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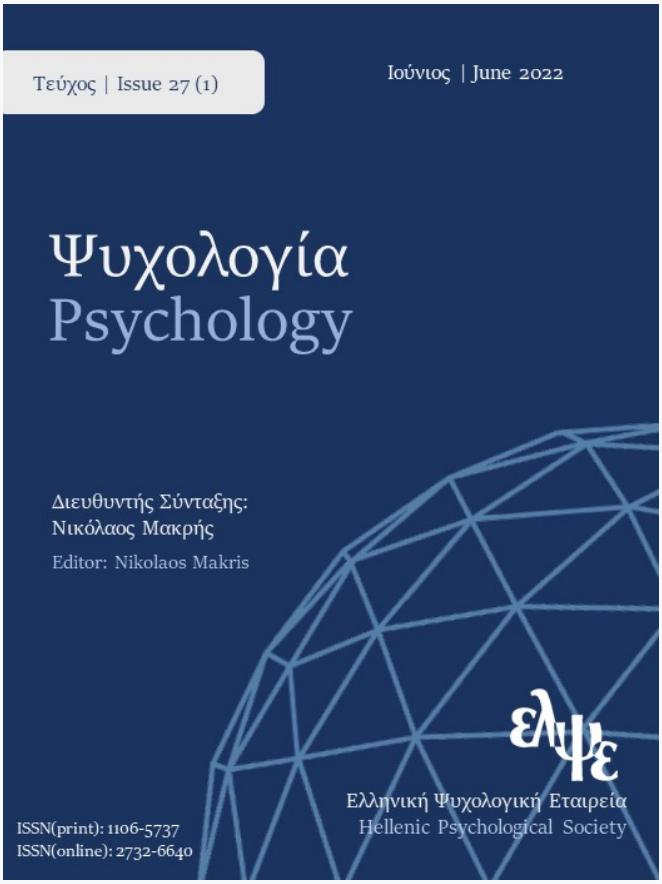

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ΕΜΠΕΙΡΙΚΗ ΕΡΓΑΣΙΑ | RESEARCH PAPER

Internet addiction among psychology students: the role of resilience and perceived economic hardship

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KEYWORDS

Psychology students,
internet addiction,
resilience,
perceived economic hardship

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ABSTRACT

The present study aimed to investigate internet addiction among psychology students, as well as the role of resilience and perceived economic hardship in the manifestation of the phenomenon. The study involved 252 students (233 women, 19 men) of Aristotle University of Thessaloniki. They completed a self-report questionnaire, which included a short version of a scale on resilience (The Connor-Davidson Resilience Scale - CD-RISC), a scale on perceived economic hardship (Economic Hardship Questionnaire), and a scale on Internet Addiction (Internet Addiction Test). The results showed that students of Psychology, regardless of their academic year, make above-average/normal and excessive/addictive internet use displaying indicative behaviors (e.g., uncontrollable internet use, neglect of social life). Furthermore, based on the path analysis models, it seemed that students' resilience is a negative predictor of above-average/normal and excessive/addictive internet use (and their indicative behaviors). An indirect positive predictive relationship was also found between students' perceived economic hardship and their above-average/normal and excessive/addictive internet use (and their indicative behaviors) through their sense of resilience. The findings emphasize the need to implement preventive counselling actions within university campuses to engender a safe internet culture among students and strengthen their sense of resilience, especially in a period of recovery from economic crisis.

Introduction

The present study investigated internet addiction among psychology students, as well as the role of resilience and perceived economic hardship in the manifestation of the above phenomenon. Over the last decade, the multidimensional and daily use of the Internet, for reasons such as information research, social networking, access to restricted content and gambling, has gradually blurred the boundaries between safe and unsafe internet use. Unsafe internet use is usually reflected through a frequently recorded phenomenon, such as internet addiction. Internet addiction refers to the daily, long and forced use of the Internet, which has a negative impact on a person's social, psychological and professional life (Griffiths, 1997; Scherer, 1997; Touloupis & Athanasiades, 2014; Young, 1996). Internet addiction, although not a clinical entity (American Psychiatric Association, 2013), is similar to other addictive behaviors (e.g., pathological gambling). They share common symptoms, such as mood swings, tolerance, withdrawal, internal conflict, recurrence and denial of the problem (Griffiths, 1995; Mitsiou & Stogiannidou, 2009). Young (1996, 1998) adapted the

criteria for pathological gambling to diagnose excessive/addictive internet use, constructing a scale for detecting cases of internet addiction (Internet Addiction Test). Based on this scale, internet users are classified as those who make an "average-normal" use (average users), "above average/normal" use (over-users) and "excessive/addictive" internet use (Young, 1998).

Taking into consideration the fact that there is a rapid increase in the number of adolescents that own modern electronic media (e.g., smartphones) and engage with social networking sites (e.g., Facebook, Twitter, Instagram), as well as the general experimentation that characterizes the transition period of adolescence (Crosslin & Golman, 2014; Touloupis & Athansiades, , 2018, 2020; Zalaquett & Chatters, 2014), it is not surprising that the prevalence of internet addiction among adolescents has been frequently investigated (Gholamian et al., 2017; Hassan et al., 2020; Kaur & Sharma, 2015; So et al., 2017; Touloupis & Teli, 2021; Xin et al., 2018). However, unsafe internet use seems to carry on as they grow older. The period between the ages of 18 and 26, known as "emerging adulthood", is characterized by free will at a higher level than during other developmental periods. Students at this stage delay decision-making and confront "open" and "unclear" options in different domains (e.g., personal/professional life) (Arnett, 2007). The above situation, as well as the fact that the academic years constitute another transitional period where individuals have to adapt to new and potentially difficult situations (e.g., moving to a new city, living alone, socializing with new and unknown people, facing academic obligations), could force a student to see long hours of internet use as a "shelter" from the possibly stressful and vulnerable conditions mentioned before.

Furthermore, it would be interesting to investigate the relevant experience of internet use among students of specific University Departments which, through their curriculum, focus on human behavior and the way it can be affected by contextual and emotional factors (e.g., Study Guide of Undergraduate Studies, Department of Psychology, AUTh, 2021-2022). Among these Departments, the Department of Psychology could be considered representative. This assumption lies in the fact that psychology students, through the courses taught in their curriculum, such as School, Educational and Clinical Psychology, usually delve into issues of youth's risky and addictive behaviours, including internet behaviours, into ways of stress management, as well as into protective and risk factors (e.g., resilience) of risky human behaviors (e.g., Study Guide of Undergraduate Studies, Department of Psychology, AUTh, 2021-2022). Therefore, one could argue that psychology students are expected to be familiarized and sensitized with the issue under study. Subsequently, they are likely to adopt a relatively safe internet use.

Nevertheless, the latter hypothesis has not been answered yet through the limited related studies that are available, as they usually focus on a mixed sample of university students who attend polytechnics as well as Schools of Humanities and Health Sciences (Anand et al., 2018; Younes et al., 2016). These findings show that the prevalence of excessive/addictive internet use among university students remains an under-investigated field. The few available studies report that almost 17% of students in the United States and Asia make above-average/normal use of the Internet, while the rates of internet-addicted students range from 1% to 15% (Anand et al., 2018; Chi et al., 2016; Lin et al., 2018; Sharma, & Sharma, 2018; Wu et al., 2017; Younes et al., 2016). In the case of both categories, above-average/normal and excessive/addictive internet use, it has been observed that there is an over-representation of students in the first year of their studies as well as male students. In addition, excessive/addictive internet use is a predictor of a significantly negative impact on university students' academic performance (Amin & Kaur, 2014; Anand et al., 2018; Younes et al., 2016). Regarding Greek literature, the findings are more limited. Based on the available studies, it seems that up to 28% of university students make above-average/normal internet use, while excessive/addictive internet use seems to concern about 3.5% of students (Annousis et al., 2017; Iliopoulou, 2016; Demsia et al., 2016).

Furthermore, the related literature mentions a number of psycho-emotional factors that seem to act more or less protectively in someone's involvement in online risk behaviors such as excessive/addictive internet use. One of these factors is the sense of resilience, which refers to an individual's ability to adapt positively to a situation, despite difficult and adverse conditions and exposure to risk factors (Luthar, 2006; Masten, 2001; Rutter, 2006). Studies conducted on adolescents and young adults report that high perceived resilience is related to low involvement in excessive/addictive or above-average/normal internet use (Bilgin & Tas, 2018; Nam et al., 2018; Yen et al., 2019). In other words, people who are generally better able to successfully overcome new, unexpected and/or difficult situations barely feel the need to seek "shelter" by

surfing the Internet for hours to "forget" their problems, limiting the possibility of excessive/addicted internet use (and vice versa). This fact, in turn, contributes to the strengthening of people's resilience and general psychological adjustment or vice versa, thus creating a vicious circle (Bilgin & Tas, 2018; Nam et al., 2018; Yen et al., 2019). Considering the challenging and possibly difficult circumstances faced during academic years, as described earlier, it is worth investigating if and how university students' sense of resilience can act, during this transitional period, as a protective filter in the manifestation of online risk behaviors such as internet addiction. In fact, the latter would be of high importance to be investigated in the case of undergraduate psychology students, as it seems that during their studies, they are already interested in enhancing their sense of well-being and resilience in an effort to be efficient professionals of mental health in the future (Flouli, Athanasiades, & Touloupis, 2021). Specifically, almost 34% of undergraduate psychology students mention that in order to enhance their resilience, not only do they attend related courses such as Clinical and Counselling Psychology, but they are also having or are in the process of taking individual psychotherapy (Flouli et al., 2021). Therefore, this could mean that psychology students, compared to other students, are more likely to have opportunities for introspection and enhanced resilience, which could act as a protective factor for developing maladaptive patterns of behaviors even in cyberspace, such as internet addiction.

Since a person's sense of resilience is formed through the interaction of both inherent characteristics and contextual influences (e.g., perceived socioeconomic circumstances/supportive framework) (Fergus & Zimmerman, 2005; Masten & Narayan, 2012), one should not omit to take into consideration perceived contextual factors, which may contribute to people's emotional state and subsequently to the likelihood of displaying risky behaviors even on the Internet. During the current period, perceived economic hardship is considered one of the most important contextual factors, as many European countries, such as Greece, are still experiencing the repercussions of the global economic crisis (Cuadrado-Roura et al., 2016; Simou & Koutsogeorgou, 2014; Smith & Swain, 2010). According to the related findings, the severe consequences of the economic crisis have significantly affected young people, including Greek citizens, in many domains of their life, leading them to a vulnerable emotional state (Papageorgiou & Petousi, 2018; Revilla et al., 2018). That is, youth whose families have been hit by the economic crisis tend to experience a low sense of resilience. In other words, the more severe individuals perceive the consequences of the economic crisis on their family's daily life, the less they feel able to positively adapt to adverse circumstances (Papageorgiou & Petousi, 2018; Revilla et al., 2018). On the other hand, research findings show that perceived repercussions of the economic crisis possibly make young people (e.g., adolescents, adults) prone to develop addictive behaviors, such as alcohol and drug abuse, bullying and generally aggressive behaviors (De Haan et al., 2020; Lazaratou et al., 2017; Mateo-Urdiales et al., 2020; Pickett et al., 2013). In other words, the more severe individuals perceive the consequences of the economic crisis on the daily life of their family or their own, the more likely they are to behave in a violent, antisocial or risky way in their interpersonal relationships (e.g., aggression, bullying, alcohol use) as a way of relieving daily pressure (De Haan et al., 2010; Hong et al., 2020; Lazaratou et al., 2017; Mateo-Urdiales et al., 2020).

Based on the above findings, someone could argue that sense of resilience may act as a moderator in the relationship between young people's perceived economic hardship and the development of risky behaviors, such as internet addiction. Nevertheless, according to our literature review, no study has investigated the network of relationships above (perceived economic hardship, resilience, internet addiction), especially during academic years.

Aiming at answering the research questions that emerged from the literature review, the present study investigated the prevalence of internet addiction among psychology students and the role of their resilience and perceived economic hardship in the manifestation of the above phenomenon. Based on the relevant literature, the theoretical connection model of the variables of the present study is illustrated in Figure 1.

According to the related findings, psychology students are expected to be involved in unsafe internet use (above average/normal, excessive/addictive) at low levels (Hypothesis 1) (Anand et al., 2018; Annousis et al., 2017; Demsia et al., 2016; Younes et al., 2016). In addition, it is expected that students' resilience is a negative predictor of their above-average/normal and excessive/addictive internet use (and behaviors indicative of excessive/addictive internet use) (Hypothesis 2) (Bilgin & Tas, 2018; Nam et al., 2018; Yen et al., 2019). Furthermore, it is expected that there is a direct (Hypothesis 3) (Bilgin & Tas, 2018; Fergus &

Zimmerman, 2005; Masten & Narayan, 2012; Nam et al., 2018; Yen et al., 2019), as well as an indirect positive predictive relationship between students' perceived economic hardship and their above-average/normal and excessive/addictive internet use (and behaviors indicative of excessive/addictive internet use) through their sense of resilience (Hypothesis 4) (De Haan et al., 2010; Fergus & Zimmerman, 2005; Masten & Narayan, 2012; Hong et al., 2020; Lazaratou et al., 2017; Mateo-Urdiales et al., 2020). Finally, students who are in their first year of study are expected to engage to a greater extent in unsafe internet use (above average/normal, excessive/addictive) (Hypothesis 5) (Amin & Kaur, 2014; Anand et al., 2018; Younes et al., 2016). Regarding students' level of internet use according to their gender, this was not set as a research goal, and a hypothesis due to the large disproportion of students' sample in terms of their gender.

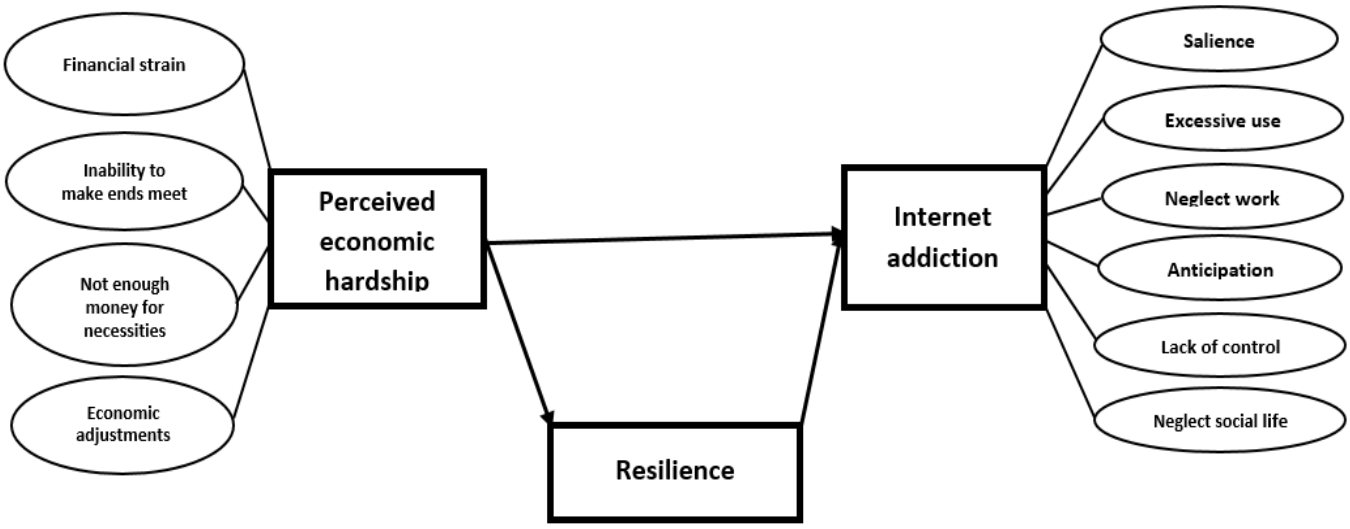

Figure 1. Hypothetical structural model of the network of relationships among variables

Method

Sample

The pilot sample of the study consisted of 50 students from a Department of Psychology in Greece [45 (90%) women and 5 (10%) men]. The pilot study did not indicate the need to modify the scales. Therefore, the pilot sample was integrated into the sample of the main study (202 students of the same department), resulting in a total sample of 252 students [233 (92.5%) women and 19 (7.5%) men]. Most students were in the first (91 students, 36.1%) and second (62 students, 24.6%) years of their studies, while a lower percentage of students were in their third (46 students, 18.3%), the fourth (44 students, 17.5%) or even a greater (9 students, 3.6%) academic year. Regarding the age of the students (M = 21, SD = 4.20), 33 (13.1%) were 18 years old, 56 (22.2%) were 19 years old, 59 (23.4%) were 20 years old, 50 (19.8%) were 21 years old, and 29 (11.5%) were 22 years old. Finally, 25 (10%) students were between 24 and 54 years old.

Measures

For the present study, a set of self-reported questionnaires was used. The initial questions were on the students' demographic characteristics (sex, age, year of studies). After this introductory part, three main parts followed:

Internet Addiction Test: This questionnaire is a Greek translation of Young's (1998) Internet Addiction Test (IAT), which has been previously used in a sample of Greek adolescent students with good psychometric properties (Mitsiou & Stogiannidou, 2009). This questionnaire includes 20 questions (e.g., "How often do you find that you stay online longer than you intended?", "How often do you prefer the excitement of the

Internet to intimacy with your friends/partner?", "How often do you lose sleep due to late-night log-ins?") to which the respondents are asked to answer on a 6-point Likert scale (from 0 = Never to 5 = Always). The above questions, according to Young (1996), form six distinct factors: "Salience", "Excessive use", "Neglect of work", "Anticipation", "Lack of control", and "Neglect social life". The total score for each participant is the sum of their answers to the 20 questions, ranging from 0 to 100. Depending on the score, the person is ranked on the following three levels of internet use: "average/normal" use (20-39 points), which means that they have control over their online activities, "above average/normal" use (40-69 points), which means that they occasionally experience some problems due to their online activities, and "excessive/addictive" use (70-100 points), which means that they experience severe problems due to the addiction to their online activities. In other words, the higher the score, the more problems associated with the individual's internet use.

Initially, an exploratory factor analysis was carried out using the main component method and Varimax-type rotation (KMO = .899, Bartlett Chi-square = 1968.314, $p < .001$). Compared to the six factors of the original structure of the test, three factors emerged with eigenvalue > 1.0 and significant interpretive value: Factor 1 = excessive/uncontrollable internet use, explaining 24.23% of the total variance; Factor 2 = salience, explaining 19.69% of the total variance; and Factor 3 = neglect of social life, explaining 10.85% of the total variance. The emergence of these three factors could be attributed to the fact that these dimensions of excessive/addictive internet use were experienced to a greater extent by students. Thereafter, confirmatory factor analysis was performed with the maximum likelihood method, confirming the above model of the three factors (Table 1). The model has a very good fit, χ^2 (87, N = 252) = 147.292, $p < .05$, CFI = .934, TLI = .914, RMSEA = .038, SRMS = .037. The correlations between the three factors are presented in Table 1. The internal consistency indexes for the three factors are: Factor 1 (α = .871), Factor 2 (α = .805), and Factor 3 (α = .858). The affinities (according to Pearson's correlation coefficient r) of the score of each question by each factor with the sum of the scores of the remaining questions of the same factor (corrected item-total correlation) are considered satisfactory: Factor 1 (from r = .48 to r = .74), Factor 2 (from r = .24 to r = .66), and Factor 3 (r = .76).

Resilience Scale: The measurement of students' resilience was carried out with the short version of the Connor-Davidson Resilience Scale (CD-RISC) (Campbell-Sills & Stein, 2007), which is based on the original long version of the scale of Connor and Davidson (2003). The original long version of the CD-RISC (25 items) investigates people's positive adaptation to stressful and/or difficult situations. According to Campbell-Sills and Stein (2007), the factor structure of the original CD-RISC across demographically equivalent samples is unstable, while the short version of the scale has excellent psychometric properties in a sample of undergraduate university students. This finding demonstrates that resilience can be reliably assessed with a subset of the CD-RISC items. Thus, in the short version of the CD-RISC, resilience is measured through 10 representative statements (they reflect the individuals' ability to tolerate experiences such as change, personal problems, illness, pressure, failure, and painful feelings), which form the single factor "resilience" (Campbell-Sills & Stein, 2007). These statements are answered on a 5-point Likert scale (from 0 = "not at all true" to 4 = "almost always true"). Examples of the statements are: "I am able to adapt to change", "I tend to bounce back after illness or hardship", and "I can handle unpleasant feelings". Individual items are summed to produce an overall score, with higher scores indicating higher levels of resilience.

An initial exploratory factor analysis was performed using the main component method and Varimax-type rotation (KMO = .827, Bartlett Chi-square = 1712.347, $p < .001$). One factor emerged with eigenvalue > 1.0 and significant interpretive value, confirming the original unidimensional structure of the scale: Factor 1 = Resilience, explaining 67.14% of the total variance. Thereafter, a confirmatory factor analysis was performed with the maximum likelihood method and confirmed the above unidimensional model (Table 2). The model has a very good fit, χ^2 (87, N = 252) = 135.321, $p < .05$, CFI = .919, TLI = .941, RMSEA = .043, SRMS = .051. The internal consistency index for Factor 1 is α = .899. The affinities (according to Pearson's correlation coefficient r) of the score of each question by Factor 1 with the sum of the scores of the remaining questions of the same factor (corrected item - total correlation) are considered satisfactory: Factor 1 (from r = .59 to r = 83).

Table 1

Confirmatory Factor Analysis of the Internet Addiction Test and inter-factor correlations.

Questions	**F1**	**F2**	**F3**
1. How often do you find that you stay online longer than you intended?	.731		
2. How often do you neglect household chores to spend more time online?	.743		
5. How often do others in your life complain to you about the amount of time you spend online?	.556		
6. How often do your grades or schoolwork suffer because of the amount of time you spend online?	.762		
7. How often do you check your email before something else that you need to do?	.629		
8. How often does your job performance or productivity suffer because of the Internet?	.763		
14. How often do you lose sleep due to late-night log-ins?	.610		
17. How often do you try to cut down the amount of time you spend online and fail?	.601		
9. How often do you become defensive or secretive when anyone asks you what you do online?		.489	
10. How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?		.570	
11. How often do you find yourself anticipating when you will go online again?		.696	
12. How often do you fear that life without the Internet would be boring, empty, and joyless?		.503	
13. How often do you snap, yell, or act annoyed if someone bothers you while you are online?		.637	
15. How often do you feel preoccupied with the Internet when off-line or fantasize about being online?		.716	
18. How often do you try to hide how long you've been online?		.546	
20. How often do you feel depressed, moody or nervous when you are off-line, which goes away once you are back online?		.663	
3. How often do you prefer the excitement of the Internet to intimacy with your friends/partner?			.878
19. How often do you choose to spend more time online over going out with others?			.906

	F1	**F2**	**F3**
F1			
F2	.656**		
F3	.390**	.413**	

Note 1: **F1**: Factor "Excessive/Uncontrollable internet use", **F2**: Factor "Salience", **F3**: Factor "Neglect social life"
Note 2: All of the above standardized loadings among the three factors are statistically significant ($p < .05$)
Note 3: $^{**}p < .01$

Table 2

Confirmatory Factor Analysis of the Resilience Scale.

Statements/Proposals	**F1**
1. I am able to adapt to change	.584
4. I can deal with whatever comes	.732
6. I try to see the humorous side of problems	.598
7. Coping with stress can strengthen me	.708
8. I tend to bounce back after illness or hardship	.593
11. I can achieve goals despite obstacles	.771
14. I can stay focused under pressure	.512
16. I am not easily discouraged by failure	.801
17. I think of myself as being a strong person	.721
19. I can handle unpleasant feelings	.533

Note 1: **F1**: Factor "Resilience"

Note 2: All of the above standardized loadings among the three factors are statistically significant ($p < .05$)

Economic Hardship Questionnaire: Perceived economic hardship was measured using the economic hardship questionnaire of Barrera, Caples, and Teine (2001). The questionnaire, which has been previously translated and administered to a sample of Greek teachers with good psychometric properties (Stagia & Iordanidis, 2014), measures, through 20 questions/statements, participants' perceived psychological sense of economic burden in the following four areas: financial strain, which refers to a person's assessment of his/her future financial situation (e.g., "In the next three months, how often do you expect that you will have to do without the basic things that you need?"); inability to make ends meet, which has to do with a person's perceived inability to make ends meet (e.g., "I have difficulty with paying my bills"); not enough money for necessities, which concerns people's sense that their family faces difficulties in responding to basic financial needs (e.g., "My family had enough money to afford the kind of medical care we should have"); and economic adjustments/cutbacks, which refers to a person's attempt to reduce costs and at the same time find new resources (e.g., "How often do/did you change food shopping or eating habits to save money?"). For the present study, it was clarified that the questions/statements are concerned only with the period covering participants' academic years. The questions/statements are answered on a 5-point Likert scale (from 1 = "almost never" / "strongly disagree" to 5= "almost always" / "strongly agree"). Individual items were summed to produce an overall score for each subscale, with higher scores indicating higher levels of economic hardship.

Initially, an exploratory factor analysis was performed using the main component method and Varimax-type rotation (KMO = .801, Bartlett Chi-square = 1981.398, $p < .001$). Four factors emerged with eigenvalue > 1.0 and significant interpretive value, confirming the original structure of the questionnaire: Factor 1 = economic adjustments/cutbacks, explaining 27.14% of the total variance; Factor 2 = not enough money for necessities, explaining 17.23% of the total variance; Factor 3 = inability to make ends meet, explaining 11.39% of the total variance; and Factor 4 = financial strain, explaining 10.14% of the total variance. Thereafter, a confirmatory factor analysis was performed with the maximum likelihood method and the above model was confirmed (Table 3). The model has a very good fit, χ^2 (87, N = 252) = 128.445, $p < .05$, CFI = .933, TLI = .919, RMSEA = .033, SRMS = .035. The internal consistency indexes for the four factors are: Factor 1 (α = .823), Factor 2 (α = .809), Factor 3 (α = .788), and Factor 4 (α = .742). The affinities (according to Pearson's correlation coefficient r) of the score of each question by each factor with the sum of the scores of the remaining questions of the same factor (corrected item - total correlation) are considered satisfactory: Factor 1 (r = .74), Factor 2 (r = .59), Factor 3 (from r = .38 to r = .71), and Factor 4 (from r = .41 to r = .65).

Table 3

Confirmatory Factor Analysis of the Economic Hardship Questionnaire and inter-factor correlations.

Questions/Statements	F1	F2	F3	F4
1. How often do/did you change food shopping or eating habits to save money?	.543			
2. How often do/did you shut down the heat or air conditioning to save money even though it made the house uncomfortable?	.781			
3. How often did not you go to see the doctor or dentist when you need(ed) to because you had to save money?	.447			
4. How often do/did you fall behind in paying bills?	.789			
5. How often do/did you ask relatives or friends for money or food to help you get by?	.590			
6. How often do/did you enter a part-time job to make ends meet?	.487			
7. How often do/did you receive government assistance?	.701			
8. How often do/did you sell some possessions because you need(ed) the money (even though you really want(ed) to keep them)?	.698			
9. How often did you/your family move to another house or apartment to save some money?				
1. My family had enough money to afford the kind of home we should have.		.431		
2. My family had enough money to afford the kind of clothing we should have.		.689		
3. My family had enough money to afford the kind of furniture or household appliances we should have.		.570		
4. My family had enough money to afford the kind of car we would need.		.703		
5. My family had enough money to afford the kind of food we should have.		.629		
6. My family had enough money to afford the kind of medical care we should have.		.738		
7. My family had enough money to afford leisure and recreational activities.		.635		
1. I have difficulty with paying my bills.			.702	
2. Generally, at the end of each month, I find it difficult to make ends meet.			.798	
1. In the next three months, how often do you expect that you will have to do without the basic things that you need?				.544
2. In the next three months, how often do you think that you and your family will experience bad times such as poor housing or not having enough food?				.599

	F1	F2	F3	F4
F1				
F2	.498**			
F3	.582**	.421**		
F4	.545**	.374**	.404**	

Note 1: **F1**: Factor "Economic Adjustments/Cutbacks", **F2**: Factor "Not Enough Money for Necessities", **F3**: Factor "Inability to Make Ends Meet", **F4**: Factor "Financial Strain"
Note 2: All of the above standardized loadings among the three factors are statistically significant ($p < .05$)
Note 3: **$p < .01$

Procedure

Data collection took place in the classrooms of the Department of Psychology of Aristotle University of Thessaloniki in the presence of the researcher (first author) and the professor, whose consent had previously been obtained. Shortly before the end of the taught course, the researcher informed the students about the reason for his presence and administered the questionnaires and consent form, which stated all the necessary information about the study's purpose, the anonymity of the data, and the voluntary nature of the process. Filling-in the questionnaires took about 10-15 minutes without any problems or difficulties. The above procedure was followed in both the pilot and main phases of the study.

Results

Methods of Analyses

First of all, descriptive statistics were used to depict the levels of students' internet use (average/normal, above average/normal, excessive/addictive), the extent of their behaviors indicative of internet addiction (excessive/uncontrollable internet use, salience, neglect social life), their sense of resilience, and their perceived economic hardship (e.g., economic adjustments/cutbacks). In addition, to test the effect of the academic year of study on students' level of internet use, on the one hand, and their behaviors indicative of internet addiction, on the other hand, two multivariate analyses of variance (MANOVA) were applied. In both analyses, students' academic year of study was set as an independent variable. As for the dependent variables, in the first MANOVA, the three levels of internet use (average/normal, above average/normal, excessive/addictive) were considered, while in the second MANOVA, the behaviors indicative of internet addiction (factors that emerged from the Internet Addiction Test) were considered. A series of Pearson correlation analyses were carried out (Pearson *r*) to investigate the dyadic relationships between the variables involved (levels of internet use, behaviors indicative of internet addiction, resilience, and perceived economic hardship). The research hypotheses (Hypotheses 2, 3, and 4) were confirmed by applying path analyses to the data (using the Mplus program with the maximum likelihood method) to highlight the network of relationships between the variables involved, which explains the dependent variables of the study (levels of internet use, behaviors indicative of internet addiction).

Descriptive Findings

Internet use among students

The students' self-reports, which were based on criteria by Young (1998), showed that 73.2% of students (N = 185) make average/normal internet use, 21.9% (N = 55) make above average/normal internet use, while for 4.9% of the students (N = 12), their internet use is characterized as excessive/addictive. The most representative behavior of excessive/addictive internet use is the fact that students find it difficult to put a time limit on internet use (excessive/uncontrollable internet use) (M = 4.31, SD = .77) and perceive internet use as their most important daily activity (salience) (M = 4.14, SD = .78). Furthermore, to a lesser extent, the students neglect their social activities and relationships (neglect social life) in favor of using the Internet (M = 3.89, SD = .85).

Students' resilience

Based on the students' scores on the Resilience Scale and considering the response system of the scale, it seems students are characterized by a medium level of resilience (M = 2.71, SD = .52).

Students' perceived economic hardship

According to the students' responses, it seems that, to a great extent, they have experienced/experience economic crisis in terms of trying to reduce costs and, at the same time, seeking to find new resources (economic adjustments/cutbacks) (M = 4.71, SD = .59), as well as in terms of their family's difficulty to

respond to basic financial needs (not enough money for necessities) (M = 4.52, SD = .71). On the other hand, it seems the economic crisis is reflected to a relatively lesser extent in the students' perceived personal inability to make ends meet (inability to make ends meet) (M = 3.89, SD = .70) as well as in the students' assessment of their future financial situation (financial strain) (M = 3.75, SD = .58).

Effect of the academic year of study on students' internet use

According to the results, students' academic year does not have a statistically significant effect on the levels of their internet use ($p > .05$) and on the manifestation of behaviors indicative of internet addiction (factors emerged from the Internet Addiction Test) ($p > .05$).

Correlations among the variables

According to Table 4, there are significant (positive and negative) correlations between the three levels of students' internet use (average/normal, above average/normal, excessive/addictive) (from r = -.174 to r = -.299, $p < .01$). Also, positive correlations were identified between students' behaviors indicative of internet addiction (from r = .439 to r = .676, $p < .01$) and between the four factors that emerged from the perceived economic hardship questionnaire (from r = .212 to r = .599, $p < .01$). Students' resilience is positively correlated with students' average/normal internet use (r = .133, $p < .05$), while it is negatively correlated with students' above average/normal and excessive/addictive internet use (from r = -.298 to r = -.444, $p < .01$), as well as with behaviors indicative of internet addiction (from r = -.252 to r = -.373, $p < .01$). In relation to students' perceived economic hardship, negative correlations were observed between the four factors of the related questionnaire, on the one hand, and students' average/normal internet use, on the other hand (from r = -.105, $p < .05$ to r = -.121, $p < .01$). However, positive correlations are observed between the four factors of the economic hardship questionnaire, on the one hand, and the unsafe levels of internet use (above average/normal, excessive/addictive) (from r = .129, $p < .05$ to r = .392, $p < .01$) and behaviors indicative of internet addiction (from r = .122, $p < .05$ to r = .419, $p < .01$), on the other hand. Finally, students' perceived economic hardship (four emerging factors) and their sense of resilience are negatively correlated with each other (from r = -.218 to r = -.591, $p < .01$).

Path analyses

To map the network of relationships between the variables involved that lead, first, to the levels of students' internet use and, secondly, to the students' behaviors indicative of internet addiction, a series of preliminary analyses of linear stepwise regressions were performed to check the predictive relationships between the variables per two. The path analyses included only those variables with statistically significant predictive relationships to meet the assumptions of normality. Without any missing cases, the path models that emerged from the students' answers had good fit indexes for students' level of internet use, χ^2 (87, N = 252) = 31.823, $p > .05$ (CFI = .991, TLI = .937, RMSEA = .063, SRMR = .088) (Figure 2), and for students' behaviors indicative of internet addiction, χ^2 (87, N = 252) = 41.432, $p > .05$ (CFI = .994, TLI = .923, RMSEA = .065, SRMR = .083) (Figure 3).

By examining the statistically significant mediating role of students' resilience in the relationship between their perceived economic hardship, on the one hand, and their level of internet use, on the other hand, the following were found: Students' sense of resilience constitutes a negative mediating factor between their perceived economic hardship [economic adjustments (Z[1] = -2.88, $p < .01$ and Z = -2.74, $p < .01$ respectively), not having enough money for necessities (Z = -2.53, $p < .01$ and Z = -2.59, $p < .01$ respectively), inability to make ends meet (Z = -2.28, $p < .05$ and Z = -2.17, $p < .05$ respectively)], on the one hand, and students' excessive/addictive and above average/normal internet use, on the other hand (Figure 2).

[1] Z = standardized normal distribution value.

Table 4
Correlations among the variables.

Variables	1	2	3	4	5	6	7	8	9	10	11
1 Average/normal internet use											
2 Above average/normal internet use	-.174**										
3 Excessive/addictive internet use	-.299**	.281**									
4 Excessive/uncontrollable internet use (symptom of internet addiction)	-.343**	.143*	.545**								
5 Salience (symptom of internet addiction)	-.233**	.127*	.339**	.676**							
6 Neglect social life (symptom of internet addiction)	-.189**	.189**	.371**	.559**	.439**						
7 Resilience	.133*	-.298**	-.444**	-.311**	-.373**	-.251**					
8 Economic adjustments/cutbacks	-.121*	.271**	.392**	.209**	.398**	.419**	-.591**				
9 Not enough money for necessities	-.119*	.243**	.288**	.201**	.309**	.401**	-.433**	.599**			
10 Inability to make ends meet	-.111*	.198**	.190**	.174**	.297**	.304**	-.340**	.444**	.381**		
11 Financial Strain	-105*	.129*	.139*	.122*	.129*	.202**	-.218**	.331**	.220**	.212**	

Note 1: *$p < .05$, **$p < .01$

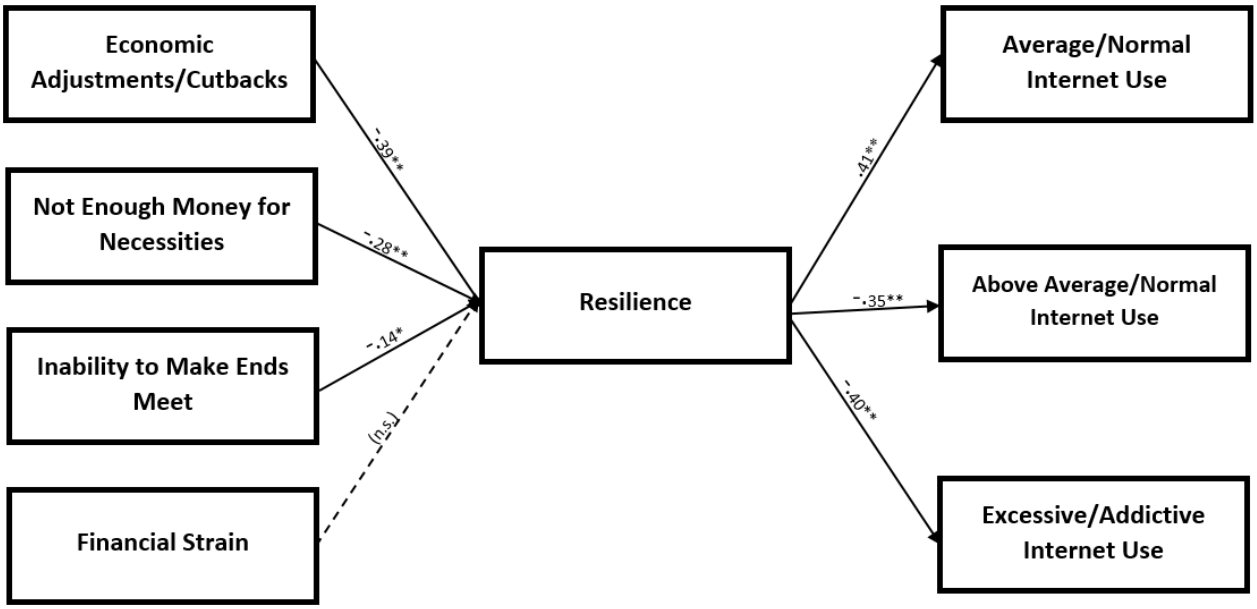

Figure 2. Schematic representation of the path model for the students' level of internet use

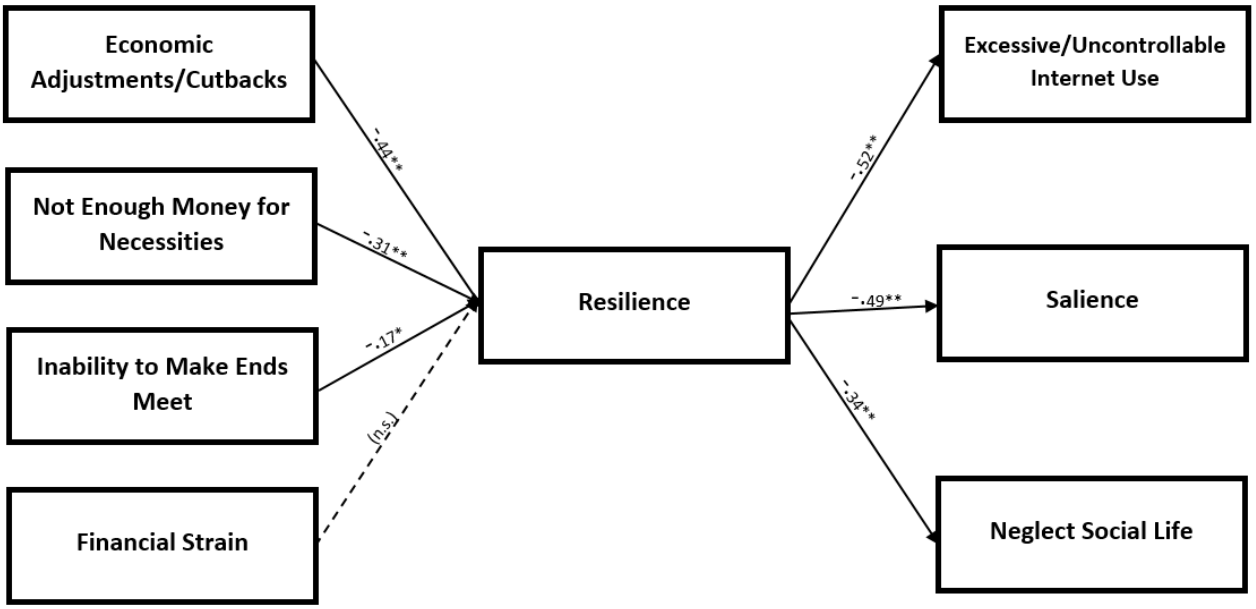

Figure 3. Schematic representation of the path model for the students' behaviors indicative of internet addiction

According to Figures 2 and 3, students' perceived economic hardship (economic adjustments, not enough money for necessities, inability to make ends meet, financial strain) negatively predicts their sense of resilience. Instead, students' sense of resilience constitutes a positive mediating factor between their perceived economic hardship [economic adjustments (Z = 2.98, p < .01), not having enough money for necessities (Z = 2.74, p < .01), inability to make ends meet (Z = 2.23, p < .05)], on the one hand, and their average/normal internet use, on the other hand (Figure 2). In other words, when students perceive that the economic crisis has/had a negative impact on their life, it leads to a lower sense of resilience, which in turn increases for students the possibility of making excessive/addictive or above-average/normal internet use while also reducing the possibility of making safe (average/normal) internet use.

Furthermore, the path analyses showed that students' sense of resilience constitutes a negative mediating factor between their perceived economic hardship [economic adjustments (Z = -2.75, p < .01, Z = -2.85, p < .01, and Z = -2.55, p < .01 respectively), not having enough money for necessities (Z = -2.72, p < .01, Z = -2.55, p < .01, and Z = -2.57, p < .01 respectively), the inability to make ends meet (Z = -2.38, p < .05, Z = -2.19, p < .05, and Z = -2.35, p < .01 respectively)], on the one hand, and their behaviors indicative of internet addiction (excessive/uncontrollable internet use, salience, and neglect of social life), on the other hand (Figure 3). In other words, when students perceive that the economic crisis has/had a negative impact on their lives, it leads to a lower sense of resilience, which in turn increases students' possibility of displaying behaviors indicative of internet addiction (excessive/uncontrollable internet use, salience, neglect of social life).

Finally, it should be noted that the only factor/variable from the economic hardship questionnaire that did not seem to predict, neither directly nor indirectly, students' level of internet use and their behaviors indicative of internet addiction is students' assessment of their future financial situation ("Financial strain").

Discussion

The present study aimed to investigate the phenomenon of internet addiction among students of psychology, as well as the role of resilience and perceived economic hardship in the manifestation of the above phenomenon.

According to the findings, psychology students are engaged in unsafe internet use. In particular, almost 22% of the students make above-average/normal internet use, and 5% can be categorized as excessive/addictive internet users according to the criteria set by Young (1998), manifesting indicative behavior such as uncontrollable internet use, perceiving internet use as the most important daily activity (salience), and neglecting their social life. These findings confirm Hypothesis 1 as well as corresponding available studies that report similar rates among university students (Anand et al., 2018; Annousis et al., 2017; Chi et al., 2016; Lin et al., 2018; Sharma & Sharma, 2018; Wu et al., 2017; Younes et al., 2016). However, considering that the penetration of the Internet into young Greek's daily lives is slower than in other countries, such as China, Korea, and Singapore (Ki Sook & Kyunghee, 2009; Mythily, Qiu, & Winslow, 2008; Zboralski, Orzechowska, Talarowska, Darmosz, Janiak, Janiak, & Gałecki 2009) the above rates of the present study are considered worrying. Furthermore, this finding may need even more attention, given the fact that the participating students study in a university department (Psychology), where they are taught and are sensitized to a greater extent than students of other university Schools on issues that relate to addictive behavior in a physical (e.g., drugs) or virtual environment (e.g., internet addiction), prevention strategies, as well as protective and risk factors of these behaviors (Study Guide of Undergraduate Studies, Department of Psychology, AUTh, 2021-2022).

In addition, this study showed that students' sense of resilience negatively predicts unsafe levels of internet use (above average/normal, excessive/addictive) and behaviors indicative of internet addiction (e.g., neglect of social life). This finding suggests that the less students feel able to successfully overcome or adapt to new and/or difficult circumstances (resilience), such as the transitional and sometimes challenging period of academic years, the more likely they are to perceive cyberspace as a supportive environment where they can spend a lot of time daily (neglecting other activities) to escape from unpleasant thoughts or feelings during this period. On the contrary, it was found that students with high resilience levels do not tend to choose this "solution" without making cyber-navigation a priority in their daily life (salience), perhaps because they invest time in activities in a physical environment (e.g., socializing with other people). As a result, they become average/normal internet users. These findings confirm Hypothesis 2 and related studies conducted on adolescents and young adults (Bilgin & Tas, 2018; Nam et al., 2018; Yen et al., 2018). Considering that the majority of the participating students reported a medium level of resilience, this can be a warning sign of future unsafe levels of internet use (above average/normal, excessive/addictive). Nevertheless, the fact that another study conducted on psychology students reports that almost 1/3 of them are already in the process of individual psychotherapy (Flouli et al., 2021) is considered encouraging, as it shows that psychology students take initiatives to enhance their professional skills and mental resilience. These can act as protectors against their future involvement in dysfunctional/addictive behaviors.

Furthermore, the results of the path analyses revealed that students' sense of resilience seemed to act as a negative mediator in the relationship between students' perceived economic hardship, on the one hand, and their unsafe level of internet use (above average/normal, excessive/addictive) as well as their behaviors indicative of internet addiction, on the other hand. Regarding students' safe level of internet use, their sense of resilience constitutes a positive mediator in the relationship between their perceived economic hardship and their average/normal internet use. The above findings confirm Hypothesis 4 and related studies (Bilgin & Tas, 2018; Fergus & Zimmerman, 2005; Masten & Narayan, 2012; Nam et al., 2018; Yen et al., 2018). On the contrary, these findings reject Hypothesis 3, regarding the existence of a direct positive predictive relationship between how students perceive economic hardship, on the one hand, and their levels of internet use as well as their behaviors indicative of internet addiction, on the other hand. Additionally, these findings are inconsistent with those of other studies, which report that perceived consequences of the financial crisis on individuals' daily life can make them prone to develop antisocial, violent or addictive behaviors in a physical context (De Haan et al., 2010; Hong et al., 2020; Lazaratou et al., 2017; Mateo-Urdiales et al., 2020) to escape daily pressure. The above-discussed findings of the present study imply the following: when a student feels that the economic crisis has negatively affected their daily life, they are not necessarily vulnerable to adopting online risky/addictive behaviors, such as internet addiction (displaying indicative behaviors) or above average/normal internet use, as a way out of their financial problems, as long as the student feels resilient. In other words, students' sense of resilience finally seems to have the potential to curb the effect of perceived economic hardship on the manifestation of online dysfunctional/risky behaviors. For young adults, cyberspace is still considered a new, challenging and under-explored environment (Almarabeh et al., 2016; Coiro, 2003). Perhaps, this explains why perceived economic hardship does not necessarily lead young adults to the adoption of a maladaptive pattern of internet use.

On the contrary, perceived financial pressure (due to economic crisis) seems to make young adults more easily prone to develop dysfunctional behaviors in a physical context (e.g., alcohol use, violence) (De Haan et al., 2010; Hong et al., 2020; Lazaratou et al., 2017; Mateo-Urdiales et al., 2020). Dysfunctional behaviours have been systematically reported among youth during the last decades (e.g., Kokkevi et al., 2007; Quigley & Leonard, 2004) before internet penetration in youth's daily routine. Considering the virtual environment as a means of escaping from daily (e.g., financial) problems seems to presuppose students' vulnerable emotional state (low resilience). However, this finding should be considered with caution due to the lack of other related findings. Furthermore, considering the increasingly crucial role of the Internet in youth's life, future studies should re-examine the moderating role of resilience in the relationship between students' perceived economic hardship and internet addiction.

It should also be highlighted that, according to standardized normal distribution values (*Z*) of path analyses, a student's attempt to reduce costs in their daily life (economic adjustments/cutbacks) and a student's sense that their family faces difficulties in covering basic needs (not enough money for necessities) proved to be the most important indirect predictive factors in students' level of internet use and their behaviors indicative of internet addiction. Instead, students' perceived inability to make ends meet (inability to make ends meet) proved to have lower indirect predictive power. The last is probably related to the fact that the factor "inability to make ends meet" refers to a student's sense that they are unable to cover basic personal financial obligations/needs during their academic years (e.g., paying bills). However, because most university students usually depend financially on their families, it can be argued that students' perceived inability to make ends meet may result from their general sense that their family is in financial hardship. This sense is reflected through the statements/proposals of the factor "not having enough money for necessities", a factor with higher predictive power in the path analyses.

In addition, the fact that the factor "financial strain" did not have a statistically significant indirect predictive factor in students' level of internet use and their behaviors indicative of internet addiction possibly implies the following: This factor concerns a student's assessment of their future (and not the present) financial situation. Consequently, it may not be a significant source of stress for students, as it does not refer to their current economic living conditions. In that way, "financial strain" does not have the predictive power to affect students' low sense of resilience and, in turn, the development of risky/addictive behaviors. The latter can be related to the fact that students' perceived economic hardship is reflected to a lesser extent under the factor "Financial strain", compared to the other factors in the economic hardship questionnaire.

Finally, regarding the effect of the students' year of study on internet use, it was found that their level of internet use (average/normal, above average/normal, excessive/addictive) and the manifestation of behaviors indicative of internet addiction are not affected by whether students are at the beginning, in the middle or at the end of their academic studies. This finding rejects Hypothesis 5 and relevant findings of previous studies (Amin & Kaur, 2014; Anand et al., 2018; Younes et al., 2016), according to which unsafe internet use is a concern mainly for students in the first year of their studies, a period very close to adolescence, where there is intense experimentation and a search for new experiences in a physical or virtual environment (Crosslin & Golman, 2014; Zalaquett & Chatters, 2014). The reported widespread and continuously growing use of electronic media, not only in adolescence but also during academic years of studies (Faucher, Jackson, & Cassidy, 2014), has made the Internet a valuable learning tool and an "arena" where almost every student, regardless of their academic year of study, can experiment in an unsafe way.

In summary, this study concludes that psychology students, regardless of their study year, are involved in unsafe internet use (above-average/normal and excessive/addictive internet use). In addition, students' sense of resilience seems to constitute a necessary condition before students' perceived economic hardship is denatured into risky behaviors in cyberspace. These findings should be interpreted with caution, as they are subject to limitations. In particular, the possibility of socially acceptable answers may affect the internal validity of the data, while the restriction to students of a particular university's department limits the possibility of generalizing the results. Also, the study followed a quantitative method, which did not allow for an in-depth qualitative investigation of the students' relevant experiences through semi-structured interviews.

Nevertheless, the present study contributes to international and Greek literature on the topic. It constitutes a first attempt to capture the network of the relationships between perceived contextual (economic hardship) and emotional factors (resilience) that explains the involvement in unsafe internet use and the manifestation of indicative behaviors among students, who are supposed to be more aware and sensitized on the issues studied. The extent of the above emotional (resilience) and online behavioral state (addictive or above-average internet use) among students, as well as the way these variables are connected, constitute a significant source of awareness for mental health professionals. For example, in the context of university counselling centers, prevention actions should be implemented or enriched, addressing experiential activities that enhance students' sense of resilience, especially in a country still experiencing the aftermath of an economic crisis. Finally, considering the current period of the imposed social distance due to the Covid-19 pandemic, counselling could also be carried out through online sessions. These strategies may inhibit or limit students' future involvement in online risky and addictive behaviors.

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ΕΜΠΕΙΡΙΚΗ ΕΡΓΑΣΙΑ | RESEARCH PAPER

Εθισμός στο διαδίκτυο μεταξύ φοιτητών/ριών ψυχολογίας: ο ρόλος της ψυχικής ανθεκτικότητας και της αντιλαμβανόμενης οικονομικής κρίσης

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ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ

Φοιτητές/ήτριες ψυχολογίας,
εθισμός στο διαδίκτυο,
ψυχική ανθεκτικότητα,
αντιλαμβανόμενη οικονομική κρίση

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ΠΕΡΙΛΗΨΗ

Στην παρούσα έρευνα εξετάστηκε ο εθισμός στο διαδίκτυο μεταξύ φοιτητών/ριών Ψυχολογίας, καθώς και ο ρόλος του παράγοντα της ψυχικής τους ανθεκτικότητας και της αντιλαμβανόμενης οικονομικής κρίσης στην εκδήλωση του εν λόγω φαινομένου. Στην έρευνα συμμετείχαν 252 φοιτητές/ήτριες (233 γυναίκες, 19 άνδρες) του Τμήματος Ψυχολογίας του Αριστοτέλειου Πανεπιστημίου Θεσσαλονίκης. Στο δείγμα χορηγήθηκε ένα ερωτηματολόγιο αυτοαναφοράς, το οποίο περιελάμβανε τη σύντομη έκδοση μιας κλίμακας σχετικά με την ψυχική ανθεκτικότητα (short version of the Connor-Davidson Resilience Scale - CD-RISC), μια κλίμακα για την ανατιλαμβανόμενη οικονομική κρίση (Economic Hardship Questionnaire), καθώς και μια κλίμακα για τον εθισμό στο διαδίκτυο (Internet Addiction Test). Σύμφωνα με τα αποτελέσματα, διαπιστώθηκε ότι οι συμμετέχοντες/ουσες φοιτητές/ήτριες, ανεξάρτητα από το έτος σπουδών τους, κάνουν άνω του μέσου όρου/φυσιολογικού και υπερβολική/εθιστική διαδικτυακή χρήση, επιδεικνύοντας ενδεικτικές συμπεριφορές (π.χ., ανεξέλεγκτη διαδικτυακή χρήση, παραμέληση κοινωνικής ζωής). Επιπλέον, βάσει των αναλύσεων διαδρομών, φάνηκε ότι η αίσθηση ψυχικής ανθεκτικότητας των φοιτητών/ριών προβλέπει αρνητικά την άνω του μέσου όρου/φυσιολογικού και την υπερβολική/εθιστική διαδικτυακή τους χρήση (και τις ενδεικτικές τους συμπεριφορές). Επιπροσθέτως, βρέθηκε έμμεση θετική προβλεπτική σχέση ανάμεσα στην αντιλαμβανόμενη εκ μέρους τους οικονομική κρίση και στην άνω του μέσου όρου/φυσιολογικού και της υπερβολικής/εθιστικής διαδικτυακής τους χρήσης (και των ενδεικτικών τους συμπεριφορών), δια μέσου της αίσθησης της ψυχικής τους ανθεκτικότητας. Τα ευρήματα, μεταξύ άλλων, υποδηλώνουν την αναγκαιότητα υλοποίησης συμβουλευτικών δράσεων πρόληψης εντός του πανεπιστημιακού χώρου, με σκοπό την προώθηση μιας ασφαλούς διαδικτυακής κουλτούρας και την ενδυνάμωση της αίσθησης ψυχικής ευημερίας/ανθεκτικότητας των φοιτητών/τριών, ειδικά σε μια περίοδο ανάκαμψης από την οικονομικη κρίση.