbid psychopathologies and their parents' parenting skills will be more dysfunctional than the community group.

Methods

Study design

A questionnaire-based cross-sectional study was used to obtain further in-depth information on the comorbid psychopathology of children who play the Blue Whale Challenge and on the parenting skills of those children's parents. Ethical approval was obtained from the Ataturk University Clinical Research Ethical Committee (B.30.2.ATA.0.01.00/228). Participants gave their informed consent to participate.

Setting

Two groups of children and parents were recruited: a clinical sample (case) group ($n = 34$) and a community sample (control) group ($n = 141$). The first group was recruited from Agri State Hospital's Child and Adolescent Psychiatry Outpatient Clinic in Turkey between March and December 2019. These were children who had played the Blue Whale Challenge and who had been singled out by judicial

authorities for psychiatric assessment. Participants in the second group were recruited from secondary schools in the same city.

Primary eligibility criteria for the case group participants were being between the ages of 13 and 15 and having parents who live together. Children whose parents were separated or divorced were not included in the study. For the control group, being from the same age group was eligibility criteria. Children and their parents who could not cooperate with DAWBA were excluded from the study. The Development and Well Being Assessment (DAWBA), a structured diagnostic interview package, was applied to the children and their families in both groups. Afterward, parents filled out the Alabama Parenting Questionnaire. Participants and their parents gave their informed consent to participate in the study.

Measures

Development and Well Being Assessment (DAWBA)

The DAWBA is a package of interviews, questionnaires, and rating techniques designed to generate common ICD-10 and DSM-IV psychiatric diagnoses for two- to 17-year-olds [16]. The interviews and questionnaires involve a mixture of closed questions to address diagnostic criteria and open-ended questions to describe informants' problems in their own words to enhance clinical persuasiveness. The DAWBA allows clinicians to determine the impact of impairments and symptomatology. A specially designed computer program allows the clinical rater to move back and forth rapidly between three types of information on each child: provisional diagnoses made by the computer algorithm; summaries of answers to the structured questions from parents, teachers, and the child; and transcripts of answers to open-ended questions. Each application takes approximately 40-60 minutes. Experienced clinicians can make a final diagnosis based on the data gathered. The diagnoses were made by the first author, an experienced child psychiatrist and DAWBA rater. It was translated and validated into Turkish by Dursun et al. [17] and was used to determine comorbid psychiatric disorders for both groups, therefore, the entire package administered.

Alabama Parenting Questionnaire (APQ)

The Alabama Parenting Questionnaire (APQ) consists of 42 items that can be used to measure parenting practices across five domains: parental involvement (e.g., "You have a friendly talk with your mom" or "You have a friendly talk with your dad"), positive parenting (e.g., "Your parents tell you that you are doing a good job"), poor monitoring/supervision (e.g., "You stay out in the evening past the time you are supposed to be home"), inconsistent discipline (e.g., "Your parents threaten to punish you and then do not do it"), and corporal punishment (e.g., "Your parents hit you with a belt, switch, or other object when you have done something wrong"). Items assessing the first two constructs are worded in the positive direction (indicating more positive parenting), and items assessing the latter three constructs are worded in the negative direction. Ratings of the items are made on a five-point scale (never, almost never, sometimes, often, always). A Turkish validity and reliability study was conducted, and the Cronbach's alpha for internal consistency was .70 [18,19].

Statistical analysis

To summarize the study's data, descriptive statistics were given as mean plus or minus standard deviation or as median and minimum-maximum, depending on the data distribution. Categorical variables were summarized as frequency and percentage. Normal distribution was tested with the Kolmogorov-Smirnov and Shapiro-Wilk tests. Student's t-test was used to compare two independent

groups when the numeric variables were normally distributed, and the Mann-Whitney U test was used otherwise. To compare more than two groups, the Kruskal-Wallis H test was used when numeric variables were not normally distributed. The differences between groups for nonparametric tests were evaluated with the Dwass-Steel-Critchlow-Fligner test. To compare differences in categorical variables, Pearson's chi-squared test was used when the expected cell count was less than five in two-by-two tables, and the Fisher-Freeman-Halton test was used in rby-c tables. The Jamovi Project (2020), Jamovi (version 1.6.3, retrieved from <https://www.jamovi.org>), and JASP [20] (version 0.14, retrieved from <https://jasp-stats.org>) software programs were used for statistical analyses.

Results

The median age of the sample was 14.0 (range: 13.0–15.0). There were 125 (71.4%) males in the sample. Fifty-one (29.1%) mothers had some primary school education, and 86 (49.1%) fathers had some high school education. One hundred and two (58.3%) families had a household income of less than 5,000 Turkish liras (TL). There was no difference in sociodemographic variables between the clinical and community samples (Table 1).

There was no difference in the percentage of histories of familial psychiatric disorders between the clinical sample ($n = 5$; 14.7%) and the community sample ($n = 17$; 12.1%). ADHD, oppositional defiant disorder (ODD), specific phobia and CD were more significant in the clinical sample than in the community sample ($p = 0.034$, $p = 0.025$, $p = 0.047$, and $p = 0.037$, respectively) (Table 2).

The median scores for the APQ parental involvement (31.0 [26.0–36.0] versus 33.0 [26.0–37.0]) and positive parenting (20.0 [15.0–23.0] versus 22.0 [18.0–23.0]) subscales were significantly lower in the clinical sample than in the community sample ($p < 0.001$ for both). The median score for the APQ poor monitoring/supervision subscale was higher in the clinical sample (26.0 [22.0–32.0]) than in the community sample (25.0 [22.0–35.0]) ($p < 0.046$) (Table 3).

Discussion and conclusion

This BWC study set out with the aim of assessing the children's psychiatric comorbidity and their parent's parenting skills. The results of this study indicate that these children caught in the BWC trend have more underlying comorbidities and worse parenting functionality.

Table 1. Comparison of sociodemographic variables in the clinical and community samples

	Overall (n = 175)	Clinical Sample (n = 34)	Community Sample (n = 141)	p
Age (years)	14.0 [13.0–15.0]	14.0 [13.0–15.0]	14.0 [13.0–15.0]	0.652**
Gender (%)				
Female	50 (28.6)	10 (29.4)	40 (28.4)	0.999*
Male	125 (71.4)	24 (70.6)	101 (71.6)	
Mother's Education (%)				
Illiterate	34 (19.4)	6 (17.6)	28 (19.9)	0.986*
Primary school	51 (29.1)	10 (29.4)	41 (29.1)	
Secondary school	40 (22.9)	9 (26.5)	31 (22.0)	
High school	40 (22.9)	7 (20.6)	33 (23.4)	
University	10 (5.7)	2 (5.9)	8 (5.7)	
Father's Education (%)				
Primary school	9 (5.1)	2 (5.9)	7 (5.0)	0.784*
Secondary school	39 (22.3)	9 (26.5)	30 (21.3)	
High school	86 (49.1)	17 (50.0)	69 (48.9)	
University	41 (23.4)	6 (17.6)	35 (24.8)	
Total Household Income (%)				
Minimum wage	21 (12.0)	4 (11.8)	17 (12.1)	.928*
Minimum wage – 5,000 TL	81 (46.3)	17 (50.0)	64 (45.4)	
5,000+ TL	73 (41.7)	13 (38.2)	60 (42.6)	

*The Pearson chi-squared test, Fisher's exact test, and Fisher-Freeman-Halton test were used.
**The Mann-Whitney U test was used.

Table 2. Comparison of comorbidities in the clinical and community samples

	Overall (n = 175)	Clinical Sample (n = 34)	Community Sample (n = 141)	p*
History of familial psychiatric diagnosis (%), yes	22 (12.6)	5 (14.7)	17 (12.1)	0.773
Psychiatric referral for child (%), yes	13 (7.4)	3 (8.8)	10 (7.1)	0.719
ADHD (%), yes	26 (14.9)	9 (26.5)	17 (12.1)	0.034
ODD (%), yes	33 (18.9)	11 (32.4)	22 (15.6)	0.025
Depression (%), yes	16 (9.1)	5 (14.7)	11 (7.8)	0.202
Specific phobia (%), yes	27 (15.4)	9 (26.5)	18 (12.8)	0.047
Social phobia (%), yes	1 (0.6)	1 (2.9)	0 (0)	0.194
Generalized anxiety disorder (%), yes	0 (0)	0 (0)	0 (0)	-
Conduct disorder (%), yes	2 (1.1)	2 (5.9)	0 (0)	0.037

Abbreviations: ADHD: attention-deficit/hyperactivity disorder; ODD: oppositional defiant disorder.
*The Pearson chi-squared test, Fisher's exact test, and Fisher-Freeman-Halton test were used.

Table 3. Comparison of APQ scores in the clinical and community samples

	Overall (n = 175)	Clinical Sample (n = 34)	Community Sample (n = 141)	p*
Alabama Parenting Questionnaire				
Parental involvement	32.0 (26.0–37.0)	31.0 (26.0–36.0)	33.0 (26.0–37.0)	< 0.001
Positive parenting	21.0 (15.0–23.0)	20.0 (15.0–23.0)	22.0 (18.0–23.0)	< 0.001
Poor monitoring/supervision	25.0 (22.0–35.0)	26.0 (22.0–32.0)	25.0 (22.0–35.0)	0.046
Inconsistent discipline	18.0 (17.0–18.0)	18.0 (17.0–18.0)	18.0 (17.0–18.0)	0.787
Corporal punishment	8.0 (7.0–11.0)	8.0 (7.0–11.0)	8.0 (7.0–10.0)	0.082
Abbreviations: APQ: Alabama Parenting Questionnaire				
*The Pearson chi-squared test, Fisher's exact test, and Fisher-Freeman-Halton test were used.				

The first aim of this study was to determine whether there is any difference between children who are involved in online challenges and a community sample of children who do not involve in online challenges. The literature provides very limited data on BWC and psychiatric comorbidity. However, it has been reported that BWC may find potential victims in adolescents and young adults whose neural circuits have not completely matured and who have had insufficient real-life experiences, and in individuals with additional conditions, such as negative life experiences, depression, neglect, abuse, social defeat, repeated failure, and borderline personality disorder, that may cause them to be more psychologically sensitive. It was posited that these individuals might see BWC as a solution to their persistent psychological states and continuing unhappiness [21-24]. In some case reports have shown that individuals playing BWC have been diagnosed with depression [25,26]. In addition, one case of obsessive-compulsive disorder with BWC-induced suicidal obsessions was reported [27]. No difference was found in terms of depression. We think that this may be caused by a situation similar to the relationship between ADHD, ODD, and CD diagnoses and IGD and problematic internet use.

It is thought that the impulsivity that comes with ADHD increases the risk of problematic internet use and the development of IGD [28]. Some studies have suggested that IGD is both a disorder that can be secondary to ADHD and a disorder that has a reciprocal relationship with it via reward-seeking [29]. Weinstein and Weizman mentioned the possibility of an IGD subtype that exhibits high reward addiction and that responds to in-game rewards due to a dopamine deficiency [30]. This hypothesis is supported by the parallel increase between ADHD and IGD symptoms and the comorbid ADHD diagnosis in a significant portion of individuals diagnosed with IGD [29,30]. It has also been suggested that excessive game play may provide an escape from real-life problems for individuals with ADHD (30). Furthermore, other traits of ADHD, such as low extraversion, disinhibition, social withdrawal, and low self-esteem, have been associated with problematic internet use [31-33].

Another goal of our study was to determine whether there is a relationship between playing BWC and parenting skills. While parental involvement and positive parenting scores were significantly lower among BWC players, poor monitoring/supervision was found to be significantly higher. The groups showed no difference in terms of inconsistent discipline and corporal punishment, nor is there any study in the literature showing a direct relationship between BWC and parenting. However, it has been stated that especially problematic family relationships increase the probability of being a BWC victim [5]. Case reports have also shown that victims often experience relationship problems, especially with their parents [26]. In investigating the relationship between parenting and IGD and problematic internet gaming, we found many studies on factors such as parenting styles [34], parental follow-up, parental attachment attitudes [35], and parental rearing [36]. Studies show that problematic gamers have more family conflict and poor family

relationships. It has also been shown that lower-quality parent-child relationships are associated with increased gaming problems [13].

Previous research has shown that positive parenting indicators (such as emotional warmth and understanding) can help protect against IGD, pathological internet use, and internet addiction [37], and parents' emotional warmth, especially, supports children's time management abilities, an important factor that protects against IGD by improving self-efficacy, self-control, and autonomy. In our study, parental involvement scores, which measure whether parents spend time with their children and help their children fulfill responsibilities and hobbies, and positive parenting scores, which measure parents' and children's awareness of a child's positive behaviors, were lower among BWC players, in keeping with the literature.

Our study has some limitations, the first of which is its cross-sectional nature. Longitudinal studies are needed to verify causal relationships between BWC and possible influencing factors and to adequately examine the direction of effects. Another limitation is that parental behaviors were self-reported, with no information on children's evaluations of parental behavior. Another limitation is that we don't have data on how long they've been playing BWC. Finally, the small sample size is another limitation. More BWC-player children could be included, but there are no studies with more sample groups than this number regarding the online challenges. However, the inclusion of more BWC players should not be overlooked when conducting studies with larger samples.

As far as we know, our study is the only one to evaluate psychiatric comorbidity in BWC players using a structured assessment tool and investigating the relationship between parenting and playing BWC. We believe that our results will help guide the development of programs to prevent and manage cases resulting from BWC and other online challenges that pose a serious danger to mental health and that have driven many young people to suicide worldwide.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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