

IGDS9-SF TRANSLATION AND PSYCHOMETRIC PROPERTIES

TRANSLATION IN GREEK AND PSYCHOMETRIC PROPERTIES OF
THE 9-ITEM INTERNET GAMING DISORDER SCALE-SHORT FORM
(IGDS9-SF)

by

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requirements for the degree of

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Title: TRANSLATION IN GREEK AND PSYCHOMETRIC PROPERTIES OF
THE 9-ITEM INTERNET GAMING DISORDER SCALE-SHORT FORM (IGDS9-SF)

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The aim of this study was to translate in Greek and then validate the psychometric properties of the Internet Gaming Disorder Scale–Short-Form (IGDS9-SF) (Pontes & Griffiths, 2015). This is the first short standardized psychometric tool to assess Internet Gaming Disorder (IGD) according to the DSM-V nine clinical criteria and among the most frequently examined. The translation of the test was done through the process of back-translation. To gain a better insight into the psychometric properties of this test, the questionnaire included demographic questions and the Greek version of the Internet Addiction Test (Young, 1998). The participants of the study were 241 adolescents, aged between 12 to 18. They were nationally recruited in Greece through an online survey that was hosted in the platform of Qualtrics. Analysis revealed excellent reliability with Cronbach’s alpha coefficients $\alpha = .939$ for IGDS9-SF and $\alpha = .940$ for IAT. The use of Pearson product-moment correlation revealed a significant positive relationship between IGDS9-SF and IAT $r(241) = .45, p < .001$. Due to

inconsistencies in terminology and tests in the field of IGD, what is recommended for future research, is a consensus towards IGD testing and research.

Keywords: Internet Gaming Disorder, IGDS9-SF, psychometric properties

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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Internet Gaming Disorder: Definitions & Diagnostic Criteria	1
Prevalence	2
Comorbidity with other mental health problems	7
Risk and Protective Factors.....	10
Impact of Internet Gaming	15
Therapeutic Interventions	17
Background Research on Internet Gaming Disorder	22
Screening tools on Internet Related Disorders	25
The Gaming Addiction Scale for Adolescents (GASA)	26
The Young Internet Addiction Scale (YIAS).....	27
The Internet Gaming Disorder Scale–Short-Form (IGDS9-SF).....	28
Purpose of the study	30
II. METHODOLOGY.....	31
Design of the study.....	31
Participants	32
Ethical Standards	33
Back-Translation Process	34
Demographics and internet-related questions	35
Measures	36
The Greek version of the 9-item Internet Gaming Disorder Scale–Short-Form (IGDS9-SF)..	36
The Greek version of Internet Addiction Test (IAT).....	37
Statistical Procedure	38
Reliability analysis	38
Validity analysis	39
III. RESULTS	40
Demographics Analysis	40
Reliability	44
Validity	48
Factor Analysis.....	49

IV. DISCUSSION	50
Limitations	52
Considerations for Future Research	53
Conclusion	54
REFERENCES	55
LIST OF TABLES	76
TABLE 1: DESCRIPTION OF PARTICIPANTS BY GENDER & AGE	77
TABLE 2: AGE THE PARTICIPANTS WERE FIRSTLY EXPOSED TO INTERNET	78
TABLE 3: AGE THE PARTICIPANTS WERE FIRSTLY EXPOSED TO INTERNET IN RELATION TO AGE	79
TABLE 4: HOURS SPENT ON GAMING IN RELATION TO GENDER.....	80
TABLE 5: SCHOOL PERFORMANCE	81
TABLE 6: SCHOOL PERFORMANCE IN RELATION TO GENDER	82
TABLE 7: SCHOOL PERFORMANCE IN RELATION TO TIME SPENT ON GAMING..	83
TABLE 8: RELIABILITY- INTERNAL CONSISTENCY FOR THE GREEK VERSION OF IGDS9-SF	84
TABLE 9: RELIABILITY- INTERNAL CONSISTENCY FOR THE GREEK VERSION OF IAT	86
TABLE 10: PEARSON INDECES FOR CONSTRUCT VALIDITY	89
TABLE 11: PEARSON INDECES FOR CONVERGENT VALIDITY.....	90
TABLE 12: SPLIT-HALF INTERNAL CONSISTENCIES	93
TABLE 13: FACTOR ANALYSIS	95
APPENDICES	97
APPENDIX A: THE 9-ITEM INTERNET GAMING DISORDER SCALE-SHORT FORM (IGDS9-SF) BY PONTES & GRIFFITHS (2015).....	98
APPENDIX B: THE GREEK VERSION OF THE 9-ITEM INTERNET GAMING DISORDER SCALE-SHORT FORM (IGDS9-SF)	99
APPENDIX C: THE GREEK VERSION OF INTERNET ADDICTION TEST BY DR. KIMBERLY YOUNG.....	101
APPENDIX D: CONSENT FORMS FOR PARENT AND ADOLESCENT.....	103
APPENDIX E: DEBRIEFING FORM	107
APPENDIX F: DEMOGRAPHIC QUESTIONS	109
APPENDIX G: INSTITUTIONAL REVIEW BOARD APPROVAL	110

LIST OF TABLES

TABLE 1: DESCRIPTION OF PARTICIPANTS BY GENDER & AGE	77
TABLE 2: AGE THE PARTICIPANTS WERE FIRSTLY EXPOSED TO INTERNET	78
TABLE 3: AGE THE PARTICIPANTS WERE FIRSTLY EXPOSED TO INTERNET IN RELATION TO AGE	79
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TABLE 11: PEARSON INDECES FOR CONVERGENT VALIDITY.....	90
TABLE 12: SPLIT-HALF INTERNAL CONSISTENCIES	93
TABLE 13: FACTOR ANALYSIS	95

LIST OF SYMBOLS & ABBREVIATIONS

- (AICA-S-gaming) Assessment of Internet and Computer game Addiction—Gaming Module
- (APA) American Psychological Association
- (DIB) Dysfunctional Internet behavior (DIB)
- (DSM-5) Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
- (IAB) Internet addictive behavior
- (IAD) Internet Addiction Disorder
- (IAT) Internet Addiction Test
- (ICD-11) International Classification of Diseases, 11th Revision
- (IGD) Internet Gaming Disorder
- (IGDS9-SF) Internet Gaming Disorder Scale–Short-Form
- (WHO) World Health Organization
- (YIAT) Young Internet Addiction Test (Young, 1996)
- (YIAS) Young Internet Addiction Scale (Young, 1998).

I. INTRODUCTION

Internet Gaming Disorder: Definitions & Diagnostic Criteria

Internet, smartphones, tablets, laptops, and several other electronic devices have invaded everyday life and functioning. It is possibly inevitable and sometimes even scary to imagine our lives without internet access. This is even more severe for younger generations who were exposed to internet gaming, smartphones, and tablets from as young as toddlers. Despite the benefits arising from the use of smart devices, excess and/or problematic use could have a negative impact on mental and physical health. There are numerous studies that associate internet activities with obesity, dysfunctional social relationships, anxiety, depression, etc.

As this is still considered a quite new field, internet and gaming disorders are permeated by controversies and conflicts around the impact, prevalence, risk factors, comorbidity, etc. Scholars around the world have depicted that problematic internet activities could potentially be accountable for mental health issues, disorders, and/or addictions, but possibly it is too early to reach a consensus.

This is evident even in the variety of terminology that can be found in the literature. Some of the terms that prevail in studies regarding internet and gaming are the following: “Internet gaming disorder”, “problematic online gaming”, “problematic Internet use”, “Internet addiction”, “Excessive use of the Internet and online gaming”, “Internet addictive behavior”, “problematic video game use”, “Persistence of Internet addiction”, “Smartphone addiction”, “Smartphone Problematic Use”, etc. to name only a few (Juthamane & Gunawan, 2021).

The scope of this study is not to present the differences and similarities between these approaches and terms. Instead, the focus will be on adding further insights in one of the terms that seem to gain more ground and widespread application around the academic community.

In this view, the term that is going to be employed will be “Internet Gaming Disorder” and wherever necessary, distinctions will be provided with other terminology.

In DSM-V, under the third section “Emerging measures and models” and under “conditions for further study”, a new element has been added: Internet Gaming Disorder (IGD). This appears as a separate category that shares characteristics with impulsive-compulsive disorders; substance use addictions; and gambling disorder.

More explicitly, Internet Gaming Disorder was introduced relatively recently within the Diagnostic Manuals. It was in 2013 that it was included in the DSM-5; in 2018 in the ICD-11 (Darvesh et al., 2020), and in 2019 that the World Health Organization (WHO, 2019) recognized gaming disorder (GD) as a behavioral addiction (Ciccarelli, et. al, 2021). It is important to note that the American Psychiatric Association (APA) included IGD at the appendix of the DSM-5 as a potential diagnosis. After having reviewed more than 240 articles, the DSM-5 group “found some behavioral similarities of Internet gaming to gambling disorder and to substance use disorders” (APA, 2013, p. 796).

In the realm of definitions, two prevailing approaches emerge in the literature: the former describes it as “the persistent and recurrent use of the Internet to engage in games, often with other players, leading to clinically significant impairment or distress as indicated by five (or more) criteria in a 12-month period” (APA, 2013, p. 796); and the latter as a pattern of gaming behavior ('digital-gaming' or 'video-gaming') characterized by loss of control over gaming, and continuation/escalation of gaming despite negative impact on the person’s daily functioning and social life (ICD-11, 2019).

The proposed criteria according to DSM-V include the following:

- (1) preoccupation with online/offline gaming,
- (2) experience of unpleasant symptoms when gaming is taken away (i.e., withdrawal),
- (3) the need to spend more time engaged in games (i.e., tolerance),

- (4) unsuccessful attempts to control participation in games (i.e., loss of control),
- (5) loss of interest in previous hobbies and entertainment because of, and except for games (i.e., give up other activities),
- (6) continued excessive use of games despite knowledge of psychosocial problems (i.e., continuation),
- (7) deceptive behaviors towards family members, therapists, or significant others, regarding time devoted to gaming (i.e., deception),
- (8) use of games to escape reality or relieve negative moods (i.e., escape), and
- (9) jeopardizing or losing a significant relationship, job, or education or career opportunity because of participation in games (i.e., negative consequences)", (ibid).

For an individual to be recognized as problematic gamer, DSM-V proposes endorsing five of the nine criteria for at least a year (last 12 months). Moreover, a minimum of 30 hours of gaming per week, is also considered an index for potential IGD diagnosis.

Respectively, ICD-11 criteria involve "impaired control over gaming; increasing priority given to gaming over other activities; continuation of gaming despite the occurrence of negative consequences; and clinically significant distress or impairments in important areas of functioning" (<https://icd.who.int/en>).

In this view, the prevailing criteria for IGD could be summarized as follows: distress and withdrawal symptoms when not playing; loss of interest in other activities, relationships, job, etc.; tolerance, thus the need to spend more time into gaming to satisfy the urge; and unproductive attempts to control this behavior. There is background research that both supports and challenges these criteria.

Despite research evidence and support, the academic community still struggles towards international consensus on criteria for assessing internet gaming disorder. In 2014, Petry et al., published a paper supporting that this consensus has been accomplished. Using

experts from European, North, and South American, Asian, and Australasian countries, they decoded and interpreted each of the nine DSM-5 criteria for IGD. Then, they introduced a single item for each criterion and these criteria were translated into 10 languages that were considered representative.

It was not long after this publication, that Griffiths et al. (2016) published a critique paper, challenging many aspects of the “consensus”. The paper was written by 28 academic IGD research scholars who questioned the concept of consensus at many levels. More explicitly, they argued that the panel was not adequately representative of the international community of gaming researchers, because many countries with empirical studies on IGD (e.g., United Kingdom, Canada, Belgium, Norway, Czech Republic, Turkey, Hungary, Switzerland, Taiwan, and South Korea) were not included. They also highlighted that they do not all embrace the criticisms on each criterion and that they would have liked to propose different wordings for each criterion. After having challenged the published paper on each one of the criteria, the team concluded the paper with suggestions that could possibly foster the dialogue towards consensus on IGD research. What seems to be interesting about this paper is admittance that “it is questionable whether consensus in the IGD field will ever be possible, given the lack of consensus in other fields of addiction” (Griffiths et al., 2016, p.173).

In a similar manner, another study by Rehbein et al. (2015) also focused on the diagnostic contribution of the nine DSM-5 criteria in a state-wide representative sample in German adolescents. The findings suggest that “give up other activities,” “tolerance,” and “withdrawal” were the most important predictor variables for IGD within the German adolescent community. Ko et al. (2015) carried out another study in China, and they also assessed the presence of the DSM-V criteria in IGD. Based on the conclusion statements, they have argued that all criteria had good diagnostic performance apart from “deception”

and “escape”. It is important to note that this study had an adult population, whilst the former focused on adolescents (13-18 years old). The criterion of “escape” criterion appeared to show low specificity in another mixed population study (aged 13-40) in Netherlands (Lemmens et al., 2015). In this view, it emerges that the “escape” criterion should be explored further, as age and gender seem to affect the diagnostic performance for IGD.

In addition, DSM-V criteria for IGD have been explored from several different perspectives. For instance, the study by Müller et al. (2019) aimed at recognizing the clinical validity of the DSM-5 criteria for IGD and other types of Internet Related Disorders (IRD). An additional section that they explored, it was the diagnostic validity for craving and IGD, an element not yet considered in the DSM-V. Results suggest diagnostic accuracy 76.6% for deceiving and 92% for loss of control and craving. While the criterion of escaping aversive moods was debatable, they recommended craving as a supplementary diagnostic index. These findings are also supported by Ko et al. (2014) who found that craving had a diagnostic accuracy of 89% and was perceived as one of the best performing criteria for IGD assessment.

In summary, it could be argued that despite the DSM-V criteria for IGD diagnosis, as Weinstein & Lejoyeux (2010) argue, problematic Internet gaming behavior is still difficult to classify consistently. What seems to be perplexing is, “whether it should be treated as an emerging primary mental health disorder or as a maladaptive coping mechanism of another mental disorder such as social anxiety” (ibid, p.278). This is also supported by King & Delfabbro (2014) who depict a generalized inconsistency in the definitions, the terminology, the diagnostic criteria, etc. For this reason, after the review that they have conducted on definitions, diagnosis, and treatment, they concluded that there is insufficient evidence on the classification and treatment and that future studies on IGD need improvement on design and reporting.

Prevalence

Regarding prevalence, again the field of IGD is still obscure, because as reported in DSM-V “due to lack of a standard definition it is difficult to derive prevalence data” (APA, 2013, p. 796). However, initial research data indicate that adolescent males seem to be at greatest risk of developing IGD (Tsitsika, et. al., 2014).

More explicitly, two recent (2021 & 2022) meta-analysis studies provide significant prevalence data. The former by Stevens et al. (2021) was conducted between 2009-2019 and it included 53 studies from 17 different countries (226,247 participants). Based on their findings (ibid, p.624):

(1) the prevalence of GD was 3.05% to 1.96% depending on the sampling criteria; (2) prevalence varied according to the screening tool; (3) studies with smaller sample sizes, adolescent samples and/ lower cut-off scores reported higher prevalence rates; (4) GD rates were approximately 2.5:1 in favor of males; and (5) more recent studies and studies conducted in Asia, reported higher prevalence rates.

The latter meta-analysis study, that was conducted by Kim et al. (2022), included 61 studies from 29 countries (227,665). All studies have been carried out before December 2020. Findings from this meta-analysis suggest the following: (1) the overall prevalence was 3.3% (8.5% in males and 3.5% in females), ranging from 0.3% to 17.7%; (2) the children and adolescent groups (8–18 years) (6.7%) and the adolescent and young adults groups (12–40 years) (6.3%) were higher than other age groups in this study; (3) “studies with less than 1000 participants had the highest prevalence of 5.2%, whereas studies with medium-sized samples of 1000–5000 participants and those with over 5000 participants reported lower prevalence rates” (ibid, p. 9); (4) the screening tool affected the prevalence rates; and, (5)

“various confounding variables, such as sampling methods, sample types, assessment tools, age, region, and cultural factors have an impact on prevalence rates” (ibid, p.1).

In view of the above, a common pattern that emerges from both meta-analyses, is that the prevalence rates are affected by age and region, with adolescent males to be at greater risk. However, methodologically, and epistemologically, it is evident that there is an urgent need for reliable and acceptable screening tools and definitions, that will produce systematic and trustworthy data regarding gender and age prevalence on internet gaming disorder.

Comorbidity with other mental health problems

Explicit information on the clinical characteristics of IGD diagnosed patients is relatively limited. This is attributed to the fact that most of the studies involve healthy participants and use mainly self-report questionnaires (van Rooij, Schoenmakers, & van de Mheen, 2017). For instance, no explicit comorbidity was reported in a Norwegian study that was limited to participants aged between 8 and 10, who were not diagnosed with IGD. Findings suggested a weak correlation (i.e., from $r = 0.07$ to $r = 0.15$) between symptoms of other disorders and IGD-symptoms. It was concluded that “IGD symptoms are only marginally associated with symptoms of other psychiatric disorders and only predicted by social skills and emotion regulation deficits” (Wichstrøm et al., 2019, p. 71).

However, there is evidence in other studies that argues that attention-deficit/hyperactivity disorder (ADHD), depressive, and anxiety disorders are the most prevalent comorbidities of IGD (Anderson et al., 2017; Carli et al., 2013; Gonzalez- Bueso et al., 2018; Lee et al., 2021; Yen et al., 2017).

Concerning ADHD and IGD, there is research evidence, but the scholars seem to hesitate to use the term comorbidity with confidence, due to insufficient data. For instance, in the study by Lee et al. (2021) results suggest that: (1) “ADHD symptoms were identified as a key risk factor for IGD, but the effect of ADHD comorbidity on longitudinal course of IGD

in the clinical population is yet to be examined” (ibid, p. 1117); (2) IGD patients with ADHD comorbidity had different rates on recovery (higher), recurrence (lower), and severity (higher) of IGD symptoms throughout 3-year follow-up periods; (3) Modifications in symptoms over time had a statistical significant relationship for both ADHD & IGD; (4) it is significant for the projected development of IGD, to assess and treat ADHD symptoms in patients diagnosed with IGD.

Regarding depression, it is well documented in the research domain that depression symptoms coexist with IGD symptoms and IA symptoms (e.g., Kaess et al. 2014; King et al., 2016; Stetina et al., 2011; etc.). For instance, in the study of Stetina et al. (2011) it is postulated that players with problematic video game behavior, had more depressive symptoms, and lower self-esteem compared to other players. More interestingly, gaming seemed to function as a coping escape strategy that resulted in problematic gaming behavior.

Similarly, other studies have argued that there is an association between gaming and depressive symptoms (Hellstrom et al, 2015; Weinstein & Weizman, 2012). Moreover, depression was included along with anxiety, and hostility when exploring comorbidity with internet addiction and disorder (Ko, 2014; Yen, 2007). In a two-year longitudinal study, Gentile et al. (2011) reported that depression in adolescents could be due to internet gaming and that both depression and anxiety symptoms decreased among participants who stopped online gaming. While there is a meta-analysis (Ho et al., 2014) report documenting a significantly higher rate in patients with depression and internet addiction (26.3%) than in healthy controls (11.7%), what still seems to be problematic with the above studies is that the directionality between IA/IGD and depression has not been yet clarified.

Lu et al. (2018) made tried to fill this gap, by addressing comorbidity between IGD, depression symptoms, and underlying neural mechanisms. They combined a longitudinal survey, a cross-sectional resting-state functional connectivity (rsFC), and an intervention

study, to explore causality between IGD and depression. Findings from this research showed that IGD severity and depression were reciprocally predictive. This was further supported by findings on neural level, where “individuals with IGD had inferior frontal and precentral gyrus, and the amygdala-frontoparietal connectivity at the baseline negatively predicted reduction in depression symptoms following a psychotherapy intervention” (ibid, p.1). In conclusion, they suggested that IGD is closely associated with depression; that the abnormalities detected in emotion and executive control networks are related to depression; and that this could function as a therapeutic target for IGD patients.

Lastly, anxiety is also one of the disorders that seem to be implicated in form of comorbidity with IGD. A correlational study by Wang et al. (2017) aimed at evaluating the relationship between generalized anxiety disorder (GAD) and (IGD). Moreover, they explored the role of behavior inhibition in young adults in developing both disorders. Based on the findings, individuals diagnosed with IGD had higher depressive and anxiety scores than those without IGD. Furthermore, participants with high GAD scores were eight times more likely to develop IGD.

Similar findings emerged also from the study of Bonnaire & Baptista (2019). The aim of their study was to investigate alexithymia and IGD, in reference to depression and anxiety. Their study suggests that depression and anxiety (OR = 1.19, $p = 0.003$ and OR = 1.11, $p = 0.026$, respectively) were positively associated with IGD, and that being alexithymic justified the additional significant variance with $R^2 = 0.21$ (Wald $\chi^2 = 5.48$, $p = 0.019$), whilst it was positively associated with IGD (OR = 2.32, $p = .024$)” (ibid, p.21). There were also depicted differences regarding gender. For male participants there was a correlation between IGD, being alexithymic and having high anxiety and depression scores. For female participants, IGD was solely associated to depression scores.

Lastly, there is evidence that associate IGD with other addictive behaviors, such as Gambling Disorder (e.g., Mallorquí-Bagué, 2017; Choi, 2014). What needs to be considered is what Yau & Potenza (2015, p. 134) suggest: that “there is evidence that points to overlaps between behavioral and substance-related addictions in phenomenology, epidemiology, comorbidity, neurobiological mechanisms, genetic contributions, responses to treatments, and prevention efforts”. In this view it may be argued that despite similarities there are differences that make each disorder unique. Therefore, different diagnostic criteria need to be applied for each addictive behavior, to produce accurate diagnosis and treatment.

In summary of the above, there are studies that support comorbidity with other mental health disorders. However, what remains inconclusive is the causal relationship between the other mental health conditions and IGD. It is certain that common symptomatology and shared characteristics can be found between anxiety, stress, depression, ADHD, and IGD. What needs though further explanation and research is whether the relationship can be explained through the perspective of comorbidity, the perspective of risk factor, or as a causality. Of course, this is not mutually exclusive, but further research would assist in a thorough understanding and clarification on comorbidity of IGD.

Risk and Protective Factors

In 2004 the media reported the first death that was attributed to excessive gaming. A 24-year-old South Korean male suddenly died at an Internet café. He was playing for four consecutive days with minimal rest and the postmortem study concluded that his death was due to “prolonged sitting at computer” (Lee, 2004). (Korea SBS News, 2004). Almost twenty years later the numbers of reported deaths because of IGD have increased and for this reason it is essential to examine closely the factors that could increase or reduce the likelihood of developing IGD along with the impact of IGD. In the literature, there is evidence that risk and protective factors are related to demographic characteristics, psychological,

psychopathological, social, and gaming-related aspects (Kuss & Griffiths, 2011; Ropovik et al., 2023).

Regarding the risk factors, there is indication that reduced parental control and poor bonding (Floros & Siomos, 2013) are regarded as family related risk factors. Biologically, family history of addictions could also enhance genetic predisposition (Burleigh et al., 2019), along with dopamine and serotonin abnormalities that might trigger neurobiological changes associated with addiction (Ahmed, et al., 2020; Volkow, et al., 2004; Wise & Robble, 2020). Moreover, impulse control disorders within the family and prenatal alcohol exposure, could also be considered as risk factors for developing internet addiction and gaming disorder (Yau et al., 2013).

More explicitly, in reference to mental health there is a proposed bi-directional relationship between problematic use of internet and depression. As Ko et al. (2009) suggest, adolescents diagnosed with depression have increased likelihood to become problematic Internet users, while adolescents who demonstrate problematic Internet behaviors have 2.5 times increased probability to develop depressive symptoms (Lam et al., 2010).

The aspect of depression is also supported by Ropovik et al. (2023, p. 139) who proclaim that strong risk factors related to IGD are “depression, gaming time, impulsivity, stress, hostility/aggressivity as a trait, escape motive, or social networking addiction”. In two large-scale meta-analyses studies (Gao, 2022; Ropovik et al., 2023) focusing on risk and protective factors for IGD, it emerged that other risk factors include personality traits such as impulsivity, low self-esteem, loneliness, and perceived stress, whilst comorbidity was mainly detected with the following disorders: depression, (social) anxiety, and ADHD (see previous analysis). Moreover, Kuss & Griffiths (2011, p.281), after having reviewed 58 empirical studies (published between 2000-2011) they concluded that Internet gaming addiction appears to be associated with a variety of personality traits, “which can be subsumed under

the key characteristics of introversion, neuroticism and impulsivity but may not be unique to the disorder” and could function as risk factors for the development of IGD.

In the literature, another risk factor is often recognized, and this is focusing on the intrinsic and extrinsic motivation behind online gaming. Many scholars (e.g., Beranuy et al., 2010; Caplan et al., 2009; Hussain & Griffiths, 2009; King & Delfabbro, 2009, etc.) have explored the motivation of both adult and young players. IGD and motivation appeared to be related through defective coping strategies, lack of socialization, and absence of personal satisfaction. All were considered as risk factors associated with IGD (Kuss & Griffiths, 2011).

A sub-category that falls between etiology and pathology of Internet gaming addiction is pathophysiology. This sector is treated as the crossroad between risk factors and the actual development of pathological behaviors and disorders. Within the physiology domain IGD was assessed through (Kuss & Griffiths, 2011, p.283):

Functional Magnetic Resonance Imaging (fMRI; Han et al. 2010; Hoeft et al. 2008; Ko et al. 2009), electroencephalography (EEG; Thalemann et al. 2007), genotyping (Han et al. 2007), polysomnographic measures, visual and verbal memory tests (Dworak et al. 2007), medical examinations including the patient’s history, and physical, radiologic, intraoperative, and pathologic findings.

Results suggest that gaming addicts showed stronger activation, but this cannot be solely attributed to IGD due to study limitations and inadequate research in the field (Cultrara and Har-El 2002). However, there is still evidence that IGD might be linked to various physiological, biochemical, and neurological irregularities that deviate from non-gamers.

Another significant study on internet gaming that explores potential risk factors is that conducted by Orkun et al. (2020). Their aim was to examine the role of metacognitions and emotion recognition in predicting IGD during the early adolescence period. The participants

were 427 secondary school students, and they completed the Internet Gaming Disorder Test (IGDT), the Metacognitions Questionnaire for Children (MCQ-C), and the Children's Version of Reading the Mind in the Eye Test (RMET). This study suggests that negative metacognitions and poor ability to recognize negative emotion could be regarded as risk factors that can negatively affect adolescents who are prone to developing IGD.

Regarding aggression, there is a statistically significant reciprocal relationship with IGD. In this view, aggression can be regarded both as a risk factor and an impact of IGD. More explicitly, in a meta-analysis conducted by Li et al. (2023) on a total of 30 samples and 20,790 subjects, it emerged that "people with a higher level of IGD might show more aggression, and people with more aggression might have a higher level of IGD" (ibid, p. 1). Results were higher in Asia and in primary school years. Though the causal relationship is not clear -whether aggression has an impact on IGD or the other way round- still there is a reported relationship that needs to be considered in research on IGD.

In summary of the above, some of the risk factors for developing IGD that are reported in the literature are the following: problematic social competence impulsivity, increased time spent on internet gaming, narcissistic and low self-esteem personality traits, anxiety, depression, genre of gaming, pathophysiology, etc. It is important to note though, that due to limited research on IGD and because of non-consistent terminology use on internet-related disorders, the field of risk factors is still vague and needs further exploration and clarification.

Concerning the protective factors, it is important to highlight the significance of prevention, because it is rare for people who demonstrate pathological gaming behavior, to seek professional help (Konkolý Thege et al., 2015). The following elements emerge as protective factors: self-regulation, secure attachment, reliable support and responsiveness from caregivers, ability to make friends and get along with others, adequate socioeconomic

resources for the family, and satisfactory academic achievement (Ji et al., 2022; Ropovik et al., 2023; Warburton et al., 2022). Among those, individual's self-esteem, intelligence, life satisfaction, and education, emerged as the strongest.

Furthermore, resilience was reported to be a buffering factor against IGD because it was found to be lower in IGD adolescents (Nam et al., 2018; Wu et al., 2017). Resilience encompassed various personal traits, such as acceptance, problem-solving skills, capacity to recover, self-regulation, personal competence, and self-efficacy; however, it has not been established which of these characteristics could protect from the development of IGD (Canale, 2019). What was interesting in terms of resilience was that individuals with lower resilience had higher scores on stress and depression and they were more likely to be at risk of developing IGD (Yen, 2019).

Another study that focused on personality traits, family factors and internet gaming, was that conducted by Trouvala et al. (2019). The aims of the study were to explore the relationship between parental acceptance-rejection theory and (IGD) along with the mediating and moderating effect of core self-evaluations (CSE) (ibid, p.48). Results could not provide etiological relationships among the variables explored, because it is a cross-sectional study. However, this study contributes further on the role of the family and on the significance of safe attachment in all developmental stages. Moreover, the role of the father in the upbringing is highlighted as a factor that can create a safe and functional family environment where the children develop personality traits that will protect them against addictive behaviors (Throuvala & Janikian, 2016).

In view of the above, the role of the family is paramount in protecting young children and adolescents from the risk of developing internet gaming disorder. A safe family context, with adequate family control, and secure attachment, might not only enhance the children's life satisfaction, but also ensure that they are protected by IGD and other related mental

health disorders. Specifically for Internet Gaming and usage, there are applications and relevant software that permit to the family to control and monitor the children's activity. It is recommended that the parents set time limits on internet and gaming usage; block access to age-inappropriate content and monitor social media and game activity. It is crucial for the children to know that the family sets and respects boundaries that foster the family's unobstructed development while facilitating mental health maintenance for all its members.

Impact of Internet Gaming

Several studies have recently focused on the impact of internet gaming in several dimensions of the life of both adults and adolescents. A recent study by Amani (2022) focused on the psychological effects of FIFA, PES, and Clash of Clans games on young men who are at risk of developing IGD. The findings suggest that the group that played Clash of Clans scored significantly higher than other groups in mental health problems, conflict with friends, executive function problems, and in IGD assessment tests. On the other hand, FIFA group players exhibited higher scores in conflict with parents. Amani concluded that the game Clash of Clans had more negative effects on psychological functions.

His study not only sheds light on the impact of IGD, but also associated IGD with specific game typology. For instance, Clash of Clans belongs to a category of games that are permeated by the spirit of destructiveness, stress and killing others to gain trophies and points. Instead, sport games like FIFA seem to promote antagonism and more aggressive behaviors.

The findings of this study are supported by previous research on the structural characteristics of games. Thomas and Martin (2010) suggest that Internet and arcade games were found to be more addictive than offline video game. Further research proposed that certain game characteristics were able to affect the players' mood and this in turn resulted in a vicious cycle where negative reinforcement led to frustration, whereas positive

reinforcement resulted in game persistence and possible addiction (Chumbley & Griffiths, 2006). More research is needed to explore further aspects of game genres that might be related both to IGD and mental health issues.

Another element regarding the impact of Internet Gaming, emerged during and after the pandemic era. Online gaming was supported and promoted during quarantine COVID-19 periods, because it was considered a safe, non-problematic activity. Positive aspects of gaming, such as a medium that could reduce loneliness and stress (Billieux, Flayelle, Rumpf, & Stein, 2019; Carras et al., 2017), have been highlighted through campaigns like #PlayApartTogether. Whilst online gaming was considered less risky than other coping mechanisms (alcohol and food consumption), it should be acknowledged that it may have masked threats that are equally risky for public health.

As King et al. (2020, p.184) stressed, “technology-based activity, and limited face-to-face interaction have the danger of solidifying unhealthy lifestyle patterns, intensifying technology-related disorders and leading to difficulties to readaptation when the COVID-19 crisis has passed”. Evidence of this is that some gaming platforms and distributors (e.g., Verizon in U.S.A, Fortnite, Twitch, etc.) reported increase that reached even 75% (Pantling, 2020; Perez, 2020). Given this high percentages of growth in online gaming, it is debatable whether it functioned as a safe context for public health or as a medium that jeopardized physical and mental health by encouraging the development or relapse of internet gaming disorders.

The negative impact of Pathological Internet Use (PIU) is also highlighted by Durkee et al. (2016). When referring to PIU, they mean “excessive or poorly controlled preoccupations, urges or behaviors regarding Internet use that lead to impairment or distress” (ibid, p.2). Though it is not clear whether PIU is different to IGD, their study includes excessive internet gaming habits of adolescents. Regarding the impact of PIU on

adolescents, findings suggest a strong association between PIU and reported poor sleeping habits, risk-taking actions, tobacco use, poor nutrition, and physical inactivity. What seems to be important from this study is that it is recommended to consider problematic internet behaviors when “screening, treating or preventing high-risk behaviors among adolescents” (ibid: 4).

Therapeutic Interventions

As King et al. (2010, p.265) suggest there are limited reports regarding treatment and interventions because there is an observed “lack of demand for psychological services for technology-based addictions”. Similarly, this is also reported in studies of different forms of behavioral addictions (Konkolý Thege et al., 2015) where it was concluded that the rates for seeking help were very low in the case of online chatting and video gaming, but more frequent in other forms of addictions such as excessive eating and exercising.

Another obstacle that can be detected in IGD therapeutic approaches is related to what has been earlier identified as lack of consensus. Since there is not a share comprehension of IGD; since there are so many definitions or even names for this disorder; since there is not a common understanding and agreement on the proposed criteria; and, since academia have not decided yet whether IGD shall fall under the category of disorder, syndrome, or addiction; it is safe to assume that all these factors are going to affect the final diagnosis. This means that there might be a variety of diagnoses, depending on the perspective that IGD is seen. Therefore, different diagnoses will call for different treatments.

As a prerequisite for an effective treatment planning, is an accurate assessment of the patient’s needs and characteristics. A multifactorial assessment, through observations, clinical interviews, tests, etc. will give an insight into each unique case. Then “a multidisciplinary treatment team is often required to develop and implement an individualized treatment plan that is determined most likely to be effective based on current

evidence, but flexible enough to adjust as the patient and family respond to that treatment” (Young & Abreu, 2017, p. 37).

What seems to be the prevailing approach to treatment for IGD are “some type of cognitive behavior therapy (CBT), psychopharmacology, or other self-devised interventions” Paul (2016, p.97). According to most recent European studies, only CBT has been reported to be effective in leading to significant changes in internet addiction (i.e., symptoms, time spent online, negative consequences, and comorbid symptoms) (European Parliamentary Research Service, 2019: 52).

CBT-based interventions are also supported by other studies. For instance, in a systematic review on the Effectiveness of Available Treatments for Gaming Disorders in Children and Adolescents, that was conducted by Lampropoulou et al (2022, p.5), it was confirmed that “cognitive-behavioral therapy (CBT) or CBT-based interventions are the most used; and psychopharmacology was effective when there was comorbidity with depression or attention-deficit/hyperactivity disorder”. Other therapeutic approaches combined CBT with family therapy or CBT-based therapies in specialized camps. Family involvement seemed to play a key role and sometimes it was regarded as the cornerstone of therapy.

Moreover, it is suggested that since there is research evidence that supports association between IGD with other types of addiction, it is reasonable that adapted treatment strategies originated from substance-related addictions could be employed in treating IGD (Müller et al., 2015). However, there is a major difference between substance addictions and behavioral addictions that are internet related. In the former case, complete abstinence will be attempted, as drugs, alcohol or smoke are not necessary to everyday functioning, and they are limited to harmful effect on the individual. On the contrary, in the case of internet related addictions, treatment should not focus on total absence from the internet, either it is media, gaming, or chatting. Online access is necessary not only for young people but also for adults.

It is a medium employed to educate themselves, entertain, communicate, etc. Therefore, instead of total absence from the internet, treatment should focus on mindful ways of using the internet, awareness, and impulse control. In this view, there could be transferals and borrowings from addiction treatment, but this should be done with extra care and by acknowledging the differences between substance addictions and behavioral addictions.

Nevertheless, there is a body of research that explores IGD treatment through the lenses of addiction. Such a study on addictions treatment, it was conducted by Goslar et al. (2020, p.14). Their study examined the “short-term and long-term efficacy of psychological, pharmacological, and combined treatments for internet addiction, sex addiction, and compulsive buying”. Interestingly, based on their findings, they concluded that treatments that were implemented for behavioral addictions, were effective in the short term only. For this reason, they proposed more rigorous trials that could provide further data on the issue of behavioral addiction treatment.

Other studies though, support that there is evidence suggesting that transferals of treatment approaches have positive effects in IGD treatment. For instance, in the meta-analysis study by Winkler et al. (2013), it is proposed that transferal of cognitive-behavioral therapy and psychopharmacological treatment from other behavioral addictions, had a positive impact in treating internet addiction related disorders. However, it should be reminded that there is a possibility of comorbidity of IGD with other disorders. Therefore, comorbidity should be acknowledged, and the therapeutic approaches should be managed in a holistic manner, addressing comorbidity and co-occurring disorders (e.g., by containing social skill trainings etc.)” (Müller et al., 2015, p. 572).

Other therapeutic approaches proposed by Wölfling et al. (2020) for IGD patients, involve techniques like motivational enhancement strategies or cognitive restructuring. They postulate that there is a good possibility for IGD patients to abandon dysfunctional behaviors

after treatment, which “could result in lower relapse rates compared to patients with substance- use disorders or Gambling Disorder” (ibid, p. 5). However, this is reported as an assumption that should be evaluated through follow-up studies and larger clinical samples.

As regards Applied Behavior Analysis therapeutic interventions, due to limited research only a few loosely related approaches were found. However, implicit reference to ABA interventions was detected in studies that employed self-monitoring processes to reduce Internet Gaming Behavior, Problematic Smartphone Use (PSU) misuse of social media, etc.

More explicitly, in the study by Kuczmierczyk, Walley, and Calhoun (1987) a combination of methods was employed to reduce game playing behavior. These involved self-monitoring, GSR (Galvanic Skin Response) biofeedback assisted relaxation training, in vivo exposure, and response prevention techniques. The interventions managed a 90% reduction in game playing behavior.

Several studies focused on Problematic Smartphone Use (PSU) behavior by using contingency management (CM) and deposit contract intervention. For instance, Jones et al. (2019) evaluated the effects of an interdependent group contingency on cell phone use in a high school class. Results indicated decrease in cell phone use at both the group and individual student level.

Accordingly, Hernan et al. (2019) used an interdependent group contingency, the Good Behavior Game, along with an antecedent strategy (a clear box where the students placed their phones), to reduce inappropriate phone use in two high school classrooms. Findings suggest increase in academic engagement and decrease in inappropriate use of mobile devices, whilst social validity data suggested that teachers and students viewed the intervention helpful. Similarly, Buttari et al. (2023) explored the effects of a contingency management and deposit contract intervention on PSU. Participants could earn back their

entire deposit by meeting daily usage goals and earn a \$20 cooperation bonus. Results indicate mean reduction of 40 % of PSU during intervention in comparison to baseline.

As mentioned earlier, background research indicates association between problematic aspects of gaming, substance-use disorders, and gambling (Potenza et al, 2020). In a case study conducted by Torres-Rodríguez, et. al (2019) Internet Gaming addiction/disorder was explored using an A-B-A withdrawal design. To collect data, they went through repeated main measures, and self-report diaries completed by the participants to record the number of hours spent on online video games. Findings suggest that all the “participants showed clinical improvement in the amount of time spent using video games and in the symptoms of IGD” (ibid, p. 11).

Regarding psychopharmacology, it is mainly proposed as a supplementary treatment that could assist psychotherapy. Due to lack of unifying psychiatric diagnosis, there is no specific medication that is recommended or has been approved for the treatment of Internet Related Disorders. However, there are limited reports on medication protocols based mainly on underlying or comorbid psychiatric conditions. Therefore, clinicians reported effective results using medications designed for those comorbid diagnoses. In this view, they have used “stimulants (attention deficit disorder); selective serotonin reuptake inhibitors (SSRIs) and norepinephrine– dopamine reuptake inhibitors (anxiety and depression; tobacco, alcohol, and other substance use); benzodiazepines (anxiety); and antipsychotic medications to support psychotherapy” (Young & Abreu, 2017, p.39). Moreover, Kuss & Lopez-Fernandez, 2016, suggest that escitalopram, bupropion, and methylphenidate have proven to be very effective with internet related addictions.

However, what needs to be clarified is that treatment with medication alone is not recommended. It should be used in parallel with psychotherapy, as it is suggested for other mental health disorders, or psychiatric conditions. There is evidence in psychiatry that

patients that were treated following a combined approach with psychotherapy and medication, they have performed much better compared to groups of patients on medication alone (Busch & Sandberg, 2016; Oliveira, Schwartz & Stahl (Eds.), 2014). Therefore, if psychopharmacology is proposed to the family, it will be more beneficial to also seek psychotherapy. This will facilitate and boost the effectiveness of the therapy and will support prevention of relapse.

Background Research on Internet Gaming Disorder

After having acknowledged research limitations in the field of internet gaming disorders and addictions, the focus now is turned on exploring further background research. The studies include four main sectors: (1) studies on internet/gaming/smartphone disorders; (2) studies on internet from the perspective of addiction; (3) studies on tests, scales, questionnaires, etc. on internet gaming disorder; and (4) psychometric properties, validation, cultural adaptation of internet gaming disorder tests. The first two fields will be addressed here by presenting studies that have been conducted during the last 20 years, with reference mainly to children and adolescent participants. These dimensions will narrow down background research on publications that are recent and relevant to the current study. As for the latter two fields, these will be addressed later (see next section), when analyzing the screening tools on internet related disorders and the respective psychometric properties.

Since the aim of this study is on the psychometric properties of the Greek version of IGDS9-SF, initially the studies that will be presented will be those that include Greek population. The first study has been conducted, as part of an important research project, EU NET ADB. It was carried out with the aim to assess prevalence and psychopathological correlates of IGD in seven European countries based on a large sample of 12,938 adolescents (14 to 17 years old) (Müller et al., 2015; Tsitsika et al., 2014). The study was funded by the European Commission's Safer Internet Programme, and the participant countries were

Greece, Germany, the Netherlands, Iceland, Poland, Romania, and Spain. It is reported as a cross-sectional school-based survey study (N=13,284; 53% females; mean age 15.8±0.7) that addressed the following issues: adolescents' internet access and use; positive, harmful, and risky online experiences; internet addictive behaviors; online communication and social networking; computer gaming and gambling. They used a general questionnaire for the sociodemographic characteristics; the 13-item self-report Scale for the Assessment of Internet and Computer game Addiction—Gaming Module; and, the Youth Self-Report, which is consisted of 112 items that assess competences and problem behaviors.

The findings of this project suggest that 1.6 % of the participants met criteria for IGD whilst 5.1 % were at risk for IGD. These rates increased when the sample included only regular online gamers, where 2.7 % met criteria for IGD and 8.4 % were at risk. Moreover, there was a reported prevalence for boys and a statistical significance between low academic performance and gaming. Interestingly, “girls with IGD showed significantly increased emotional and behavioral symptoms compared to boys” (Müller et al., 2015, p. 572). In addition, findings suggest that IGD was related to increased psychosocial problems, psychopathological symptoms, display of elevated scores in Aggressive Behavior, in Rule-breaking Behavior, in Social Problems, and in Thought Problems. No significant differences were reported on the results of each country. Only minor differences emerged, where Romania, Greece and Spain had the highest Internet Addiction scores and the respective scores of being at risk for developing Internet addiction. The countries with the lowest scores were Iceland, Holland, and Germany (https://www.youth-life.gr/documents/Internet-Addiction/GREEK_EU-Internet-Addiction-Behavior.pdf, accessed on 11/10/23)

Two more significant studies are focusing on Greek population. The former, is the study by Fisoun et al. (2012) that was a cross-sectional survey with a sample consisting of 1270 students (14-19 years old) in the island of Kos, Greece. Methodologically, they

employed a demographic questionnaire, the 8-question YDQ (Diagnostic Questionnaire for Internet Addiction) and the 20-question IAT (Internet Addiction Test). Comparative analysis between and within usage groups indicated the presence of antisocial and aggressive behaviors associated with dysfunctional internet use by both sexes, whilst boys and girls manifested internet addiction in different behaviors.

Similarly, Floros & Siomos (2013) conducted a cross-sectional study to 1971 high-school students to explore Social Networking (SN) motivation and a possible link with parenting style and cognitions related to Internet addiction disorder. For the purposes of data collection, they used a questionnaire with demographic and Internet use questions, a 14-item questionnaire on motives for participating in SN, the Parental Bonding Index (PBI) and the Online Cognitions Scale (OCS). Important findings emerged from this study suggesting that “optimal parental bonding reduces adolescent’ motivation to become involved with SN” (ibid, p. 533).

As mentioned earlier, a body of research on internet gaming disorder overlaps with behavioral addictions, gambling, substance use, obsession, and compulsivity. Initial studies used Internet Addiction Test by Young which is proposed as a multifactorial construct that functions as an umbrella term for different kind of online addictions (Kuss & Griffiths, 2012). Despite debates on definitions and diagnostic criteria, IGD is often described as a non-substance- related addiction, therefore there are several studies on internet gaming from the addiction perspective.

The American Society of Addiction Medicine defines addiction as “a treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and an individual’s life experiences. People with addiction seem to use substances or engage in behaviors that become compulsive and often continue despite harmful consequences” (<https://www.asam.org/quality-care/definition-of-addiction>, accessed

on 30/09/2023). It is apparent from the definition that addiction is not limited to substance use but it can also include other addictive behaviors.

Both IGD and behavioral addictions share the characteristic of impulsivity. For this reason, impulsivity can also be treated as a risk factor and/or as a criterion for diagnosing addiction disorders. In this field, Şalvarlı & Griffiths (2019) conducted a systematic review on IGD and impulsivity using empirical studies that were published between 2000-2019. Findings from 33 studies and 18,128 participants suggest that there is a positive relationship between impulsivity and IGD and this could possibly be attributed to altered neurobiological structures detected in participants with impulsivity. More specifically, neuropsychological impairments were detected in attention and in emotion regulation whilst it emerged a dysfunctional relationship between executive control and reward-seeking. Therefore, high level of impulsivity among gaming addicts could be attributed to these factors.

In line with these findings, are suggestions by Wölfling et al. (2020) who demonstrate similarities and differences between gambling disorder and internet gaming disorder patients. They argue that impulsivity along with impairments in decision making, and cognitive biases in the preference of immediate rewards are common characteristics that can be depicted in several addictive disorders. The similarities between the two groups of patients were found on the Delay Discounting Task, which shows a tendency on disregarding rewards faster. Similarly, results from the Iowa Gambling Task, indicated defects in decision making for both groups comparing to the control group. What seems to be more interesting for IGD research, is that “the IGD-group was able to shift towards more advantageous decision making, which might have important implications for therapeutic interventions” (ibid, p.4).

Screening tools on Internet Related Disorders

At the present time, there are at least 22 instruments (Anthony et al., 2023) that assess Internet Gaming Disorder and employ DSM-V criteria. Most of the tests use a Likert-type

scale with a variety of points ranging from 3 to 6. More explicitly, the tests that are more frequently used, irrespective of their psychometric properties, are: the 20-item Internet Gaming Disorder Test (IGDT-20), the 9-item Internet Gaming Disorder Scale–Short-Form (IGDS9-SF), the 10-item Internet Gaming Disorder Test (IGDT-10), the 27-item Internet Gaming Disorder Scale (IGDS), the Gaming Addiction Scale for Adolescents (GASA), the Problem Videogame Playing Scale (PVPS), the Young Internet Addiction Test (YIAT) (Young, 1996) and the Young Internet Addiction Scale (YIAS) (Young, 1998) (King et al., 2013; King et al., 2020 ; Finserås et al., 2019). The GASA and the YIAT are reported to provide the most relevant clinical information whilst the IGDS9-SF (Pontes & Griffiths, 2014) has been validated and translated in at least 16 languages and it is regarded as one of the best tests concerning its psychometric properties. For this reason, these three tests will be presented in more detail.

The Gaming Addiction Scale for Adolescents (GASA)

As mentioned earlier, GASA (Game Addiction Scale for Adolescents) (12–16) is one of the most frequently used questionnaires that provides accurate information for clinical assessment regarding disordered gaming in adolescents. GASA was developed by Lemmens et al. (2009) to measure computer and videogame addiction. They have created 21 items to measure the following seven criteria: salience, tolerance, mood modification, relapse, withdrawal, conflict, and problems. The last criterion refers to “problems” caused by excessive gaming, and it refers to displacement of problems due to game addiction and negligence of other activities (school, work, socializing, etc.). Moreover, the concept of “problems” is also associated with the individual per se, as intrapsychic conflict, due to loss of control over gaming. It was a design of three items per criterion and in parallel, they have also developed a shortened 7-item version. What seems to be important about this scale, is

that it was designed to correspond to the developmental stage of an adolescent (André et al., 2022).

Concerning the psychometric properties of GASA, it was found that “both versions showed good concurrent validity across samples, as indicated by the consistent correlations with usage, loneliness, life satisfaction, social competence, and aggression” (Lemmens et al., 2009, p.77). This was verified by the study of André et al. (2022) that confirmed the validity of the core approach two-factor model for the Child and adolescent psychiatry sample. Moreover, they confirmed the theoretical psycho-social model that excess gaming results in negative social and emotional consequences.

One of the limitations of the scale, acknowledged though by the developers, is that the proposed items target specifically the developmental level of adolescents (e.g., their homework or relation to their parents). Hence, more research shall explore whether some of our items could be amended to meet the needs and experiences of younger children or adults. Moreover, it is suggested that GASA shall include more items that would the complexity of gaming behavior.

The Young Internet Addiction Scale (YIAS)

The YIAS is a self-report questionnaire designed for the assessment of internet addiction in adolescents and young adults. The developer, Dr. Kimberly Young, aimed at assessing and describing excessive/compulsive use of the internet that could affect daily function. The first version that was developed (1998) it was based on the DSM-IV criteria for pathological gambling (e.g., tolerance, withdrawal symptoms, mood modification or relapse). It uses a 6-point Likert-type scale exploring internet usage and behaviors. The scores classify the participants into four categories by the cutoff values as indicated by Young: <20: below average users; 20–49: average users; 50–79: occasional/frequent problems with internet use; and 80–100: significant problems with internet use.

The YIAS is one of the early assessment tools and it has been used widely for internet research -2837 citations- (King et al., 2020). All assessments of its psychometric properties demonstrate consistent results on the factor analysis, that ranged from one-to-six. Furthermore, when some factors were extracted, there were depicted differences in the distribution of the items (Servidio, 2017). In general, most studies that have translated or validated YIAS, recommend it as a test with very good psychometric properties in terms of validity and reliability.

The Internet Gaming Disorder Scale–Short-Form (IGDS9-SF) (Appendix 1)

In a systematic review on the Psychometric Properties of the Internet Gaming Disorder Scale–Short-Form, Poon et al. (2021) postulate that “IGDS9-SF is among the best regarding its psychometric properties”. Similarly, in a review of all -32 at that moment- screening instruments available for dysfunctional gaming, King et al. (2020) reported that the IGDS9-SF was among the best tools in relation to its psychometric properties and compared with other related screening tests. In line with these studies, it was reported that among 22 reviewed measures, IGDS9-SF was “the most frequently examined measure across all studies (n = 26), followed by IGDT- 10 (n = 5)” (Anthony et al., 2022, p.4).

Moreover, it was identified as a measure with “adequate structural validity” “adequate internal consistency (Cronbach’s α or ρ \geq 0.70)”; “adequate test-retest reliability (intra-class correlation coefficient [ICC] or ρ \geq 0.70)”; “it had strong correlations (Pearson’s r \geq 0.70) with preexisting instruments for problem gaming” ensuring criterion validity; “adequate construct validity”, and “established measurement invariance (age and gender)” (Anthony et al., 2022, p. 6-10). These findings on the psychometric properties of IGDS9-SF coincide with the findings by Poon et al. (2021). After having examined 21 studies in 15 language versions, IGDS9-SF showed adequate internal consistency, excellent criterion validity, measurement invariance across gender and age, and a unidimensional factor structure across all studies.

Therefore, the psychometric properties of IGDS9-SF have been established both across similar screenings tools (Anthony et al., 2022) and across studies that have used it in different language versions (Poon et al., 2021).

In view of the above, IGDS9-SF has been chosen to be translated and validated for Greek-speaking communities because it meets a range of criteria. As stated earlier, it is proposed as among the best and most frequently used screening tools in the field of Internet Gaming Disorder. Moreover, it was designed according to the DSM-V criteria, and this is the implemented version that resulted from previous tests.

More specifically, this test was developed by Pontes & Griffiths in 2015. It is described by the developers as “the first brief standardized psychometric tool to assess Internet Gaming Disorder (IGD) according to the nine clinical criteria developed by the American Psychiatric Association in the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)” (<https://www.halleypontes.com/tests/igds9-sf/>, accessed in 27/4/23).

For the exploration of its psychometric properties, 1060 gamers were recruited (85.1% males, mean age 27 years) through online gaming forums. All nine items of the test proved to be valid, reliable, and appropriate for measuring IGD. Regarding factor analysis, results from Exploratory Factor Analysis produced a single-factor structure for IGD that was supported by Confirmatory Analysis (see Fig. 1 below) (Pontes & Griffiths, 2015).

In summary, after having reviewed background research and theory, IGDS9-SF emerges as a valid and reliable screening test for measuring Internet Gaming Disorder, as this is described by DSM-V (APA, 2013). It represents all nine criteria and its psychometric properties have been validated across different samples and languages. As King et al. (2020, p. 17) argue, after having reviewed 22 gaming tests, “there were some relatively stronger tools (i.e., the AICA-S gaming, GAS-7, IGDT-10, IGDS9-SF, and Lemmens IGD-9),

identified on the basis of conceptual and/or practical considerations and greater volume of evidential support for their psychometric properties”.

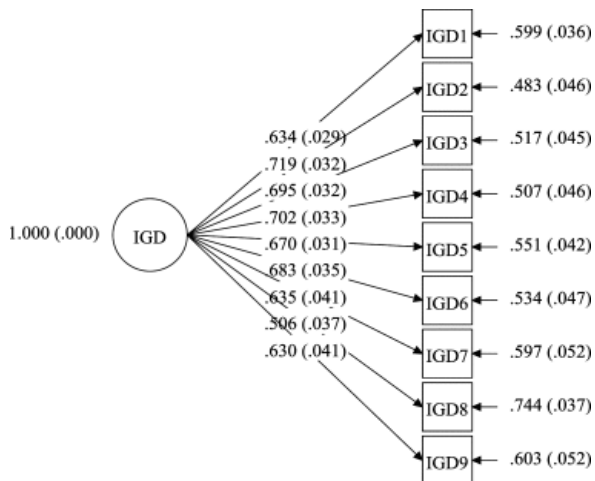


Fig. 1. Graphical summary of CFA results obtained from the nine items of the IGD9-SF on Sample 2 (n = 528) (Pontes & Griffiths, 2015, p.141).

Purpose of the study

The aim of the current study is twofold: Firstly, it will translate and culturally adapt IGD9-SF in Greek; secondly, the psychometric properties of the Greek version will be explored and validated. To my knowledge, at the moment of writing, there are no screening tools in Greek for the assessment of Internet Gaming Disorder. The purpose of this study is to fill this gap and to provide to therapists a screening tool for the assessment of IGD.

II. METHODOLOGY

Design of the study

The study unfolded in three major steps. The first step was the back-translation process. This involved translators, other than the researcher, who volunteered to assist with the process. After the completion of the translation, 7 adolescents were recruited, to give their insights into the test. The final Greek version of the test was completed based on their comments, interpretations, and questions.

The next step entailed the design of the questionnaire. Prior to the design of the measures, it was important for ethical reasons to design the consent and debriefing forms. One of the problems that emerged was related to the parental consent forms. Since the target population were adolescents, it was mandatory to have the parents' consent, before obtaining the participants' consent. This was more complicated because the survey was online.

To address this problem, two consent forms were included. The first was addressing the parents who had to agree and then sign the consent form. Then, a second consent form was designed for the adolescent participants. It was important for the second consent form, to reassure the participants that their responses were anonymous and that their parents will not have access to their responses. Lastly, a debriefing form was designed, that would follow the end of the questionnaire.

The questionnaire included three parts: the demographics, the Greek version of IGD9-SF, and the Greek version of IAT. For designing the demographic questions, previous studies of translation and validation of the IGD9-SF test were used. This was done for two reasons: to maintain consistency across similar studies, and to produce results that could be cross-referenced.

The last step was the design of the Qualtrics survey and the recruitment of the participants. For the design, the Qualtrics guidance was followed. A demo survey was tried

before sending the official one. After implementing some mistakes, the survey was published. For the recruitment of participants, friends, family, and colleagues were asked to forward the link to families who had children at the adolescent developmental stage. To ensure maximum participation, the survey link was also published in social media pages that were of parental or educational interest. The choice of game platforms was rejected because the parental consent was needed prior filling the survey. Due to time limitations, the choice of printing and giving the questionnaire in person, was also avoided. However, for future consideration, a hybrid form would have been better, thus combining the digital survey with printed survey, to attract more participants.

The last stage of the study was the statistical analysis and interpretation of the collected data. For this stage the IBM SPSS Statistics Software version 29 for Mac OS was used.

Participants

A significant aspect of research is sampling because it is one of the factors that can ensure the validity and reliability of the study. The target population for this study were Greek-speaking adolescents (aged between 12-18) who play video games. For the data collection process, a link to an online survey was created and hosted on Qualtrics (www.qualtrics.com). The survey link was employed for carrying out the data collection and it included the study's psychometric instruments -the Greek version of the IGDS9-SF & the respective Greek version of IAT- along with the consent forms and the demographic questions. The link was disseminated through personal social media channels (Facebook & Instagram); through emails to friends, family, and colleagues; and through specific Facebook pages that could attract the interest of the target group (e.g., pages that included the terms “adolescents”, “parents”, “educators”, “game activities”, etc.). The data collection stage lasted one month, from August 20th until September 20th, 2023.

The total sample that completed the survey was 268 adolescents, but only 241 were considered valid after cleaning up the data. The 27 cases were removed because they have not completed some questions from the two tests, or they did not meet the age criterion (12-18 years old). The final number of participants is not only representative in terms of gender but also in terms of location and possibly socioeconomic status. In this view, the participants come from a range of areas in Greece (Athens, Crete, Peloponnese, Lipsous Island, et al.) and from a range of areas in Athens. Both private and public schools were included, and it is believed that the statistical analysis could produce valid results in terms of sample's representativeness (Zhao, 2020). As Vasileiou et al. (2018) argue the adequacy of a sample is affirmed by the composition, size, and representativeness in gender, ethnicity, socioeconomic status, educational background, etc.

However, it should be noted that the process followed for the sample of this study, belongs to the category of convenience sampling, and as such it has limitations that need to be acknowledged. Convenience, accidental or opportunity sampling, refers to available and accessible individuals. The sample is chosen based on access and this type of sampling jeopardizes generalizability (Cohen, Manion, & Morrison, 2017; Salome, 2021).

Ethical Standards

The study follows the ethical standards and code of conduct of psychologists as stated by the American Psychological Association (<https://www.apa.org/ethics/code>, accessed 9/07/2023). More explicitly, as stated under 8.01, Institutional Approval was obtained prior to conducting the research. The study was examined and approved by the Institutional Review Board of the American College of Greece prior the beginning of the research (Appendix G).

Moreover, the research was conducted in accordance with the approved research protocol. As stated under "8.02 Informed Consent to Research", informed consent was obtained -as required in Standard 3.10- and the participants were informed about: (1) the

purpose of the research, expected duration, and procedures; (2) their right to decline to participate and to withdraw at any point without any consequences; (3) any prospective research benefits; and (4) whom to contact for questions about the research (ibid, p. 11) (see Appendix D for Consent Forms).

Regarding Debriefing (8.08), the participants were informed about: (1) opportunities to obtain appropriate information about the nature, results, and conclusions of the research; (2) procedures to follow if they feel preoccupied, and (3) assurance that the researcher will take reasonable steps to minimize the harm if any (see Appendix E for the Debriefing Form).

In summary, all provisions were made for confidentiality, anonymity, institutional approval, parental consent form, informed consent form for the adolescent participants, and debriefing.

Back-Translation Process

For this process, previous validation/translation studies of the test were used, along with the International Test Commission Guidelines for Translating and Adapting Tests (2017, Second edition) [www.InTestCom.org]. Back-translation is considered the “most popular quality assessment tool used in international and cross-cultural social research” (Tyupa, 2011, p.36). One of the qualities of this type of translation is that it reveals possible discrepancies between the two languages. Moreover, with the translation in the original language it is as if “it permits a greater involvement of the original author” (Epstein et al, 2015, p. 361). However, it should be noted that it cannot function as a stand-alone tool, but as part of a complicated translation process formatted according to the research field and the reasons for the translation.

In this view, the first stage in adaptation was the forward translation from the original language (source language) to the target language (English to Greek). To produce more accurate translation two bilingual translators were employed whose native language is Greek

(target language). As proposed, the former translation was conducted by a person who had a background in psychology and was aware of the elements that the test addresses (Greek female bilingual psychologist). The latter translator, often named “naïve translator”, was neither aware nor informed of the specific properties of the test (Beaton et al., 2000). For the second translation, a Greek philologist was employed who holds the Cambridge Proficiency in English and a degree in Greek Philology. After the generation of the two independent translations, a synthesis of the translations was followed that integrated the two perspectives.

For the following stage two other translators, blind to the original version, translated the test back into the original language (English). This is a validity practice that ensures that the new version is “reflecting the same item content as the original versions and magnifies unclear wording in the translations” (ibid, p.3188). A similar practice to the previous one was followed for the choice of the new translators. The former translator was a bilingual friend who holds a master’s degree in child psychology. The “naïve” translator was an English Literature graduate who works as a full-time translator.

For the final stage, the test was admitted to 7 adolescents (13-17), followed by an interview to gain insights into the participants’ interpretations of each item. This was the part that is often referred as the “cross-cultural adaptation” and aimed at consistency in the content and face validity among the original and target versions of the test (ITC, 2017, p.10). After implementing the final product of this test, this was included in the online survey that was created and hosted on Qualtrics (www.qualtrics.com). Then it was subjected for validity and reliability testing to a larger population of adolescents.

Measures

Demographics and internet-related questions

After the consent forms, the survey addressed socio-demographic characteristics of the participants. The survey included questions that were analogous to alike psychometric

studies that have used the IGDS9-SF (e.g., Monacis et al., 2016; Pontes & Griffiths, 2016; Schivinski et al. 2018; Stavropoulos et al., 2017, etc.) The demographic questions included sex, age, and educational competence. Then it was followed by game-related behaviors and characteristics, such as age of first-time exposure to internet, hours devoted to internet gaming, number of fellow players, and reasons for online gaming.

As regards the hours spent on internet gaming, it was separated into two questions: during holidays and during school period. Because the survey was published towards the end of the summer holidays, the dual perspective functioned as a shield for possible biases. In this way the participants could differentiate the time that they spend on gaming during vacations and during school period, and not present data that could possibly be misleading. The part with the socio-demographic and game-related questions aimed at creating a more complete profile for the respondents as personalities and as gamers (Appendix F). This could assist into exploring the psychometric properties of the test with greater accuracy.

The Greek version of the 9-item Internet Gaming Disorder Scale–Short-Form (IGDS9-SF)

After the demographic questions, the participants responded to the Greek version of the 9-item test that it is under validation IGDS9-SF (Appendix B). The nine items have been translated and adapted into the Greek language. The participants report to 9 questions, one for each DSM-V diagnostic criterion for IGD. It is designed in a five-point Likert scale ranging from “never” to “very often”. It is clear to the participant via written instructions that they need to reply to the questions based on their gaming activity the last year (12 months). Then it was clarified that gaming activity includes games that are played at the computer/laptop, gaming console, or any other kind of device (smartphone, tablet etc.) both online and offline.

Regarding the scoring information, available to therapists, counselors, etc., the developers (Pontes & Griffiths, 2015) explain that the total score is obtained by summing up all the responses. The value of each answer ranges from 1 (never) to 5 (very often), meaning

that the total score can range from 9 to 45. A gamer can be identified as “disordered gamer” when the participant has endorsed at least five criteria answering, “very often” (5).

The Greek version of Internet Addiction Test (IAT)

The Greek version of Internet Addiction Test (IAT) (Appendix C) (original version by Young, 1998) was employed as the tool that could validate the psychometric properties of the current test. Even though the two tests have many differences, both theoretically and design wise, IAT is the closest test that could be used in a supplementary way for examining the psychometric properties of the Greek version of IGDS9-SF.

The Greek version of IAT (<https://www.oasis.org.gr/wp-content/uploads/2015/09/diadiktio.pdf>, accessed on 27/06/2023) has shown good psychometric properties, comparable with the original IAT and the previously published translated versions (Tsimtsiou et al., 2014, p.187). In general, it is a test that has been widely used in internet addiction research, and gaming addiction one of the dimensions that it explores.

As for the structural characteristics, IAT is also a self-reported test, but it has more items (20-item). Like IGDS9-SF, it uses a 5-point Likert scale that ranges from 0 (never) to 5 (always). The scoring process for IAT is the same as IGDS9-SF. Similarly, the higher the score, the higher is the severity of the disorder/addiction. For IAT The maximum score is 100 points. The participants who score between 0 to 30, are considered to reflect a normal level of Internet usage; scores of 31 to 49 indicate the presence of a mild level of Internet addiction; 50 to 79 reflect the presence of a moderate level; and scores of 80 to 100 indicate a severe dependence upon the Internet (Young, 1998, <https://www.iitk.ac.in/counsel/resources/IATManual.pdf>, accessed on 27/06/23).

Regarding the psychometric properties of IAT, reliability tests indicated that the Cronbach’s alpha was 0.91 and internal consistency has not been affected when the items

were removed one at a-time. Moreover, “the Pearson correlation coefficient, that reflected the test– retest reliability, was $r_{tt} = 0.84, p < 0.001$ ” (Tsimtsiou et al., 2014, p. 191). As regards the validity, face validity was confirmed by 83.6 % (117/140) of the students, with a mean rate of 7.1 (SD = 2.0); convergent validity, indicated a positive correlation with the parameters of daily hours of internet use (Spearman’s rho 0.48, $p < 0.001$), online gambling ($p = 0.002$), and pornographic sites ($p = 0.003$). Lastly, the results of the Greek version of IAT showed Internet addiction symptoms cluster into three factors: “Psychological/Emotional Conflict”, “Time Management” and “Neglect Work”.

Statistical Procedure

As mentioned earlier, the survey link was hosted on Qualtrics platform. Data were exported to an excel file, they were cleaned up and then imported for the statistical analysis on SPSS. The final data consisted only of participants who had fully completed both questionnaires, IGDS9-SF and IAT. Statistical analysis was carried out using IBM SPSS Statistics Software version 29 for Mac OS. Descriptive analysis was employed for exploring the participants’ demographic characteristics and game-related behaviors. Then, it was followed by inferential analysis for evaluating the reliability and validity of the Greek version of the IGDS9-SF.

Reliability analysis

Reliability refers to the property of a test to produce consistently and accurately measures. It is often referred as the predictive value of the test and certifies that the measure is an accurate representation of the participant's performance rather than the result of unrelated environmental, psychological, or methodological factors. Reliability was assessed through Cronbach’s alpha coefficient analysis in relation to the sample as an entity and as separate categories.

Validity analysis

As regards validity, it refers to the extent that the test measures what is designed to measure. The Greek version of IGDS9-SF was assessed on construct validity; thus, it was examined whether it really targets the construct of interest, thus internet gaming disorder. Moreover, it was assessed by testing Pearson correlation in relation to the IAT Greek version, which is a similar test that measures internet addiction. Pearson product-moment correlations were employed between the Greek versions of IGDS9-SF and IAT.

III. RESULTS

Demographics Analysis

As stated earlier, the participants of the survey were adolescents, aged 12-18. In total, 268 questionnaires were completed, but only 241 were used for the analysis. The main reason for excluding questionnaires, was that the participants have not replied to all the questions, and that they did not meet the age criterion. In this view, the final sample was consisted of 241 participants.

Regarding the specific characteristics of the sample, the boys were 131 (54.4 %) whilst the girls were 110 (45.6 %) (see Table 1). The average age of the participants was 14.9 years old (median 14.9, S.D.= 1.575) (see Table 1). The average age for the boys was 14.7 and the for the girls 15. There is no statistically significant relationship between the variables age and gender, therefore the sample is considered to have reliable characteristics.

The questions Q9-Q17 were designed to explore the habits of the adolescents regarding internet use, gaming, and educational accomplishment. It is important to note that the responses are self-reports, thus might be liable to false accounts, subjective, and/or affected by social desirability biases. In fact, numerous studies have shown that the presence of several factors, such as depression, anxiety, etc., might skew the results of studies which rely on self-reports (Saeedi, 2020). Nonetheless, the participants' self-reports reveal interesting aspects of internet use that might be related to the adolescents' social and game habits and respective educational achievements.

More specifically, as regards the age that the participants were firstly exposed to the internet, the mean age was 8.13 (Median=8, S.D.=2.17). The highest frequencies were reported for the age of 10 (38), 5 (36), and 8 (30) (see Table 2). What seems to be troubling for future internet-related studies is that 75 participants reported that they have started using the internet between the ages of 2-6. This means that 31 % of the participants were exposed

to the internet prior attending primary education. A chi-square test of independence was performed to evaluate the relationship between gender and age that the participants have started using the internet. The relationship between these variables was not significant, $\chi^2(12, 241) = 9.372, p = .674$ (see Table 3).

Comparing these findings with the sample that was used by the developers of the test, there are many similarities. As Pontes & Griffiths (2015, p. 138) suggest, the participants of their study reported “they first played video games at a very early age, that is, before the age of 6 years (45.8%, $n = 485$) and between the age of 7 and 12 years (44.3%, $n = 470$)”.

As regards the time that the participants devote to internet gaming, the reports indicate a mean score of 6.25 days per week, meaning that they play almost every day. More precisely, during holidays the mean hours that they spend on videogaming were 3.29 hours per day (S.D.=1.77), whilst during school period the mean time was 1.6 hours (S.D.=1.12). A chi-square test of independence was performed to evaluate the relationship between the two periods. The relationship between these variables was statistically significant, $\chi^2(81, 241) = 423.41, p = < .001$.

It seems that only a few cases meet the criteria of playing more than 30 hours per week, during schooltime period. This is completely different for holidays, as it appears that the time devoted to playing games has increased. More specifically, during holidays, 59 participants (24.4 %) reported playing more than 5 hours per day (thus, more than 30 hours per week) (see Fig. 1). The frequencies change for schooltime period (see Fig. 2), with only 8 (3.3%) participants reporting that they play more than 5 hours per day.

Concerning the relationship between gender and hours spent daily on internet gaming, the chi-square test revealed that the relationship was statistically significant, for both periods: during holidays it was $\chi^2(9, 241) = 54.883, p = < .001$ and during school period it was $\chi^2(9, 241) = 20.613, p = < .001$ (see Table 5). In this view, boys seem to spend more days and

more hours on internet gaming than girl participants. This is consistent with the assumed prevalence, that male adolescents present more risks in developing IGD.

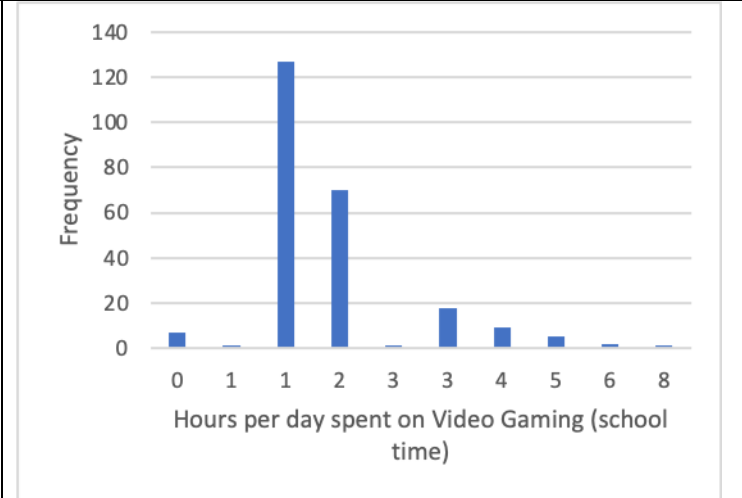
Fig 1: Hours played during holiday period.

		Q11			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	36	14.9	14.9	14.9
	2	55	22.8	22.8	37.8
	3	54	22.4	22.4	60.2
	4	37	15.4	15.4	75.5
	5	36	14.9	14.9	90.5
	6	15	6.2	6.2	96.7
	7	4	1.7	1.7	98.3
	9	1	.4	.4	98.8
	10	2	.8	.8	99.6
	11	1	.4	.4	100.0
	Total		241	100.0	100.0



		Q12			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	7	2.9	2.9	2.9
	1	1	.4	.4	3.3
	1	127	52.7	52.7	56.0
	2	70	29.0	29.0	85.1
	3	1	.4	.4	85.5
	3	18	7.5	7.5	92.9
	4	9	3.7	3.7	96.7
	5	5	2.1	2.1	98.8
	6	2	.8	.8	99.6
	8	1	.4	.4	100.0
Total		241	100.0	100.0	

Fig 2: Hours played during school period.



In Pontes & Griffiths’ (2015) study, “almost one-third of the total sample (26.7%, n = 283) reported playing games for more than 30 h per week”, thus one-third of the sample could be described as dysfunctional gamers. This means, that the participants of this study performed similar scores as gamers only during holidays. This difference could be attributed

to age variables, since the current study included only students, whilst the study by the developers had no such restriction.

Fig.3: Describing educational competence.

Q17

Πώς θα περιέγραφες την επίδοσή σου στο σχολείο, σύμφωνα με το μέσο όρο της βαθμολογίας σου;

Πώς θα περιέγραφες την επίδοσή σου στο σχολείο, σύμφωνα με το μέσο όρο της βαθμολογίας σου;

10-13

14-16

17-18

19-20

κάτω από 10

Δεν απαντώ

The last parameter that was explored for the sociodemographic characteristics was the participants' self-reports regarding their school performance. Most of the students described their grades between 14-16 (N=96, 39.8%) and between 17-18 (N=86, 35.7%) (see Table 5). Interestingly, a chi-square test of independence was performed to evaluate the relationship between gender and reported school performance. The relationship between these variables was statistically significant, $\chi^2(4, 241) = 42.587, p < .001$. This is also evident through the performance of an Independent Variable T-test. An independent-samples t-test was conducted to compare the reported school performance between the group of boys and the group of girls. There was a statistically significant difference in the scores for boys (M=2.40, SD=.792) and girls (M=3.08, SD=.847); $t(225) = -6.36, p < .001$. The girls reported higher school performance comparing to the boys (see Table 6).

By comparing the time spent on Internet and the self-reported school competence, it emerged a statistically significant relationship (.004) that indicates that more hours on internet gaming were related to lower school competence and lower grades (see Table 7).

The aspect of academic performance is interesting for further research as there is evidence from previous studies that the “IGD group of participants ($M = 1.92$, $SD = 0.85$) had lower mean scores in academic performance than non-problematic ($M = 2.18$, $SD = 0.59$) and non-gamers ($M = 2.18$, $SD = 0.59$; each $p < 0.001$), whilst the same was true for at-risk gamers ($M = 2.02$, $SD = 0.67$; each $p < 0.001$)” (Müller et al., 2015, p.569).

In summary, the demographic data provided interesting elements for the profile of the participants, by providing age and gender characteristics along with internet gaming habits.

Reliability

After having described the sociodemographic elements of the participants and after having reported on the statistically significant relationships between some variables, now the focus is turned on the psychometric properties of the test and the aspect of reliability.

Reliability means that the test under exploration, thus the Greek version of IGDS9-SF, should constantly reflect the construct that it is measuring, hence Internet Game Disorder. This means if other things being equal, “a person should get the same score on a questionnaire if they complete it at two different points in time” (Field, 2018, p.673). This is often found as test–retest reliability, but due to limitations of time, retest has not been used in this case.

Alternatively, reliability can be perceived as a property of the test that permits the production of the same score for two participants who are the same in terms of the construct being measured, thus Internet Gaming Disorder. “In statistical terms, the usual way to look at reliability is based on the idea that individual items (or sets of items) should produce results consistent with the overall questionnaire” (ibid, p. 674). A feasible practice to achieve this would be to use split-half reliability. However, this presents the problem that there are several ways “in which a set of data can be split into two and so the results could be a product of the random way in which the data were split” (Field, 2018, p.674).

This problem was addressed by Cronbach (1951) through the development of a measure that is almost equivalent to splitting data in two and calculating the correlation coefficient for each split. The average of these values is Cronbach's alpha, α , the most widely used indicator of scale reliability. As Alkhadim (2022) postulates, it is a universally used index of internal consistency reliability that exceeds 256,000 hits in Google's Scholar database. This suggests widespread use of Cronbach's alpha, despite noticeable shortcomings and challenges.

As regards internal consistency it is often considered acceptable when the value is .7 or higher (Bonett & Wright, 2015; Dunn, et al., 2014; Foster, 2021). Kline (2000) suggests that for cognitive tests (e.g., intelligence tests) .8 is an accepted value. However, it is more appropriate for ability tests to use a cut-off point of .7. As there is diversity of psychological constructs, even values below .7 should be expected. Hinton, McMurray & Brownlow (2014 p. 124), suggest "the use of Cronbach's Alpha because of its flexibility in application to both dichotomous/binary responses, and data measured on a larger scale; it will offer reliability in calculation based on the whole of the questionnaire".

For this study, Cronbach alpha was performed for the 9 items of the Greek version of IGDS9-SF and internal consistency was $\alpha = .939$, indicating excellent reliability for the instrument (see Table 8 for further statistical analysis on each item). Respectively, internal consistency for the Greek version of IAT was $\alpha = .940$ for 20 items, indicating excellent reliability as well (see Table 9 for further statistical analysis on each item).

As for the Corrected Item-Total Correlation column, it functions as an index for the connection between answers to specific questions and the questionnaire's overall score. A reliable question would have a positive correlation with the whole sum, preferably being above .3. In the case of IGDS9-SF, all 9 items range from .59 (Question 8) to .81 (see Table 8). This means that all correlations between individual responses to the total score are high

and strong. The respective correlations for the Greek version of IAT are .484 (lowest-Question 4) and .816 (higher-Question 15). The only exception is Question 7 of the 20 items which scored as low as .022. This item displays a weak positive relationship to the total; thus, it is poor on reliability, and it might affect the findings from the whole scale.

Looking at the content of Question 7, it explores whether the participants check their e-mails before doing something else that they must do. Given that the participants are adolescents who communicate mainly through social media platforms and other communication apps (e.g., WhatsApp, Viber, Snapchat, etc.), it could be possibly argued that this item might be not relevant to this target group. For this reason, it is proposed a possible replacement with a reference on social media when the test is not addressing adults. For instance, a possible alternative could be “How often do you check your social media accounts/communication apps before doing something else that you must do”.

The impact that individual items can have on the total reliability of the scale are stressed by the inverse relationship between the Corrected Item-Total Correlation and the Alpha-if-Item-Deleted columns. The significance of the weak relationship between question 7 and the total score of the IAT is reflected in the alpha score if this item is removed. Given that the alpha value for IAT is $\alpha = .940$ for 20 items, when omitting question 7 from the test, the index rises to $\alpha = .948$. Given the small impact on the total alpha value and the slight rise, question 7 despite having a weak reliability, it does not have a negative effect on the total reliability of the test. This is almost in line with the findings by Tsimtsiou et al. (2014), who produced Cronbach's alpha 0.91 and internal consistency has not been affected when the items were removed one at a-time.

In addition to the above indices, Squared Multiple Correlation is a value that represents variance in the total score as explained by each item separately. It functions as an indication of each item's contribution to the overall predictive power of the test. For the

Greek version of IGDS9-SF, this ranges from .367 to .689, indicating a strong predictive power that contributes to the reliability and internal consistency of the test. In a similar manner, the respective indices for the Greek version of IAT range from .483 to .737 (see Table 9).

As for the total scale statistics, the Greek version of IGDS9-SF has a mean score of 22.49 with S.D.=8.6. The small standard deviation shows that the scores are not widespread. Similarly, the IAT mean score is 57.64 with S.D.=15.15. In view of the above, it can be argued that the adaptation of IGDS9-SF in Greek has an excellent internal consistency, which can be compared with similar adaptations in other languages and the original version of the test.

To explore internal consistency, two more processes were followed: split-half the items and split-half the sample. Both processes produced high internal consistency as measured by the Cronbach's alpha: = .87 when splitting in half the items and = .94 when splitting in half the sample (see Table 12). More specifically, the split-half items produced a statistically significant relation, with overall agreement Kappa = .24 (S.D. = 0.14), Spearman-Brown Coefficient = .928, and ANOVA Cochran's test between items = .245 (df 8, sig <.001).

Lastly, another parameter that might affect both validity and reliability in applied psychology, is the length of the test and the time that it requires to be completed. Kline (2000:48) argues that a test might be more useful if it is short and there could be "a trade-off between brevity and reliability" but "understanding the relationship between test reliability and length" could assist in avoiding statistical errors. In this view, the reliability of the current test is not jeopardized by the element of length, as it is a nine-item short scale that can be completed in less than 3 minutes.

Validity

Cohen, Manion & Morrison (2017, p.245) suggest that validity is essentially a “demonstration that a particular instrument in fact measures what it intends, purports or claims to measure”. Different types of validity co-exist depending on the type of instrument or research (qualitative, quantitative, mixed methods, etc.). Construct validity is described as the fundamental/queen of the types of validity (Slanley, 2017) because it incorporates supplementary types of validity. Construct validity is the measure of how well the items selected for the construct measure the actual construct and this is established through, convergent and discriminant validity. As Cooper and Schindler (2001) suggest convergent techniques infer that different tests that explore similar construct should have a relatively high inter-correlation. On the other hand, discriminant validity is approached through factor analysis, “which clusters together similar issues and separates them from others” Cohen, Manion & Morrison (2017, p.257).

For construct validity, a Pearson correlation coefficient was computed to assess the linear relationship between the two tests. The use of Pearson product-moment correlation revealed a significant positive relationship between IGDS9-SF ($M= 2.42$, $S.D.=1.112$) and IAT ($M= 3.64$, $S.D.= 1.083$), $r(241) = .45$, $p < .001$. (see Table 10).

After this, convergent validity was calculated, to check the correlations of each item within one scale. All the items of the IGDS9-SF presented good convergent validity ranging between .5 to .7 (see Table 11). The IAT did not perform such good scores, especially for items 7 and 12 (see Table 11). Item 7 has already been discussed and alterations were proposed when admitting it to adolescents. As for item 12, it could be described as an abstract item because the adolescent needs to imagine his life without the internet and report whether this causes fear or anxiety. If the question was in the form of Yes/No, results could have been

different. However, questioning how often you experience feelings like fear without internet, could be a little vague and abstract for an adolescent.

Factor Analysis

Factor analysis presented great challenges due to limitations of the number of items. Since, there are only 9 items, only one factor emerged. This is consistent with what the developers have argued “Exploratory Factor analysis revealed a single factor explaining 45.4% of the total variance of the construct” (Pontes & Griffiths, 2015: 139). Indicative of the steadiness is that Factor Analysis reported “1 component extracted” (see Table 13). As regards, Bartlett’s Test of Sphericity, which provides a measure of the statistical probability that the correlation matrix has significant correlations among some of its items, the results were significant, $\chi^2(df\ 36) = 1588$ ($p < 0.001$), which indicates its suitability for factor analysis. Kaiser–Meyer–Olkin measure of sampling adequacy (MSA indicates the appropriateness of the data for factor analysis, was 0.949, thus considered appropriate for factor analysis.

IV. DISCUSSION

In the literature IGDS9-SF is considered as one of the most validated and most frequently tools for the assessment of IGD. Its psychometric properties have been validated by the developers (Pontes & Griffiths, 2015) and other scholars in the field. The test is comprised by 9 items that correspond to the 9 diagnostic criteria proposed by DSM-V. It is a self-report scale that uses a 5-point Likert scale: 1 (“Never”), 2 (“Rarely”), 3 (“Sometimes”), 4 (“Often”), and 5 (“Very Often”). The final score is calculated by summing the and total scores can range from 9 to 45.

An earlier and longer version of this scale was used to examine the test’s concurrent validity. It was the IGD-20 self-report Test (Pontes, Király, Demetrovics, & Griffiths, 2014) that has 20 items and uses a similar 5-point Likert scale: 1 (“Strongly disagree”) to 5 (“Strongly agree”). Both tests were designed according to the DSM-V IGD proposed criteria and embrace the relevant theory of addiction (e.g., salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse) as proposed by Griffiths (2005). The Cronbach’s alpha for the IGD-20 Test was reported to be .88.

In the current study, Cronbach alphas for the Greek version of IGDS9-SF and IAT, were $\alpha = .939$ and $\alpha = .940$ respectively, indicating excellent reliability for both tools. Reliability was also explored through Corrected Item-Total Correlation. In the case of the Greek version of IGDS9-SF, all 9 items range from .59 (Question 8) to .81 indicating that correlations between individual responses to the total score are high and strong. Respective correlations for the Greek version of IAT are .484 (Question 4) to .816 (Question 15). An exception emerged for Question 7 which scored as low as .022. Even though it indicates poor reliability, when this question was omitted, there was only a slight difference to Cronbach alpha from $\alpha = .940$ $\alpha = .948$. This means that the question does not have a negative impact on the total score, but it is proposed to be revised when referring to adolescents.

Comparing these findings to validations performed in other languages and countries, the Greek version appears to present greater degree of reliability. For instance, the IGDS9-SF among Sri Lankan students, presented adequate internal consistency (coefficient alpha = 0.81), item-total correlations ranging between 0.341 and 0.611, and alpha-if- item deleted ranging between 0.779 and 0.816 (Amira et al., 2022). In the Spanish version it was reported “a Cronbach’s alpha of $\alpha = 0.889$ ” presenting adequate levels of reliability. In summary, in the review conducted by Poon et al. (2021) for the 15 versions of this test, they support that relevant score in Cronbach ranged between $\alpha = .810$ to $.963$. This means that the Greek version of IGDS9-SF reached the highest score that was reported by the Italian version (de Palo, 2018).

IGDS9-SF presented good convergent validity ranging between .5 to .7 for all the items. This is consistent with what Poon et al. (2021) suggest, that the test demonstrated good convergent validity, meaning that it presents correlations with with other measures of IGD.

In the original study by Pontes & Griffiths (2015, p. 140) this was examined by “splitting the total sample into two random independent samples and assessing the results. This method produced high internal consistency as measured by the Cronbach’s alpha = .87.

In this study, following a similar process, Cronbach’s alpha was = .909 when splitting the items in half; and all relevant measures presented excellent significance. In the second case, the sample was split in half, using random sample in SPSS. The consistency was maintained by producing Cronbach alpha = .94.

Combining the results obtained by the demographics and the validity/reliability tests, that prevalence of IGD was very low in the Greek adolescent population, comparing to results obtained by similar studies. This could be attributed to the fact that the sample was consisted of adolescents only and the parental consent had to precede the completion of the

survey. Even though it was explicitly written that the parents will not be informed about the replies, this could have affected the participants' responses.

Factor analysis presented some challenges because there are only 9 items and as the developers have argued and examined "Exploratory Factor analysis revealed a single factor explaining 45.4% of the total variance of the construct" (Pontes & Griffiths, 2015: 139). Indicative of this is that Factor Analysis reported "1 component extracted" (see Table 13). As regards, Bartlett's Test of Sphericity, which provides a measure of the statistical probability that the correlation matrix has significant correlations among some of its items, the results were significant, $\chi^2(df\ 36) = 1588$ ($p < 0.001$), which indicates its suitability for factor analysis. Kaiser–Meyer–Olkin measure of sampling adequacy (MSA indicates the appropriateness of the data for factor analysis, was 0.949, thus considered appropriate for factor analysis.

In view of the above, it can be argued that all the psychometric properties that were tested produced results that present the Greek version of IGDS9-SF as a robust tool that clinicians and researchers can use. Limitations of the study will be presented to be acknowledged and possibly addressed in future research.

Limitations

This study presented good psychometric properties for the Greek version of IGDS9-SF but has several limitations that need to be acknowledged. Firstly, there was a strict time limitation -one month- for the data collection, and this could have affected the results of the study. A consequence of the time frame might be the total number of participants (241) which were less than initially expected. This also poses restrictions on the representativeness of the sample.

Another limitation is the target group of participants. The participants were adolescents, thus more research is needed on the psychometric properties regarding younger

populations and adults. Another variable that might have affected the results of the study, despite the provisions that have been made, is the fact that data collection took place during the end of the summer holidays and the first week of the school year. This means that the participants' gaming habits might be different than those reported (recall bias). Lastly, the survey was a self-report questionnaire with all the limitations that this might bear (e.g., response biases, social desirability bias, social and emotional biases, etc.).

Considerations for Future Research

Since this study was limited in time and sample, what is proposed is a replication of the study in the future with greater sample and greater time for the data collection process. Moreover, it will be interesting to compare results with adolescents who are already diagnosed with IGD using other screening tests or diagnostic approaches. It is important to collect further data regarding Greek speaking population, especially after COVID-19 era, where there was a reported increase in gaming that is estimated around 75% (López-Cabarcos et al, 2021).

What emerged throughout this study is a lack of consensus in definition, criteria, and valid assessment tools in reference to internet related addictions or disorders. This creates several obstacles and tensions that need to be addressed. Regarding addiction, future research shall provide clear distinctions on Internet-related addictions because the Internet is merely one location where the addiction can manifest itself. As Griffiths & Davies (2005) argue, Internet addiction and game addiction are discrete, although related, concepts. A gamer who plays online games constantly and without limits, is not addicted to the Internet; s/he is addicted to game playing. The Internet is just the space where the game addiction is expressed; it is not the object of addiction per se.

Apart from this distinction, both academics and clinicians need to find a common ground on prevalence and comorbidity of IGD. As Mitchell and Wells (2007) stress, game

addiction shall not be treated merely as the aftereffect of another condition/disorder. Instead, “game addiction presents a genuine (primary) problem, which may elicit other negative consequences” (Lemmens et al., 2009, p.90). Clear definitions, boundaries, and well documented research on comorbidity, will emancipate IGD therapeutically from transferals and borrowings from other fields of addiction. Therefore, patients diagnosed with IGD will be able to experience specific therapeutic interventions, designed exclusively to meet their needs. To summarize, obscurities in the field of IGD shall be minimized, so that diagnosis, treatment, and prevention to be more feasible and effective.

Conclusion

After the review of 32 screening tools on IGD across Western and Eastern countries, King et al. (2020, p. 17) established that “there is no clearly optimal tool”. In line with this conclusion, it should be reminded that screening tools might offer significant information on IGD, but only if supplemented by clinical interviews. Additional data derived from parental and personal interviews could offer available evidence for supporting the results of the screening tool. In this view, the Greek version of IGDS9-SF is a sound psychometric screening tool that can be used within clinical and research settings to obtain information regarding disordered gamers or gamers who might be at risk for developing IGD. Further individual evaluation though is proposed, before reaching a diagnosis for Internet Gaming Disorder.

IGDS9-SF TRANSLATION AND PSYCHOMETRIC PROPERTIES

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LIST OF TABLES

TABLE 1: DESCRIPTION OF PARTICIPANTS BY GENDER & AGE

Table 1.a*Sociodemographic Characteristics by Gender & Age*

	<i>Frequency (N)</i>	<i>Percent (%)</i>	<i>Valid Percent (%)</i>
Male	131	54.4	54.4
Female	110	45.6	45.6
Total	241	100	100

Table 1.b*Sociodemographic Characteristics by Gender & Age*

<i>Age</i>	<i>Frequency (N)</i>	<i>Percent (%)</i>	<i>Cumulative Percent (%)</i>
12	20	8.3	8.3
13	33	13.7	22
14	40	16.6	38.6
15	55	22.8	61.4
16	47	19.5	80.9
17	43	17.8	98.8
18	3	1.2	100.0
Total	241	100.0	

Range: 6, Minimum: 12, Maximum: 18, Mean: 14.9. S.D. 1.58

TABLE 2: AGE THE PARTICIPANTS WERE FIRSTLY EXPOSED TO INTERNET

Table 2*Age firstly exposed to internet*

Age	Frequency (N)	Percent (%)	Cumulative Percent (%)
2	1	.4	.4
3	6	2.5	2.9
4	15	6.2	9.1
5	36	14.9	24.1
6	17	7.1	31.1
7	24	10.0	41.1
8	30	12.4	53.5
9	22	9.1	62.7
10	38	15.8	78.4
11	20	8.3	86.7
12	26	10.8	97.5
13	5	2.1	99.6
14	1	.4	100.0
Total	241	100.0	

Mean: 8.13, Median: 8.00, Std. Deviation: 2.715, Minimum: 2, Maximum: 14

TABLE 3: AGE THE PARTICIPANTS WERE FIRSTLY EXPOSED
TO INTERNET IN RELATION TO GENDER

Table 3

Age firstly exposed to internet in relation to gender.

<i>AGE</i>	<i>Frequency (N)</i>													<i>Total</i>
	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	
MALE	1	2	10	21	7	13	17	13	21	13	10	3	0	131
FEMALE	0	4	5	15	10	11	13	9	17	7	16	2	1	110
TOTAL	1	6	15	36	17	24	30	22	38	20	26	5	1	241

Pearson Chi-Square: 9.33 (d.f. 12); Phi: 1.97; Cramer's V: 1.97, N=241

TABLE 4: HOURS SPENT ON GAMING IN RELATION TO GENDER

A. DURING HOLIDAYS:

Table 4.a*Time spent on internet during holidays in relation to gender*

	Chi-Square Tests		
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	54.89	9	<.001
Likelihood Ratio	60.79	9	<.001
Linear-by-Linear Association	35.18	1	<.001
N of Valid Cases	241		

B. DURING SCHOOL PERIODS:

Table 4.b*Time spent on internet during school period in relation to gender*

	Chi-Square Tests		
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	20.61	9	.014
Likelihood Ratio	23.93	9	.004
Linear-by-Linear Association	11.92	1	<.001
N of Valid Cases	241		

TABLE 5: SCHOOL PERFORMANCE

*Table 5**School Performance*

	Frequency (N)	Percent (%)	Cumulative Percent (%)
Grades			
10-13	12	5.8	5
14-16	96	39.8	44.8
17-18	86	35.7	80.5
19-20	45	18.7	99.2
Below 10	2	.8	100
Total	241		

TABLE 6: SCHOOL PERFORMANCE IN RELATION TO GENDER

Table 6.aSchool Performance in relation to gender

Grades	10-13	14-16	17-18	19-20	Below 10	Total
<i>Male</i>	9	73	38	10	1	131
<i>Female</i>	3	23	48	35	1	110
<i>Total</i>	12	96	86	45	2	241

Table 6.bSchool Performance in relation to gender

	Value	df	Chi-Square Tests Asymptotic Significance (2- sided)
Pearson Chi-Square	42.58	4	<.001
Likelihood Ratio	44.52	4	<.001
Linear-by-Linear Association	35.150	1	<.001
Phi	.42		<.001
N of Valid Cases	241		

TABLE 7: SCHOOL PERFORMANCE IN RELATION TO TIME SPENT ON GAMING

Table 7School Performance in relation to time spent on gaming.

	<u>ANOVA</u>				
	<i>Sum of</i>	<i>df</i>	<i>Mean</i>	<i>F</i>	<i>Sig.</i>
	<i>squares</i>		<i>Square</i>		
<i>Regression</i>	8.65	2	4.327	5.77	.004
<i>Residual</i>	178.59	238	.750		
<i>Total</i>	187.25	240			

TABLE 8: RELIABILITY- INTERNAL CONSISTENCY FOR THE GREEK VERSION
OF IGDS9-SF

Table 8.a
Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	N of items	N
.939	9	241

Table 8.b
Item Statistics

Item Statistics				
	Mean	S.D.	N	
1	2.42	1.12	241	
2	2.49	1.16	241	
3	2.87	1.27	241	
4	2.41	1.09	241	
5	2.32	1.17	241	
6	2.63	1.22	241	
7	2.59	1.40	241	
8	2.80	1.03	241	
9	1.96	1.09	241	

Table 8.c
Inter-Item Correlation Matrix

Inter-Item Correlation Matrix									
	1	2	3	4	5	6	7	8	9
1	1.000	.678	.675	.612	.651	.666	.654	.506	.624
2	.678	1.000	.753	.670	.684	.713	.662	.494	.660
3	.675	.753	1.000	.676	.675	.697	.693	.518	.597
4	.612	.670	.676	1.000	.606	.602	.639	.514	.593
5	.651	.684	.675	.606	1.000	.678	.707	.490	.711
6	.666	.713	.697	.602	.678	1.000	.735	.522	.687
7	.654	.662	.693	.639	.707	.735	1.00	.477	.730
8	.506	.494	.518	.514	.490	.522	.477	1.000	.489
9	.624	.660	.597	.593	.711	.687	.730	.489	1.000

Scale Statistics

Mean	Variance	S.D.	N of Items
22.49	75.168	8.670	9

Table 8.d
Summary Item Statistics

	Summary Item Statistics						
	Mean	Minimum	Maximum	Range	Maximum/ Minimum	Variance	N of Items
Item Means	2.50	1.96	2.87	.913	1.466	.074	9
Item	1.38	1.05	1.94	.881	1.836	.072	9
Variances							
Inter-Item	.87	.55	1.25	.698	2.269	.036	9
Covariances							
Inter-Item	.63	.48	.75	.275	1.557	.006	9
Correlations							

Table 8.e
Item Total Statistics

	Item Total Statistics				
	Scale Mean if item Deleted	Scale Variance if item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1	20.07	60.61	.770	.595	.932
2	20.00	59.36	.812	.689	.930
3	19.62	57.99	.807	.687	.930
4	20.07	61.35	.744	1.570	.934
5	20.17	59.43	.794	.647	.931
6	19.85	58.52	.811	.673	.929
7	19.90	56.31	.810	.691	.930
8	19.69	64.34	.593	.367	.941
9	20.53	60.73	.776	.647	.932

TABLE 9: RELIABILITY- INTERNAL CONSISTENCY FOR THE GREEK VERSION
OF IAT

Table 9.a
Reliability Statistics

Reliability Statistics			
Cronbach's Alpha	Cronbach's Alpha based on Standardized Items	N of Items	N of cases
.938	.940	20	241

Table 9.b
Item Statistics

	Mean	S.D.	N
1	3.64	1.083	241
2	2.99	1.097	241
3	2.26	1.061	241
4	2.07	1.012	241
5	3.16	1.057	241
6	2.45	1.036	241
7	2.57	1.350	241
8	2.70	.971	241
9	2.64	1.182	241
10	3.02	1.172	241
11	3.31	1.185	241
12	2.89	1.016	241
13	2.90	1.223	241
14	3.38	1.195	241
15	2.96	1.108	241
16	3.90	1.003	241
17	2.73	1.245	241
18	2.91	1.045	241
19	2.27	1.109	241
20	2.89	1.223	241

Inter-Item Correlation Matrix

	Q21_1	Q21_2	Q21_3	Q21_4	Q21_5	Q21_6	Q21_7	Q21_8	Q21_9	Q21_10	Q21_11	Q21_12	Q21_13	Q21_14	Q21_15	Q21_16	Q21_17	Q21_18	Q21_19	Q21_20
Q21_1	1.000	.438	.487	.350	.577	.321	-.143	.457	.579	.553	.571	.275	.509	.629	.605	.656	.460	.634	.499	.443
Q21_2	.438	1.000	.400	.252	.444	.628	.075	.724	.343	.454	.459	.422	.429	.510	.429	.472	.417	.362	.348	.386
Q21_3	.487	.400	1.000	.550	.488	.395	-.100	.423	.619	.623	.589	.304	.472	.454	.639	.365	.418	.617	.733	.431
Q21_4	.350	.252	.550	1.000	.391	.347	-.179	.327	.484	.491	.442	.149	.400	.338	.429	.184	.310	.458	.494	.256
Q21_5	.577	.444	.488	.391	1.000	.415	-.054	.517	.499	.502	.551	.290	.473	.511	.473	.571	.370	.584	.489	.310
Q21_6	.321	.628	.395	.347	.415	1.000	.300	.759	.323	.457	.448	.508	.478	.440	.475	.335	.289	.329	.402	.452
Q21_7	-.143	.075	-.100	-.179	-.054	.300	1.000	.121	-.189	.031	.045	.471	-.044	.098	.003	.022	-.163	-.170	-.126	.272
Q21_8	.457	.724	.423	.327	.517	.759	.121	1.000	.395	.476	.452	.439	.544	.482	.464	.449	.375	.449	.430	.438
Q21_9	.579	.343	.619	.484	.499	.323	-.189	.395	1.000	.650	.630	.263	.466	.574	.663	.514	.550	.713	.644	.475
Q21_10	.553	.454	.623	.491	.502	.457	.031	.476	.650	1.000	.742	.436	.537	.649	.765	.524	.433	.618	.622	.607
Q21_11	.571	.459	.589	.442	.551	.448	.045	.452	.630	.742	1.000	.500	.574	.628	.753	.605	.392	.663	.619	.575
Q21_12	.275	.422	.304	.149	.290	.508	.471	.439	.263	.436	.500	1.000	.465	.448	.483	.389	.175	.276	.360	.517
Q21_13	.509	.429	.472	.400	.473	.478	-.044	.544	.466	.537	.574	.465	1.000	.531	.587	.536	.391	.484	.528	.482
Q21_14	.629	.510	.454	.338	.511	.440	.098	.482	.574	.649	.628	.448	.531	1.000	.680	.660	.424	.565	.508	.590
Q21_15	.605	.429	.639	.429	.473	.475	.003	.464	.663	.765	.753	.483	.587	.680	1.000	.579	.457	.645	.693	.638
Q21_16	.656	.472	.365	.184	.571	.335	.022	.449	.514	.524	.605	.389	.536	.660	.579	1.000	.479	.522	.411	.476
Q21_17	.460	.417	.418	.310	.370	.289	-.163	.375	.550	.433	.392	.175	.391	.424	.457	.479	1.000	.587	.496	.360
Q21_18	.634	.362	.617	.458	.584	.329	-.170	.449	.713	.618	.663	.276	.484	.565	.645	.522	.587	1.000	.679	.458
Q21_19	.499	.348	.733	.494	.489	.402	-.126	.430	.644	.622	.619	.360	.528	.508	.693	.411	.496	.679	1.000	.407
Q21_20	.443	.386	.431	.256	.310	.452	.272	.438	.475	.607	.575	.517	.482	.590	.638	.476	.360	.458	.407	1.000

Inter-Item Covariance Matrix

	Q21_1	Q21_2	Q21_3	Q21_4	Q21_5	Q21_6	Q21_7	Q21_8	Q21_9	Q21_10	Q21_11	Q21_12	Q21_13	Q21_14	Q21_15	Q21_16	Q21_17	Q21_18	Q21_19	Q21_20
Q21_1	1.172	.521	.559	.384	.661	.361	-.209	.480	.741	.702	.695	.353	.560	.833	.782	.787	.499	.855	.565	.532
Q21_2	.521	1.204	.466	.280	.514	.714	.111	.771	.445	.584	.566	.549	.478	.684	.562	.574	.459	.495	.399	.469
Q21_3	.559	.466	1.125	.590	.547	.434	-.143	.436	.777	.775	.703	.382	.509	.589	.810	.429	.445	.815	.813	.507
Q21_4	.384	.280	.590	1.024	.418	.364	-.244	.321	.580	.582	.503	.178	.411	.419	.519	.207	.315	.577	.522	.287
Q21_5	.661	.514	.547	.418	1.117	.454	-.078	.531	.624	.622	.655	.363	.507	.660	.598	.669	.393	.769	.540	.363
Q21_6	.361	.714	.434	.364	.454	1.073	.419	.764	.396	.555	.522	.624	.503	.557	.588	.385	.301	.424	.435	.519
Q21_7	-.209	.111	-.143	-.244	-.078	.419	1.821	.158	-.302	.049	.068	.753	-.060	.161	.005	.034	-.221	-.285	-.177	.407
Q21_8	.480	.771	.436	.321	.531	.764	.158	.944	.454	.542	.493	.505	.537	.573	.539	.484	.365	.543	.436	.472
Q21_9	.741	.445	.777	.580	.624	.396	-.302	.454	1.398	.902	.838	.369	.560	.830	.936	.674	.652	1.050	.795	.623
Q21_10	.702	.584	.775	.582	.622	.555	.049	.542	.902	1.375	.978	.606	.639	.931	1.071	.681	.509	.902	.762	.789
Q21_11	.695	.566	.703	.503	.655	.522	.068	.493	.838	.978	1.265	.667	.656	.864	1.012	.755	.443	.929	.727	.717
Q21_12	.353	.549	.382	.178	.363	.624	.753	.505	.369	.606	.667	1.405	.560	.650	.683	.510	.208	.407	.446	.680
Q21_13	.560	.478	.509	.411	.507	.503	-.060	.537	.560	.639	.656	.560	1.032	.659	.713	.603	.398	.612	.561	.543
Q21_14	.833	.684	.589	.419	.660	.557	.161	.573	.830	.931	.864	.650	.659	1.495	.993	.895	.520	.860	.649	.800
Q21_15	.782	.562	.810	.519	.598	.588	.005	.539	.936	1.071	1.012	.683	.713	.993	1.428	.767	.548	.959	.864	.846
Q21_16	.787	.574	.429	.207	.669	.385	.034	.484	.674	.681	.755	.510	.603	.895	.767	1.228	.532	.720	.476	.585
Q21_17	.499	.459	.445	.315	.393	.301	-.221	.365	.652	.509	.443	.208	.398	.520	.548	.532	1.006	.734	.520	.400
Q21_18	.855	.495	.815	.577	.769	.424	-.285	.543	1.050	.902	.929	.407	.612	.860	.959	.720	.734	1.550	.883	.632
Q21_19	.565	.399	.813	.522	.540	.435	-.177	.436	.795	.762	.727	.446	.561	.649	.864	.476	.520	.883	1.091	.471
Q21_20	.532	.469	.507	.287	.363	.519	.407	.472	.623	.789	.717	.680	.543	.800	.846	.585	.400	.632	.471	1.230

Table 9.c
Summary Item Statistics

Summary Item statistics

	Mean	Minimum	Maximum	Range	Maximum/Minimum	Variance	N of Items
Item Means	2882	2.071	3.905	1.834	1.886	.210	20
Item Variances	1249	.944	1.821	.878	1.930	.048	20
Inter-Item Covariances	.537	-.302	1.071	1.374	-3.545	.065	20
Inter-Item Correlations	.439	-.189	.795	.954	-4.038	.036	20

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q21_1	54.00	206.712	.685	.610	.934
Q21_2	54.66	208.717	.608	.634	.935
Q21_3	55.39	207.197	.684	.645	.934
Q21_4	55.58	213.753	.488	.442	.937
Q21_5	54.49	208.468	.643	.541	.935
Q21_6	55.20	209.493	.621	.684	.935
Q21_7	55.08	226.490	.022	.503	.948
Q21_8	54.95	209.451	.669	.728	.934
Q21_9	55.01	203.917	.707	.655	.933
Q21_10	54.63	201.467	.792	.701	.932
Q21_11	54.34	202.357	.799	.721	.932
Q21_12	54.76	208.811	.554	.562	.936
Q21_13	54.75	208.273	.679	.548	.934
Q21_14	54.27	201.454	.756	.649	.932
Q21_15	54.68	200.183	.816	.762	.931
Q21_16	53.74	206.442	.676	.651	.934
Q21_17	54.92	212.160	.549	.485	.936
Q21_18	54.74	201.894	.728	.707	.933
Q21_19	55.37	206.735	.712	.691	.934
Q21_20	54.76	206.686	.668	.574	.934

MEAN: 57.65; S.D. 15.14; N:20

TABLE 10: PEARSON INDECES FOR CONSTRUCT VALIDITY

Table 10
Pearson Indices for Construct Validity

<i>Descriptive Statistics</i>			
	<i>Mean</i>	<i>S.D.</i>	<i>N</i>
<i>IGD</i>	2.42	1.11	241
<i>IAT</i>	3.64	1.08	241

<i>Correlations</i>			
<i>IGDS9-SF</i>	<i>IGDS9-SF</i>	<i>IAT</i>	
<i>Pearson</i>	1	.454	
<i>Sig. (2-tailed)</i>		<.001	
<i>Sum of squares & Cross products</i>	296.67	131.0	
<i>Covariance</i>	1.236	.546	
<i>N</i>	241	241	
<i>IAT</i>			
<i>Pearson</i>	.454	1	
<i>Sig. (2-tailed)</i>	<.001		
<i>Sum of squares & Cross products</i>	131.0	296.67	
<i>Covariance</i>	.546	1.236	
<i>N</i>	241	241	

TABLE 11: PEARSON INDEXES FOR CONVERGENT VALIDITY

Table with columns for variables (e.g., Q12.1 to Q12.20) and rows for each variable showing Pearson correlation coefficients with other variables. The table is organized into sections for each variable (e.g., Q12.1, Q12.2, etc.), with each section containing the variable name, its correlations with other variables, and a 'Convergence' row. Asterisks indicate significant correlations at the 0.05 level.

* Correlation is significant at the 0.05 level (1-tailed).
** Correlation is significant at the 0.01 level (1-tailed).

Table 11.a*Pearson correlation between the items of the Greek version of IGDS9-SF*

1	.678**	.675**	.612**	.651**	.666**	.654**	.506**	.624**
.678**	1	.753**	.670**	.684**	.713**	.662**	.494**	.660**
.675**	.753**	1	.676**	.675**	.697**	.693**	.518**	.597**
.612**	.670**	.676**	1	.606**	.602**	.639**	.514**	.593**
.651**	.684**	.675**	.606**	1	.678**	.707**	.490**	.711**
.666**	.713**	.697**	.602**	.678**	1	.735**	.522**	.687**
.654**	.662**	.693**	.639**	.707**	.735**	1	.477**	.730**
.506**	.494**	.518**	.514**	.490**	.522**	.477**	1	.489**
.624**	.660**	.597**	.593**	.711**	.687**	.730**	.489**	1

Correlation is significant at < .001.

Table 11.b*Pearson correlation between the 20 items of the Greek version of IAT*

Q.1.	1	.438	.487	.350	.577	.321	-.143	.457	.579	.553	.571
	.275	.509	.629	.605	.656	.460	.634	.499	.443		
Q.2.	.438	1	.400	.252	.444	.628	.075	.724	.343	.454	.459
	.422	.429	.510	.429	.472	.417	.362	.348	.386		
Q3.	.487	.400	1	.550	.488	.395	-.100	.423	.619	.623	.589
	.304	.472	.454	.639	.365	.418	.617	.733	.431		
Q4.	.350	.252	.550	1	.391	.347	-.179	.327	.484	.491	.442
	.149	.400	.338	.429	.184	.310	.458	.494	.256		
Q5.	.350	.252	.550	1	.391	.347	-.179	.327	.484	.491	.442
	.149	.400	.338	.429	.184	.310	.458	.494	.256		
Q6.	.321	.628	.395	.347	.415	1	.300	.759	.323	.457	.448
	.508	.478	.440	.475	.335	.289	.329	.402	.452		
Q7.	-.143	.075	-.100	-.179	-.054	.300	1	.121	-.189	.031	.045
	.471	-.044	.098	.003	.022	-.163	-.170	-.126	.272		
Q8.	.457	.724	.423	.327	.517	.759	.121	1	.395	.476	.452
	.439	.544	.482	.464	.449	.375	.449	.430	.438		
Q9.	.579	.343	.619	.484	.499	.323	-.189	.395	1	.650	.630
	.263	.466	.574	.663	.514	.550	.713	.644	.475		
Q10.	.553	.454	.623	.491	.502	.457	.031	.476	.650	1	.742
	.436	.537	.649	.765	.524	.433	.618	.622	.607		
Q.11	.571	.459	.589	.442	.551	.448	.045	.452	.630	.742	1
	.500	.574	.628	.753	.605	.392	.663	.619	.575		
Q.12.	.275	.422	.304	.149	.290	.508	.471	.439	.263	.436	.500
	1	.465	.448	.483	.389	.175	.276	.360	.517		
Q13.	.509	.429	.472	.400	.473	.478	-.044	.544	.466	.537	.574
	.465	1	.531	.587	.536	.391	.484	.528	.482		

Q14.	.629	.510	.454	.338	.511	.440	.098	.482	.574	.649	.628
	.448	.531	1	.680	.660	.424	.565	.508	.590		
Q15.	.605	.429	.639	.429	.473	.475	.003	.464	.663	.765	.753
	.483	.587	.680	1	.579	.457	.645	.693	.638		
Q16.	.656	.472	.365	.184	.571	.335	.022	.449	.514	.524	.605
	.389	.536	.660	.579	1	.479	.522	.411	.476		
Q17.	.460	.417	.418	.310	.370	.289	-.163	.375	.550	.433	.392
	.175	.391	.424	.457	.479	1	.587	.496	.360		
Q18.	.634	.362	.617	.458	.584	.329	-.170	.449	.713	.618	.663
	.276	.484	.565	.645	.522	.587	1	.679	.590		
Q19.	.499	.348	.733	.494	.489	.402	-.126	.430	.644	.622	.619
	.360	.528	.508	.693	.411	.496	.679	1	.407		
Q20.	.443	.386	.431	.256	.310	.452	.272	.438	.475	.607	.575
	.517	.482	.590	.638	.476	.360	.458	.407	1		

TABLE 12: SPLIT-HALF INTERNAL CONSISTENCIES

FOR THE ITEMS:

Table 12.a*Split-Half Internal Consistencies (for items)*

		Reliability Statistics	
Cronbach's Alpha	Part 1	Value	.909
		N	5
	Part 2	Value	.860
		N	4
Total number of items			9
Correlation Between Forms			.866
Spearman-Brown	Equal Length		.928
	Unequal Length		.929
Guttman Split-Half			.916

*Part 1: Items 1, 2, 3, 4, 5.**Part 2: Items 6, 7, 8, 9.***Table 12.b***Split-Half Internal Consistencies (for items)*

		ANOVA with Cochran's Q				
		Sum of squares	df	Mean Square	Cochran's Q	Sig.
Between People		2004.469	240	8.352		
Within People	Between Items	142.438	8	17.805	245.684	<.001
	Residual	975.340	1920	.508		
	Total	1117.78	1928	.580		
Total		3122.25	2168	1.440		

Inter-Item Correlation Matrix

	IGD	Q19_2	Q19_3	Q19_4	Q19_5	Q19_6	Q19_7	Q19_8	Q19_9
IGD	1.000	.678	.675	.612	.651	.666	.654	.506	.624
Q19_2	.678	1.000	.753	.670	.684	.713	.662	.494	.660
Q19_3	.675	.753	1.000	.676	.675	.697	.693	.518	.597
Q19_4	.612	.670	.676	1.000	.606	.602	.639	.514	.593
Q19_5	.651	.684	.675	.606	1.000	.678	.707	.490	.711
Q19_6	.666	.713	.697	.602	.678	1.000	.735	.522	.687
Q19_7	.654	.662	.693	.639	.707	.735	1.000	.477	.730
Q19_8	.506	.494	.518	.514	.490	.522	.477	1.000	.489
Q19_9	.624	.660	.597	.593	.711	.687	.730	.489	1.000

Inter-Item Covariance Matrix

	IGD	Q19_2	Q19_3	Q19_4	Q19_5	Q19_6	Q19_7	Q19_8	Q19_9
IGD	1.236	.873	.950	.738	.849	.904	1.012	.577	.759
Q19_2	.873	1.343	1.105	.842	.930	1.009	1.067	.587	.837
Q19_3	.950	1.105	1.604	.929	1.004	1.078	1.221	.674	.828
Q19_4	.738	.842	.929	1.177	.771	.798	.965	.572	.705
Q19_5	.849	.930	1.004	.771	1.377	.971	1.154	.590	.913
Q19_6	.904	1.009	1.078	.798	.971	1.491	1.248	.655	.918
Q19_7	1.012	1.067	1.221	.965	1.154	1.248	1.935	.682	1.112
Q19_8	.577	.587	.674	.572	.590	.655	.682	1.054	.550
Q19_9	.759	.837	.828	.705	.913	.918	1.112	.550	1.198

Summary Item Statistics

		Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	Part 1	2.503	2.320	2.871	.552	1.238	.046	5 ^a
	Part 2	2.494	1.959	2.797	.838	1.428	.136	4 ^b
	Both Parts	2.499	1.959	2.871	.913	1.466	.074	9
Item Variances	Part 1	1.347	1.177	1.604	.427	1.363	.027	5 ^a
	Part 2	1.420	1.054	1.935	.881	1.836	.151	4 ^b
	Both Parts	1.380	1.054	1.935	.881	1.836	.072	9
Inter-Item Covariances	Part 1	.899	.738	1.105	.367	1.497	.011	5 ^a
	Part 2	.861	.550	1.248	.698	2.269	.070	4 ^b
	Both Parts	.872	.550	1.248	.698	2.269	.036	9
Inter-Item Correlations	Part 1	.668	.606	.753	.147	1.243	.002	5 ^a
	Part 2	.607	.477	.735	.257	1.539	.014	4 ^b
	Both Parts	.632	.477	.753	.275	1.577	.006	9

a. The items are: IGD, Q19_2, Q19_3, Q19_4, Q19_5.

b. The items are: Q19_6, Q19_7, Q19_8, Q19_9.

FOR THE SAMPLE:

Reliability Statistics

Cronbach's Alpha	N of Items
.940	9

TABLE 13: FACTOR ANALYSIS

Table 13
Factor Analysis

KMO and Bartlett's Test^a		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.949
Bartlett's Test of Sphericity	Approx. Chi-Square	1588.502
	df	36
	Sig.	<.001

a. Based on correlations

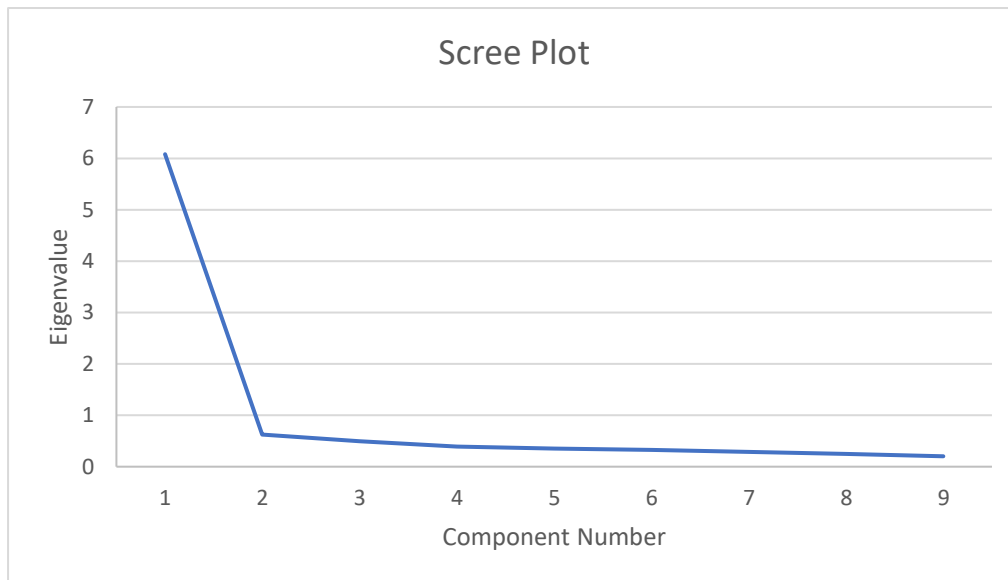
**Component Score
Coefficient Matrix^a**

	Component 1
1	<u>.118</u>
2	<u>.135</u>
3	<u>.162</u>
4	<u>.109</u>
5	<u>.136</u>
6	<u>.150</u>
7	<u>.198</u>
8	<u>.079</u>
9	.115

Extraction Method:
Principal Component
Analysis.

Rotation Method:
Varimax with Kaiser
Normalization.^a

Coefficients are
standardized.



APPENDICES

APPENDIX A

Internet Gaming Disorder Scale–Short-Form (IGDS9-SF) (Pontes & Griffiths, 2015)

Instructions: These questions will ask you about your gaming activity during the past year (i.e., last 12 months). By gaming activity we understand any gaming-related activity that has been played either from a computer/laptop or from a gaming console or any other kind of device (e.g., mobile phone, tablet, etc.) both online and/or offline.

	Never	Rarely	Sometimes	Often	Very Often
1. Do you feel preoccupied with your gaming behavior? (Some examples: Do you think about previous gaming activity or anticipate the next gaming session? Do you think gaming has become the dominant activity in your daily life?)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Do you feel more irritability, anxiety or even sadness when you try to either reduce or stop your gaming activity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Do you feel the need to spend increasing amount of time engaged gaming in order to achieve satisfaction or pleasure?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Do you systematically fail when trying to control or cease your gaming activity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Have you lost interests in previous hobbies and other entertainment activities as a result of your engagement with the game?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Have you continued your gaming activity despite knowing it was causing problems between you and other people?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Have you deceived any of your family members, therapists or others because the amount of your gaming activity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Do you play in order to temporarily escape or relieve a negative mood (e.g., helplessness, guilt, anxiety)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Have you jeopardized or lost an important relationship, job or an educational or career opportunity because of your gaming activity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scoring information:

Total scores can be obtained by summing up all responses given to all nine items of the IGDS9-SF and can range from a minimum of 9 to a maximum of 45 points, with higher scores being indicative of a higher degree of Internet Gaming Disorder. In order to differentiate disordered gamers from non-disordered gamers, researchers should check if participants have endorsed at least five criteria out of the nine by taking into account answers as '5: Very Often', which translates as endorsement of the criterion.

References:

Pontes, H. M., & Griffiths, M. D. (2015). Measuring DSM-5 Internet Gaming Disorder: Development and validation of a short psychometric scale. *Computers in Human Behavior, 45*, 137-143.

doi:10.1016/j.chb.2014.12.006

APPENDIX B

THE GREEK VERSION OF THE 9-ITEM INTERNET GAMING DISORDER

SCALE-SHORT FORM (IGDS9-SF)

Sample of the format of IGDS9-SF in the Qualtrics platform

Οι επόμενες ερωτήσεις αφορούν την ενασχόληση σου με τα παιχνίδια στο διαδίκτυο τον τελευταίο χρόνο (δηλαδή τους τελευταίους δώδεκα μήνες). Λέγοντας ενασχόληση στο διαδίκτυο με παιχνίδια εννοούμε κάθε είδους internet gaming στο κομπιούτερ/laptop, σε οποιαδήποτε κονσόλα (play station, xbox, κτλ.), ή οποιαδήποτε άλλη ηλεκτρονική συσκευή (τηλέφωνο, τάμπλετ, κτλ.). Για κάθε μία από τις παρακάτω ερωτήσεις δίνεις ξεχωριστή απάντηση, η οποία είναι ανώνυμη και εμπιστευτική και δεν θα γνωστοποιηθεί στους γονείς σου.

	ΠΟΤΕ	ΣΠΑΝΙΑ	ΜΕΡΙΚΕΣ ΦΟΡΕΣ	ΣΥΧΝΑ	ΠΟΛΥ ΣΥΧΝΑ
1. Σε προβληματίζει η συμπεριφορά σου σε σχέση με τα παιχνίδια στο διαδίκτυο (internet gaming); (π.χ. Σκέφτεσαι προηγούμενα παιχνίδια που έπαιξες ή ανυπομονείς για το	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. Σε προβληματίζει η συμπεριφορά σου σε σχέση με τα παιχνίδια (gaming); (π.χ. Σκέφτεσαι προηγούμενα παιχνίδια που έπαιξες ή ανυπομονείς για το επόμενο; Πιστεύεις ότι το gaming είναι η κυρίαρχη δραστηριότητα στη ζωή σου;)
2. Αισθάνεσαι εκνευρισμό, άγχος ή στενοχώρια, όταν προσπαθείς να μειώσεις ή να σταματήσεις τη δραστηριότητά σου στο gaming;
3. Αισθάνεσαι την ανάγκη να περνάς όλο και περισσότερο χρόνο στο gaming, ώστε να νιώθεις ικανοποίηση ή ευχαρίστηση;

4. Αποτυγχάνεις συστηματικά στην προσπάθειά σου να μειώσεις ή να σταματήσεις τη δραστηριότητά σου στο gaming;
5. Έχει συμβάλει η δραστηριότητά σου στο gaming στο να χάσεις το ενδιαφέρον σου σε προηγούμενα χόμπι σου ή (σε) άλλες δραστηριότητες που έκανες;
6. Έχεις συνεχίσει τη δραστηριότητά σου στο gaming, ενώ γνωρίζεις ότι αυτή προκαλεί προβλήματα ανάμεσα σε εσένα και τους (άλλους) γύρω σου;
7. Έχεις ξεγελάσει/κοροϊδέψει τα μέλη της οικογένειάς σου, τον/την θεραπευτή/θεραπεύτρια σου ή κάποιον άλλο σχετικά με το χρόνο που περνάς στο gaming;
8. Παίζεις με σκοπό να ξεφύγεις από τα προβλήματα σου ή να ανακουφίσεις μια αρνητική διάθεση προσωρινά; (π.χ. άγχος, ενοχή, μοναξιά, κτλ.)
9. Έχεις διακινδυνεύσει να χάσεις ή έχεις χάσει μια σημαντική σχέση, δουλειά, εκπαιδευτική ή επαγγελματική ευκαιρία εξαιτίας της δραστηριότητάς σου στο gaming;

APPENDIX C

THE GREEK VERSION OF INTERNET ADDICTION TEST BY DR.
KIMBERLY YOUNG

INTERNET ADDICTION TEST (IAT) THE DR. KIMBERLY YOUNG

Το IAT είναι ένα αξιόπιστο και χρήσιμο εργαλείο μέτρησης του εθισμού στο διαδίκτυο.

Απάντησε τις παρακάτω ερωτήσεις, χρησιμοποιώντας αυτή τη κλίμακα:

0	Ποτέ
1	Σπάνια
2	Περιστασιακά
3	Συχνά
4	Πολύ συχνά
5	Πάντα

1	Πόσο συχνά ανακαλύπτεις ότι είσαι συνδεδεμένος (online) περισσότερο απ' όσο σκόπευες;	1	2	3	4	5	0
2	Πόσο συχνά παραμελείς οικιακά καθήκοντα ή την ατομική καθαριότητα ή διατροφή σου, για να ξοδέψεις περισσότερο χρόνο στο διαδίκτυο;	1	2	3	4	5	0
3	Πόσο συχνά προτιμάς την έξαψη του διαδικτύου από την οικειότητα με το σύντροφό σου;	1	2	3	4	5	0
4	Πόσο συχνά άλλοι άνθρωποι στη ζωή σου παραπονούνται για τη ποσότητα του χρόνου που ξοδεύεις στο διαδίκτυο;	1	2	3	4	5	0
5	Πόσο συχνά οι επιδόσεις στο σχολείο, πανεπιστήμιο ή στη μόρφωσή σου γενικότερα μειώνονται εξαιτίας του χρόνου που ξοδεύεις στο διαδίκτυο;	1	2	3	4	5	0
6	Πόσο συχνά δημιουργείς σχέσεις (μηνύματα, chat) με άλλους συνδεδεμένους χρήστες στο διαδίκτυο;	1	2	3	4	5	0
7	Πόσο συχνά ελέγχεις το ηλεκτρονικό σου ταχυδρομείο (email) πριν να κάνεις οτιδήποτε άλλο που θα έπρεπε να κάνεις;	1	2	3	4	5	0
8	Πόσο συχνά οι επαγγελματικές σου επιδόσεις ή η παραγωγικότητά σου μειώνεται λόγω του διαδικτύου;	1	2	3	4	5	0
9	Πόσο συχνά γίνεσαι αμυντικός ή μυστικοπαθής όταν κάποιος σε ρωτήσει τι κάνεις όταν είσαι συνδεδεμένος;	1	2	3	4	5	0
10	Πόσο συχνά διώχνεις ανησυχητικές σκέψεις για τη ζωή σου και τις αντικαθιστάς με καταπραυντικές σκέψεις που αφορούν στο διαδίκτυο;	1	2	3	4	5	0
11	Πόσο συχνά αισθάνεσαι προσμονή για τη στιγμή που θα είσαι και πάλι συνδεδεμένος;	1	2	3	4	5	0
12	Πόσο συχνά φοβάσαι ότι η ζωή σου θα είναι βαρετή, άδεια και μίζερη, δίχως το διαδίκτυο;	1	2	3	4	5	0
13	Πόσο συχνά σπάζεις και ρημάζεις, φωνάζεις ή συμπεριφέρεσαι ενοχλημένα και επιθετικά, όταν κάποιος σε διακόπτει και σε απασχολεί ενώ είσαι συνδεδεμένος;	1	2	3	4	5	0
14	Πόσο συχνά χάνεις τον ύπνο σου για το διαδίκτυο;	1	2	3	4	5	0
15	Πόσο συχνά αισθάνεσαι κατελιμμένος από τη σκέψη του διαδικτύου ενώ είσαι εκτός σύνδεσης (off line) ή φαντασιώνεσαι τι θα κάνεις όταν θα συνδεθείς;	1	2	3	4	5	0
16	Πόσο συχνά πιάνεις τον εαυτό σου να λέει: «λίγα λεπτά ακόμη», όταν είσαι συνδεδεμένος;	1	2	3	4	5	0

17	Πόσο συχνά προσπαθείς να περιορίσεις τη ποσότητα του χρόνου που καταναλώνεις στο διαδίκτυο και αποτυγχάνεις;	1	2	3	4	5	0
18	Πόσο συχνά προσπαθείς να κρύψεις το πραγματικό χρονικό διάστημα που ήσουν συνδεδεμένος ή εφευρίσκεις δικαιολογίες γι' αυτό που κατά βάθος ξέρεις ότι δεν ευσταθούν;	1	2	3	4	5	0
19	Πόσο συχνά επιλέγεις να ξοδέψεις χρόνο συνδεδεμένος αντί να βγεις έξω με παρέα;	1	2	3	4	5	0
20	Πόσο συχνά αισθάνεσαι κατάθλιψη, δυσθυμία ή νευρικότητα όταν είσαι εκτός σύνδεσης που εξαφανίζεται μόλις συνδεθείς;	1	2	3	4	5	0

Πρόσθεσε τα αποτελέσματά σου. Όσο μεγαλύτερη είναι η βαθμολογία, τόσο μεγαλύτερο είναι και το επίπεδο του εθισμού.

20- 49 βαθμοί: Είσαι ένας μέσος χρήστης του διαδικτύου. Μπορεί να ξεφεύγεις χρονικά κάποιες φορές αλλά ελέγχεις τη χρήση σου.

50- 70 βαθμοί: Βιώνεις περιστασιακά ή συχνά προβλήματα εξαιτίας του διαδικτύου. Θα πρέπει να προβληματισθείς για την επίδρασή του στη ζωή σου και να αναζητήσεις βοήθεια

80- 100 βαθμοί: Η χρήση του διαδικτύου δημιουργεί σοβαρά προβλήματα στη ζωή σου.

Θα πρέπει να αξιολογήσεις σοβαρά την επίδραση του διαδικτύου και να αντιμετωπίσεις ευθέως τα προβλήματα που έχουν δημιουργηθεί. Οπωσδήποτε χρειάζεσαι βοήθεια.

APPENDIX D

CONSENT FORMS FOR PARENT AND ADOLESCENT

ΕΝΤΥΠΟ ΣΥΝΑΙΝΕΣΗΣ ΓΟΝΕΑ/ΚΗΔΕΜΟΝΑ ΓΙΑ ΣΥΜΜΕΤΟΧΗ ΣΕ ΕΡΕΥΝΑ
ΕΡΩΤΗΜΑΤΟΛΟΓΙΟΥ ΑΥΤΟ-ΑΝΑΦΟΡΑΣ

Μετάφραση και ψυχομετρικές ιδιότητες της ελληνικής εκδοχής της σύντομης κλίμακας ελέγχου της διαταραχής ηλεκτρονικού παιχνιδιού (Internet Gaming Disorder Scale–Short-Form IGDS9-SF)

1. Σκοπός της ερευνητικής εργασίας

Σκοπός της παρούσας μελέτης είναι η εξέταση των ψυχομετρικών ιδιοτήτων της ελληνικής εκδοχής της σύντομης κλίμακας ελέγχου της διαταραχής ηλεκτρονικού παιχνιδιού (Internet Gaming Disorder Scale–Short-Form IGDS9-SF).

2. Διαδικασία μετρήσεων

Το παιδί σας θα χρειαστεί να συμπληρώσει ένα ανώνυμο ερωτηματολόγιο σε ηλεκτρονική μορφή, που αξιολογεί τα επίπεδα χρήσης ηλεκτρονικού παιχνιδιού. Οι απαντήσεις του παιδιού σας παραμένουν εμπιστευτικές και δεν θα έχετε τη δυνατότητα να τις μάθετε.

3. Δημοσίευση δεδομένων – αποτελεσμάτων

Η συμμετοχή του παιδιού σας στην έρευνα συνεπάγεται ότι συμφωνείτε με τη δημοσίευση των δεδομένων και των αποτελεσμάτων της, με την προϋπόθεση ότι οι πληροφορίες θα είναι ανώνυμες και δε θα αποκαλυφθούν τα ονόματα ή προσωπικά στοιχεία των συμμετεχόντων.

4. Πληροφορίες

Παρακαλούμε πολύ, μη διστάσετε να κάνετε ερωτήσεις γύρω από το σκοπό ή/και τον τρόπο πραγματοποίησης της έρευνας. Αν τυχόν έχετε κάποιες αμφιβολίες ή ερωτήσεις, απευθυνθείτε στην ερευνήτρια για πρόσθετες εξηγήσεις.

5. Ελευθερία συναίνεσης

Η άδειά σας να συμμετάσχει το παιδί σας στην έρευνα είναι εθελοντική. Είσατε ελεύθεροι να μην συναινέσετε ή να διακόψετε τη συμμετοχή του παιδιού σας όποτε επιθυμείτε χωρίς κυρώσεις.

6. Ενδεχόμενοι κίνδυνοι μελέτης

Δεν υπάρχουν γνωστοί ή ενδεχόμενοι κίνδυνοι από τη συμμετοχή σας στην έρευνα. Θα κληθεί το παιδί σας να απαντήσει σε ερωτήματα που αφορούν τις προσωπικές του συνήθειες

στη χρήση του διαδικτύου. Εάν ωστόσο αισθανθεί κάποιο προβληματισμό/δυσφορία σχετικά με τις συνήθειές του, παρακαλείστε να επικοινωνήσετε με την ερευνήτρια. Πληροφορίες για αρμόδιες υπηρεσίες που αντιμετωπίζουν διαταραχές στο διαδίκτυο, είναι διαθέσιμες εφόσον ζητηθούν.

7. Αναμενόμενα οφέλη

Η συμμετοχή στην έρευνα μπορεί να αφυπνίσει το παιδί σας σχετικά με τη χρήση του διαδικτύου και να προωθήσει πιο υγιείς συνήθειες. Επιπλέον, θα του δώσει τη δυνατότητα να παρακολουθήσει μια ψυχολογική έρευνα πιο άμεσα.

Για τον κηδεμόνα: Διάβασα το έντυπο αυτό, κατανοώ τις ερευνητικές διαδικασίες και συναινώ να συμμετάσχει το παιδί μου στην έρευνα. Ναι Όχι ...

Ημερομηνία: __/__/__

Ονοματεπώνυμο και υπογραφή γονέα/ κηδεμόνα

Εφόσον έχετε απαντήσει θετικά, πατήστε στον επόμενο σύνδεσμο για να μεταβεί το παιδί σας στο ερωτηματολόγιο.

ΕΝΤΥΠΟ ΣΥΝΑΙΝΕΣΗΣ ΜΑΘΗΤΗ/ΜΑΘΗΤΡΙΑΣ ΓΙΑ ΣΥΜΜΕΤΟΧΗ ΣΕ ΕΡΕΥΝΑ
ΕΡΩΤΗΜΑΤΟΛΟΓΙΟΥ ΑΥΤΟ-ΑΝΑΦΟΡΑΣ

Μετάφραση και ψυχομετρικές ιδιότητες της ελληνικής εκδοχής της σύντομης κλίμακας ελέγχου της διαταραχής ηλεκτρονικού παιχνιδιού (Internet Gaming Disorder Scale–Short-Form IGDS9-SF)

1. Σκοπός της ερευνητικής εργασίας

Σκοπός της παρούσας μελέτης είναι η εξέταση των ψυχομετρικών ιδιοτήτων της ελληνικής εκδοχής μιας σύντομης κλίμακας που ελέγχει τη διαταραχής ηλεκτρονικού παιχνιδιού (Internet Gaming Disorder Scale–Short-Form IGDS9-SF).

2. Διαδικασία μετρήσεων

Θα χρειαστεί να συμπληρώσεις ένα ανώνυμο ερωτηματολόγιο σε ηλεκτρονική μορφή, που αξιολογεί τα επίπεδα χρήσης ηλεκτρονικού παιχνιδιού. Επιπλέον, θα χρειαστεί να δώσεις κάποιες πληροφορίες για την ηλικία, φύλο, και τις συνήθειές σου στο διαδίκτυο. Οι απαντήσεις σου είναι ανώνυμες και εμπιστευτικές και δεν θα γνωστοποιηθούν στο γονέα/κηδεμόνα σου.

3. Δημοσίευση δεδομένων – αποτελεσμάτων

Η συμμετοχή σου στην έρευνα σημαίνει ότι συμφωνείς με τη δημοσίευση των δεδομένων και των αποτελεσμάτων της, με την προϋπόθεση ότι οι πληροφορίες θα είναι ανώνυμες και δε θα αποκαλυφθούν τα ονόματα ή προσωπικά στοιχεία των συμμετεχόντων.

4. Πληροφορίες

Παρακαλούμε πολύ, μη διστάσεις να κάνεις ερωτήσεις γύρω από το σκοπό ή/και τον τρόπο πραγματοποίησης της έρευνας. Αν τυχόν έχεις κάποιες αμφιβολίες ή ερωτήσεις, μπορείς να απευθυνθείς στην ερευνήτρια για πρόσθετες εξηγήσεις.

5. Ελευθερία συναίνεσης

Η συμμετοχή σου στην έρευνα είναι εθελοντική. Είσαι ελεύθερος/η να μην συμφωνήσεις ή να διακόψεις τη συμμετοχή σου όποτε επιθυμείς χωρίς κυρώσεις.

6. Ενδεχόμενοι κίνδυνοι μελέτης

Δεν υπάρχουν γνωστοί ή ενδεχόμενοι κίνδυνοι από τη συμμετοχή σου στην έρευνα. Θα απαντήσεις σε ερωτήματα που αφορούν τις προσωπικές σου συνήθειες στη χρήση του

διαδικτύου. Εάν αισθανθείς κάποιο προβληματισμό/δυσφορία σχετικά με τις συνήθειες σου, παρακαλείσαι να επικοινωνήσεις με την ερευνήτρια. Πληροφορίες για αρμόδιες υπηρεσίες που αντιμετωπίζουν διαταραχές στο διαδίκτυο, είναι διαθέσιμες εφόσον ζητηθούν.

7. Αναμενόμενα οφέλη

Η συμμετοχή στην έρευνα μπορεί να σε βάλει σε σκέψη σχετικά με τη χρήση του διαδικτύου και να σε παροτρύνει σε πιο υγιείς συνήθειες. Επιπλέον, θα σου δώσει τη δυνατότητα να παρακολουθήσει μια ψυχολογική έρευνα πιο άμεσα.

Για τον νεαρό μαθητή/τρια: Συναινώ να συμμετάσχω στην έρευνα Ναι Όχι ...

Ημερομηνία: __/__/__

APPENDIX E

DEBRIEFING FORM

Μετάφραση και ψυχομετρικές ιδιότητες της ελληνικής εκδοχής της σύντομης κλίμακας ελέγχου της διαταραχής ηλεκτρονικού παιχνιδιού (Internet Gaming Disorder Scale–Short-Form IGDS9-SF)

Σας ευχαριστώ πολύ για τη συμμετοχή σας στην έρευνα. Χωρίς τη βοήθειά σας δεν θα ήταν δυνατή η ολοκλήρωσή της. Το θέμα της διαταραχής και του εθισμού στο διαδίκτυο κερδίζει όλο και περισσότερο το ενδιαφέρον της ακαδημαϊκής και ψυχοθεραπευτικής κοινότητας, καθώς αυξάνονται τα ποσοστά των περιστατικών που παραπέμπονται για γνωμάτευση και θεραπεία.

Η προσαρμογή αυτής της κλίμακας στην ελληνική γλώσσα θα συμβάλλει στην αντιμετώπιση του φαινομένου καθώς μπορεί να επιτρέψει την έγκαιρη διάγνωση. Συνεπώς θα υπάρχει η δυνατότητα εξατομικευμένης και έγκαιρης παρέμβασης και θεραπείας σε εφήβους που μπορεί να βρίσκονται σε κίνδυνο ανάπτυξης διαταραχής ηλεκτρονικού παιχνιδιού.

Καθώς υπάρχουν άνθρωποι που βρίσκουν το περιεχόμενο των ερωτηματολογίων ενοχλητικό, εάν για οποιοδήποτε λόγο αισθανθείτε δυσάρεστα ή έχετε προβληματισμούς σχετικά με κάποια ερώτηση, μην διστάσετε να επικοινωνήσετε μαζί μας. Μπορείτε να επικοινωνήσετε με την Υπηρεσία Συμβουλευτικής του Deree στο τηλ. 210-6009800. Για παράπονα, προβληματισμούς ή ερωτήσεις σχετικά με την έρευνα μπορείτε επίσης να απευθυνθείτε στην υπεύθυνη συντονισμού του μεταπτυχιακού προγράμματος Εφαρμοσμένης Ψυχολογίας Παιδιών και Εφήβων, Δρ. Τζανικιάν, mjanikian@accg.edu.

Εάν αισθάνεστε ότι χρειάζεστε βοήθεια ή πληροφορίες σχετικά με τη διαταραχή ηλεκτρονικού παιχνιδιού, οι ακόλουθοι οργανισμοί/γραμμές βοήθειας μπορεί να σας φανούν χρήσιμοι:

- <https://saferinternet4kids.gr/hot-topics-ef/ethismos-ef/>
- <https://www.safeline.gr>
- Ιπποκράτειο ΓΝΘ (Ψυχιατρική Υπηρεσία παιδιών και εφήβων)
- Μ. Απεξάρτησης 18 άνω Ψ.Ν.Α (Ψυχιατρική Υπηρεσία)

- Info@help-line.gr

Για μια ακόμη φορά, σας ευχαριστώ πολύ για τη συμμετοχή σας στην έρευνα. Παρακαλώ μην διστάσετε να επικοινωνήσετε μαζί μου για οποιαδήποτε πληροφορία, διευκρίνιση ή ερώτηση σχετικά με την παρούσα μελέτη, Δρ. Ασπασία Σίμψη, στο τηλ. 6988858576 ή στο ηλεκτρονικό ταχυδρομείο asimpsi@acg.edu.

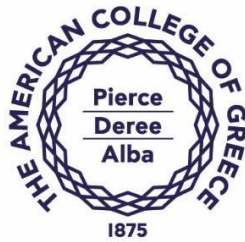
APPENDIX F

DEMOGRAPHIC QUESTIONS

1. Ηλικία....
2. Αγόρι Κορίτσι....
3. Σε ποια ηλικία άρχισες να χρησιμοποιείς το διαδίκτυο;.....
4. Πόσες ημέρες την εβδομάδα παίζεις συνήθως ηλεκτρονικά παιχνίδια;
Σε περίοδο διακοπών..... Σε περίοδο σχολείου.....
5. Πόσες ώρες καθημερινά παίζεις ηλεκτρονικά παιχνίδια;
Σε περίοδο διακοπών:
Σε περίοδο σχολείου:
6. Παίζεις μόνος σου; Ναι.... Όχι
7. Αν όχι, πόσους συμπαίχτες έχεις συνήθως.....
8. Για ποιο λόγο παίζεις ηλεκτρονικά παιχνίδια:
 - Για διασκέδαση
 - Από βαρεμάρα
 - Από μοναξιά
 - Για να βρω φίλους
 - Γιατί δεν έχω κάτι άλλο να κάνω
 - Άλλοι λόγοι.....

APPENDIX G

INSTITUTIONAL REVIEW BOARD APPROVAL



Institutional Review Board

July 24th, 2023

Aspasia Simpsi, Student of the MA Program in Educational Psychology

Re: Exempt determination (IRB protocol #202307372)

Dear Researcher,

Thank you for submitting your study entitled, "Translation in Greek and Psychometric Properties of The 9-item Internet Gaming Disorder Scale–Short-Form (IGDS9-SF)". *The IRB has reviewed and approved* your study.

Please keep in mind that the IRB Committee must be contacted if there are any changes to your research protocol. Feel free to contact the IRB [irb@acg.edu] if you have any questions.

Best Wishes for your research work.

Ion Beratis, Ph.D.

Chair, IRB

Cc: Office of the Chief Academic Officer

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