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# Internet Gaming Disorder in Adolescents in the Context of Spirituality and Life Satisfaction





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**The study examines levels of Internet Gaming Disorder (IGD), life satisfaction, and their relationship to the importance of spirituality and the practice of religious faith in adolescents. Level of Internet Gaming Disorder was measured by the IGD questionnaire (IGDS9-SF, Pontes *et al.* 2015), spirituality was measured by three items: 1. “Are you religious?”, 2. “Spirituality is important in my life”, 3. “Practicing of spirituality is important in my life”, and the measure of life satisfaction through the SWLS (Diener *et al.* 1985). The results of the study indicate a significant positive relationship between life satisfaction and spirituality; spirituality and Internet Gaming Disorder did not show a relationship. The level of life satisfaction predicted the occurrence of Internet Gaming Disorder (OR = 1.06). Gender affiliation was associated with the prevalence of Internet Gaming Disorder in favour of boys.**

# 1 Introduction

Internet Gaming Disorder (hereafter IGD) is understood as repetitive and persistent gaming using the Internet, often with other gamers in real time (American Psychiatric Association 2013, 792; King and Delfabbro 2014, 15). It is a superordinate term to other Internet-related disorders and addictions, such as internet addiction, pathological internet use, video-game addiction (King and Delfabbro 2014, 943). IGD belongs to the behavioural disorders, whereby behavioural patterns are disrupted in personal, family, social, educational, occupational, and other important areas of functioning (Saunders *et al.* 2017, 273; Petry *et al.* 2014, 1402; King and Delfabbro 2018, 53).

The risk period for the onset of Internet Gaming Disorder is adolescence, which is associated with the search for one's own identity, the pursuit of individuality and a move away from authority figures' views, and the consolidation of social support from peers (Rehbein *et al.* 2015, 842). The prevalence of the disorder during adolescence is reported to be 1.7–27.5% (Rehbein *et al.* 2015, 842; Müller *et al.* 2014, 568). Several scientific studies (Ostinelli *et al.* 2021, 138; Cudo *et al.* 2022, 4; Cheng *et al.* 2018, 160) confirm that Internet Gaming Disorder negatively impacts adolescents' psychological and physical well-being by impairing eating and posture habits, disrupting sleep cycles, emerging anxiety and depressive experiences, difficulties in coping with stressful situations, loneliness, or a deterioration in perceived well-being.

Spirituality is a concept that can be viewed from different perspectives. From a psychological perspective, spirituality is defined as “*the search for meaning and purpose in life through connection to something larger than oneself, such as nature, humanity, or God*” (American Psychological Association Dictionary 2007), from an existential perspective as “*the human striving to find meaning in an apparently meaningless world*” (Frankl 2013, 171), or from a philosophical perspective as “*an ultimate concern that transcends immediate self-interest*” (Smith 2013, 122). Within psychology, spirituality is linked to two psychological aspects, namely the search for meaning in life and self-transcendence. The search for meaning in life is associated with a belief in a higher power, a connection to something greater, and is directed inwardly towards the individual; it is more often associated with religiosity and faith. Self-transcendence is related to self-compassion, empathy, forgiveness, and acceptance, and is oriented towards the psyche, effort, and striving of the individual (Božek *et al.* 2020, 2).

Spirituality is negatively related to gaming (Braun *et al.* 2016, 5), and with higher levels of spirituality, a lower risk of both online and offline addictive gaming emerges. Existential well-being and peer support have been shown to be protective factors against the development of Internet Gaming Disorder (Utomo and Marianta 2023, 10). Adolescents with higher levels of spirituality were less likely to choose watching television or playing online games as a form of leisure activity, compared to adolescents with low levels of spirituality (Malinakova *et al.* 2018, 9). Scientific research more often focuses on other forms of electronic and online addictions or disorders, e.g., gambling disorder, video game addiction (Grant Weinandy and Grubbs 2021, 8; Barnett 1AD), and all have identically demonstrated a negative relationship of the disorder/addiction with measures of spirituality.

Life satisfaction is understood as a personal characteristic that encompasses wealth, access to resources through relative standards and frames of reference with culture, where it addresses the issue of conformity to societal norms and social integration (Diener and Biswas-Diener 2011, 99). In the context of life satisfaction, a negative relationship with Internet Gaming Disorder emerges (Celik 2022, 7), with lower levels of life satisfaction associated with greater number and intensity of symptoms of Internet Gaming Disorder (Mills *et al.* 2019, 56; Barger and Hormes 2017, 391). It is in the context of life satisfaction that Internet Gaming Disorder may function as a coping strategy to escape reality, whereby the individual avoids current problems and difficulties by spending time in the online space (Melodia *et al.* 2020, 21).

In adolescents, spirituality is positively related to experiencing life satisfaction (Dankulicova Veselska *et al.* 2018, 6), with individuals with higher levels of spirituality more likely to experience better health, and to perceive their own health better. Spirituality and religiosity explain 29% of the total variance in life satisfaction, with this relationship being stronger in adolescents compared to adults (Kelley 2008, 81).

The aim of our research is to examine Internet Gaming Disorder in the context of spirituality and life satisfaction in selected Slovak adolescents and subsequently to examine the protective effect of life satisfaction and spirituality in adolescents in the context of Internet Gaming Disorder.

## 2 Methods

### 2.1 Sample and Procedure

In our research, 1163 respondents participated. Due to the age criterion, we had to exclude 458 people from the research study. Consequently, our research population consisted of 705 respondents, of which 597 were females and 108 were males aged 18 years and older ( $M = 19.8$ ;  $SD = 2.52$ ). Inclusion criteria for inclusion in the research were established: age 18 years and older and confirmation of Internet Gaming Disorder (IGD), which was determined based on the criteria by Pontes and Griffiths (2015, 139). Respondents who met at least five symptoms out of nine met the criteria for Internet Gaming Disorder. The core criteria for IGD disorder include: (a) interest in Internet games, (b) withdrawal symptoms when internet gaming stops, (c) tolerance, which leads to the need to spend more and more time playing internet games, (d) unsuccessful attempts to control participation in Internet games, (e) loss of interest in previous hobbies and pastimes as a result of and excluding Internet gaming, (f) continued excessive use of Internet games despite knowledge of psychosocial problems, (g) deceiving family members, therapists, or others regarding the amount of Internet gaming. Table 1 shows selected socio-demographic variables of the research population.

The research was conducted from January 2022 to March 2022, through a questionnaire battery. Participation in the research was voluntary, anonymous and respondents confirmed their participation in the research through informed consent. The data collection was conducted in a combined online and face-to-face format with the participation of the researchers. Respondents were administered two different versions of the questionnaire with two different random orders of the questionnaire sections to reduce completion bias (e.g., Krosnick and Alwin 1987, 204). The research was approved by the Ethics Committee of Trnava University under Resolution no. 3/2022 on January 10, 2022.

**Table 1**  
**Socio-Demographic Characteristics of Sample**

Variable		n = 705
Gender	male	108 (15.3%)
	female	597 (84.7%)
Age (years)	mean	19.8 (range 18–69)
Religion	religious believers	695 (59.8%)
	religious non-believers	468 (40.2%)

## 2.2 Measures

**Internet Gaming Disorder – short form [IGDS9-SF, Pontes et al. 2015].** Internet Gaming Disorder was measured using the Internet Gaming Disorder Scale, which contains 9 items. The items include symptoms of the disorder as listed in the DSM-5 manual. The respondent answers using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A cut-off score of 25 out of 45 is set to diagnose Internet Gaming Disorder (Pontes and Griffiths 2015, 139; Suchá et al. 2018, 141; Poon et al. 2021, 4). The reliability of the questionnaire was demonstrated by McDonald's omega ( $\omega = 0.92$ ).

**Life satisfaction [SWLS, Diener et al. 1985]** was measured by a unidimensional questionnaire comprising 5 items. Scoring is done through a Likert 7-point scale, ranging from 1 (do not agree at all) to 7 (strongly agree). The questionnaire has good psychometric properties according to McDonald's omega, which was 0.88.

**Spirituality** was measured by three simple items: 1. "Are you religious?", respondents answered dichotomously "yes" or "no"; 2. "Spirituality is important in my life"; 3. "Practicing of spirituality is important in my life", with 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). By asking these two questions we want to inspect perceived importance of spirituality and perceived importance of practicing spirituality. The value of McDonald's omega in our research was 0.87.

## 2.3 Results

According to the Internet Gaming Disorder Scale by Pontes and Griffiths (2015, 138), we identified 5.8% ( $n = 41$ ) of individuals with Internet Gaming Disorder and 94.2% ( $n = 664$ ) of individuals who did not exhibit symptoms of Internet Gaming Disorder.

We used comparative tests to demonstrate a statistically significant difference in the occurrence of Internet Gaming Disorder by gender. We applied Welch's t-test because homogeneity of variances was not maintained according to Levene's test ( $p < 0.001$ ). The level of intensity of Internet Gaming Disorder symptoms is higher in boys ( $M = 17.4$ ;  $SD = 7.57$ ) than in girls ( $M = 11.4$ ;  $SD = 4.62$ ), this difference is statistically significant ( $t_{(122)} = 8.01$ ;  $p < 0.001$ ;  $d = 0.96$ ). It can be concluded that boys have a higher rate of Internet Gaming Disorder symptoms compared to girls.

We demonstrated through bivariate correlation analysis that life satisfaction was significantly, negatively, and weakly correlated with Internet Gaming Disorder ( $r = -0.121$ ;  $p = 0.001$ ) and a non-significant relationship between perceived level of spirituality and Internet Gaming Disorder ( $r = -0.061$ ;  $p = 0.108$ ). The results are presented in Table 2.

We applied logistic regression analysis to examine the predictive role of perceived levels of spirituality and life satisfaction in the context of Internet Gaming Disorder. We found that with a unit increase in life satisfaction, the odds of developing Internet Gaming Disorder ( $OR = 1.06$ ,  $p < 0.05$ ) decreased 1.06-fold, while holding other variables constant. Individuals who perceive an adequate level of spirituality are one time less likely to develop Internet Gaming Disorder compared to those without an adequate level of spirituality ( $OR = 1.00$ ;  $p > 0.05$ ), holding other variables constant. However, perceived level of spirituality is not significant in the model because its confounding interval crosses 1 (Table 3a). The logistic regression model has low validity ( $R^2 = 0.02$ ) and poor predictive ability ( $AUC = 0.61$ ) based on statistical attributes (Table 3b).

**Table 2**  
**Bivariate Correlation Analysis**

	IGD	Spirituality	Life satisfaction
IGD	–		
Spirituality	-0.061	–	
Life satisfaction	-0.121**	0.130***	–

Note: Significance level \*\*p<.005 \*\*\*p<.001

**Table 3a**  
**Logistic Regression Analysis**

Predictor	Estimate	SE	Z	p	Odds ratio	95% Confidence Interval	
						Lower	Upper
Intercept	1.598	0.558	2.862	0.004	4.95	0.504	2.693
Spirituality	0.003	0.037	0.078	0.938	1.00	-0.069	0.075
Life satisfaction	0.057	0.024	2.341	0.019	1.06	0.057	0.104

Note: Estimates represent the log odds of "group\_nom = norma" vs. "group\_nom = DG"

**Table 3b**  
**Model Fit Measures and Predictive Measures**

Model	AUC	R <sup>2</sup> <sub>N</sub>
1	0.609	0.022

According to the mediation analysis, we did not confirm that the effect of life satisfaction on Internet Gaming Disorder is mediated through perceived level of spirituality. The model does not meet the mediation assumption as the indirect effect ( $\beta = -0.005$ ;  $SE = 0.002$ ;  $p = 0.242$ ) is non-significant. The results demonstrated the absence of a relationship between life satisfaction (predictor) and perceived level of spirituality (mediator) as Table 4 displays.

**Table 4**  
**Mediation Analysis**

	Estimate	SE	95% Confidence Interval		Z	p	Mediation (%)
			Lower	Upper			
Indirect	-0.005	0.002	-0.015	0.004	3.67	0.242	4.92
Direct (c')	-0.098	0.036	-0.166	-0.028	-2.73	0.006	95.08
Total (c)	-0.103	0.018	-0.169	-0.032	-1.17	<.001	100.0

The overall model containing perceived level of spirituality and age along with their interaction is statistically insignificant ( $F_{(2;702)} = 2.19$ ;  $p = 0.113$ ; Table 5a). The results showed a non-significant effect of the interaction of the predictors ( $p = 0.989$ ; Table 5b).

**Table 5a**  
**Regression Analysis Model**

Model	R	R <sup>2</sup>	Overall Model Test			
			F	df1	df2	p
1	0.079	0.006	2.19	2	702	0.113

**Table 5b**  
**Moderation Analysis**

	Estimate	SE	95% Confidence Interval		Z	p
			Lower	Upper		
Spirituality	-0.074	0.048	-0.161	-1.154	-1.54	0.124
Age	0.113	0.154	-0.302	0.732	0.73	0.464
Spirituality * Age	5.49e-4	0.038	-0.052	0.014	0.01	0.989

### 3 Discussion

The aim of the research was to analyse the symptoms of Internet Gaming Disorder in the context of spirituality and life satisfaction in selected Slovak adolescents. The purpose of the research analysis was to examine the protective effect of life satisfaction and spirituality in adolescents in the context of Internet Gaming Disorder.

The results of the study showed a 5.8% prevalence of Internet Gaming Disorder among Slovak adolescents. Compared to other European countries such as Germany 0.16–3.21% (Wartberg *et al.* 2020, 33), Northern Europe 0.72–21.76% (Vadlin *et al.* 2018, 7; Stevens *et al.* 2020, 5), Hungary 4.33–4.56% (Király *et al.* 2014, 5; Pápay *et al.* 2013, 142), Czech Republic 3.31% (Király *et al.* 2019, 12), a higher prevalence of Internet Gaming Disorder can be noted.

With regard to gender, boys showed higher rates of Internet Gaming Disorder symptoms compared to girls. Males experience more intense symptoms of Internet Gaming Disorder than females, which is supported by several studies with a 4:1 ratio in favour of males (Müller *et al.* 2014, 7). Gaming, whether online or offline, is negatively related to spirituality (Braun *et al.* 2016, 5), and it is higher levels of spirituality that appear to be associated with a lower risk of addictive gaming, and thus act as a protective effect. In the context of protective factors, peer support, in addition to existential well-being, has been shown to reduce the likelihood of occurrence and development of Internet Gaming Disorder (Utomo and Marianta 2023, 10; Yu and Shek 2021, 6; Tsui and Cheng 2021, 7). According to the current result of a systematic review, gaming disorder also seems to be particularly related to disadvantageous decision-making under risk (Müller *et al.* 2023, 9). In line with these results, it can be assumed that a cognitive tendencies related to rational decision making e. g. regret anticipation (Jurášová and Špajdel 2011, 172), may also perform as protective factors. Our results did not support previous research findings, as the relationship between perceived level of spirituality and Internet Gaming Disorder was found to be nonsignificant, which may be related to the association with other behavioral disorders, such as pornography addiction (Lewczuk *et al.* 2020, 895), where a more pronounced departure from spiritual and self-transcendent values may be perceived; or it may be related to the tenets of specific religions (Eksi and Ciftci 2017, 5).

Research results indicated that experiencing lower levels of life satisfaction among adolescents was associated with higher rates of Internet Gaming Disorder symptoms. It was also confirmed that the level of life satisfaction predicts the occurrence of Internet Gaming Disorder. Individuals who experience lower levels of life satisfaction, self-esteem, and social support have higher rates of Internet Gaming Disorder symptoms (Teng *et al.* 2020, 18). Life satisfaction similarly mediates the relationship between Internet Gaming Disorder and basic psychological needs, as well as the relationship between Internet Gaming Disorder and depressive rumination (Celik 2022, 186). Similarly, life satisfaction acts as a mediator in the relationship between video game playing as a coping mechanism and the severity of Internet Gaming Disorder symptoms (Mills *et al.* 2019, 58).

### 4 Conclusion

The results of the study showed a 5.8% prevalence of Internet Gaming Disorder among adolescents in Slovakia. Regarding gender, boys showed higher rates of Internet Gaming Disorder symptoms compared to girls. Life satisfaction was positively correlated with experiencing spirituality. The results of the research indicated a significant positive relationship between life satisfaction and spirituality. Experiencing spirituality and Internet Gaming Disorder did not show a relationship. Levels of life satisfaction predicted the occurrence of Internet Gaming Disorder.

The research findings have several limitations. The study design was cross-sectional and therefore causal validity of the identified relationships cannot be inferred. Self-report questionnaires were used in the research, which may have caused responding in terms of social desirability. Despite the limitations, this study provides interesting research findings regarding the relationships of Internet Gaming Disorder and the experience of spirituality and life satisfaction in adolescents, which have not yet been investigated in this country.

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