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RESEARCH ARTICLE

The relation between resilience and problematic Internet use among youth

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ABSTRACT

Objective: The purpose of this study was to examine the role of resilience on problematic Internet use (PIU) among 220 Australian youth. Besides, it was investigated how resilience scores differ across the variables such as ethnicity, academic performance and outside school activity.

Method: The study was conducted with an online survey among 220 volunteer high school students in Melbourne. Participants were evaluated by administering the Compulsive Internet Use Scale (CIUS) and Child and Youth Resilience Measure (CYRM-28).

Results: The findings revealed that there was significant negative relationships between PIU and resilience. Also, individual personal skills and context spiritual scores, sub-dimensions of resilience, predicted PIU negatively. Resilience scores of the Black students were lower than those of the White and students from multiple ethnicities. Those whose academic performance was below average and who rarely engaged in activities outside school had low resilience scores.

Conclusion: Findings that PIU may be correlated with low individual personal skills and spirituality were discussed within the framework of this topic. In addition, the results were elaborated regarding the theoretical framework of resilience, and concepts that may be important related to strengthening resilience are included.

Keywords: Problematic Internet use, resilience, youth

INTRODUCTION

Since its invention, the Internet has affected and reshaped virtually every aspect of life (1). However, with the widespread use of the Internet, a number of problematic use of Internet have emerged (2), including Internet gaming disorder, problematic mobile phone use, social media addiction, and Internet gambling (1). Before the publication of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (3), whether PIU should be included as a separate disorder in the text was discussed (4,5). While Internet gaming disorder is included in the supplementary section of DSM-5, gambling disorder is also included under substance-related and addictive disorders (3). Furthermore, both online and offline gaming as well as gambling disorder have been included in the International Classification of Diseases-11 (ICD-11), which is published by the World Health Organization (6). Cheng and Li (7) revealed the global prevalence of PIU as 6% in a meta-analysis.

In this present study, the theoretical background of the main categories of the scale used to measure resilience have subcomponents such as self-efficacy, sociability and cultural connection (8,9). Self-efficacy is the judgment and belief of people about themselves in

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how successful they can be in the face of a particular task. According to Bandura's social cognitive theory, individuals avoid tasks that exceed their own perceived abilities. Therefore, a person who believes that he or she cannot successfully complete a particular task (such as establishing a personal relationship) will avoid and instead spend time on the Internet with less risk (for example, making "virtual" friends from the virtual world) (10,11). In addition, the cognitive distortions of the person lead to low self-efficacy and negative self-evaluation. Such people can take refuge in the Internet environment, a less risky environment, to achieve positive social reactions, and their success here can ignite cognitive distortions such as "you're only good on the Internet" and "you're bad except for the Internet environment"(12).

Social support is a protective factor in relation to resilience. Individuals who have an adequate social network are better able to adapt to stressful situations (13,14). Especially young people who do not get enough social support from their own parents, friends and teachers seek social support by interacting with other people on the Internet (15). The virtual environment provides the opportunity to meet other people and share with people with common interests without fear of being judged (16). However, the need for social support, which is tried to eliminate from the virtual environment, can cause a person to be depressed and exhibit dysfunctional behavior (17). Thus, individuals with low social networks may be more susceptible to PIU (18-20).

For a healthy and balanced life, people need to connect with others, social recognition, and a sense of belonging (21). Sense of belonging is about being involved in an environment or system. A sense of belonging arises in the environment where people feel valued, needed, and important (22). A study of people in rural Australia found that being part of a rural community had a positive effect on psychological resilience (23). People who have not been able to meet the need to belong in their own lives increase the use of the Internet in order to meet this need (24). It is assumed that individuals who have difficulty making friendships in real life may be more interested in playing games to meet the need for belonging and social competence (25). Individuals with identity problems and difficulties in defining themselves are at risk of PIU (26).

Ungar (27) emphasized the importance of culture in resilience studies and defined resilience in relation to social and ecological sensitivities (28). In the International Resilience Project, where many different cultures are together, it has been observed that there are great differences between cultures in how people cope even in the face of similar negativity (29). Culture is different from ethnicity but is an associated structure and plays a major role in shaping resilience-related cognition and behaviors (30).

Beauvais et al. (31) showed the relations between academic achievement and resilience. Johnson et al. (32) found that exam grade have a direct effect on resilience. Other studies presented that individuals with strong resilience have high academic performance (33,34). Resilience supports students achieving better academic results, as it enables them to adapt better to stressful situations and to overcome difficulties (34). Allan et al. (35) revealed a reciprocal relationship between resilience and academic achievement.

Activities outside the school can facilitate the development of social bonds (36). Time spent in organized activities can put young people in contact with peers and adults who share their interests (37). It is already known that social support is of great importance in terms of resilience (38). Lee et al. (39) found that relationship between leisure activity, social support and well-being. At the same time, engaging in an activity outside of school protects people's functionality and mental health (40). So, having hobbies is a protective factor for resilience (41).

Overall, studies have revealed that the presence of psychopathology may affect human's resilience negatively (42,43). Resilience, which assists individuals to recover in the face of difficult situations, also serves as a protective task against psychological problems such as PIU. Therefore, resilience has a direct impact on PIU and enhancing an individual's resilience may be an effective way to reduce the harmful overuse of the Internet (44). Apart from, this study is one of the few that has examined the relationship between PIU and resilience with Australian youth.

Considering all these, aim of this study is to examine the effect of resilience on PIU in Australian youth. In addition, determining how resilience scores differ in terms of demographic variables such as ethnicity, academic performance and out of school activity is the secondary aim of the study. The present study hypothesized that resilience factors correlated with and predicted PIU negatively.

METHOD

This present study conducted with a correlational design, one of the quantitative research methods, in order to examine the effect of resilience on PIU.

Participant

A correlational study design was employed (45). The participants were 220 students at a high school in Melbourne, Australia. The mean age of the participants was 14.16 years (SD=1.44). In terms of gender, 113 (54.1%) of the participants were female, 93 (44.5%) were male, and 3 (1.4%) were transsexual. 79 of the participants (65.8%) were White, 24 (20.7%) were Black, 8 (6.7%) were Multiple ethnicities, 5 (4.2%) were Asian and 4 (3.3%) were Mixed.

Inclusion Criteria

1. Age between 12-18 years,
2. Being volunteer,
3. Living in Australia,
4. To be in formal education

Exclusion Criteria

1. The absence of consent
2. Candidate not completing forms
3. Illiteracy

Procedure

The study was conducted 2019 spring semester. Youth were asked to complete socio-demographic form and self-report measures of compulsive Internet use (CIUS) and resilience. Data were collected online. Participants have been given an e-mail address that they can reach in case of any problem before starting to answer the questions. They were informed of the measures purpose as well as voluntary participation and confidentiality. Institutional Review Board approval was obtained from the Ethics Committee of Hasan Kalyoncu University Institute of Social Sciences. Furthermore, permission was secured for the various scales that were employed in the study.

Measures

Socio-demographic form: This form was developed by the researchers to obtain information on the participants' demographic traits and personal information including sex, age, ethnicity, school performance, and out of school activities.

Compulsive Internet Use Scale (CIUS): Compulsive Internet Use Scale (CIUS) was developed by Meerkerk et al. (46) to measure problematic Internet use (PIU). The scale comprises 14 items, which are assessed with a five-point Likert scale ranging from 1 (never) to 5 (very often). High scores indicate excessive Internet usage. The internal consistency for this scale has been shown to be high (Cronbach α=0.89 at both Study 1 and Study 2). The cronbach alpha value calculated in this study was 0.89.

Child and Youth Resilience Measure (CYRM-28): The CYRM-28 scale was employed to measure resilience (9,47). It comprises 28 items, which are evaluated on a three-point Likert scale, ranging from 1 to 3. Thus, individuals can acquire scores between 28 and 84 for the total scale. High scores indicate high resilience. The CYRM-28 has three subscales and eight sub-dimensions. Each sub-scale has at least two sub-dimensions. The subscales include individual (11 items), relationship with caregiver (7 items), and contextual components that facilitate sense of belonging (10 items). While the individual sub-scale encompasses individual personal skills, peer support, and social skills sub-dimensions, the relationships with caregivers sub-scale includes physical and psychgological caregiving sub-dimensions and the contexual/sense of belonging sub-scale is related to culture, education and aspects of religion and spiritual beliefs. The internal consistency coefficient for each of the subscales is 0.80, 0.83, and 0.79, respectively. Cronbach alpha values of the subscales calculated in this study were found to be 0.79, 0.78 and 0.67, respectively.

Data Analysis

Data were processed, according to research questions. If the distributiton of the variables showed skewness and kurtosis values between -3 and +3, distribution was accepted as normal (48). One-way Analysis of Variance (ANOVA) test was employed to compare resilience by study variables such as ethnicity, achievement at school and out of school activities. Pearson product-moment correlation coefficient was used to determine the relations between resilience subscales, resilience sub-dimensions and PIU. Multiple regression analysis was conducted to test the predictive power of the resilience on PIU. SPSS 23.0 software was used to perform all the analyses.

RESULTS

Descriptive and Correlational Analyses

Pearson product-moment correlation coefficient analysis was conducted to test resilience subscales, resilience sub-dimensions and PIU. The results revealed that there were significant correlations among all the resilience subscales, resilience sub-dimensions and PIU ($p<0.01$, $p<0.05$). The CYRM-28 scale (Resilience) was significantly and positively correlated with all subscales ($p<0.01$) and significantly and negatively correlated with PIU ($r=-0.290$, $p<0.01$). Correlation coefficients of resilience and subscales ranged between 0.55 and 0.92. However there is

Table 1: Descriptive statistics and correlations among study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Resilience	–													
2. PIU	-0.290**	–												
3. Individual	0.923**	-0.263**	–											
4. IndPS	0.808**	-0.253**	0.893**	–										
5. IndPeer	0.681**	-0.137*	0.747**	0.511**	–									
6. IndSS	0.832**	-0.249**	0.875**	0.646**	0.543**	–								
7. Relationship with caregivers	0.871**	-0.226**	0.716**	0.596**	0.564**	0.660**	–							
8. CrPhys	0.583**	-0.184**	0.450**	0.361**	0.368**	0.422**	0.731**	–						
9. CrPsyc	0.861**	-0.211**	0.719**	0.604**	0.561**	0.660**	0.965**	0.526**	–					
10. Contextual	0.877**	-0.284**	0.704**	0.623**	0.478**	0.655**	0.654**	0.419**	0.654**	–				
11. CntS	0.546**	-0.305**	0.397**	0.348**	0.227**	0.403**	0.378**	0.179**	0.403**	0.699**	–			
12. CntEd	0.675**	-0.224**	0.576**	0.516**	0.415**	0.513**	0.476**	0.286**	0.483**	0.751**	0.352**	–		
13. CntC	0.782**	-0.152*	0.639**	0.565**	0.453**	0.582**	0.621**	0.457**	0.598**	0.843**	0.297**	0.517**	–	
14. Age	-0.064	0.021	-0.040	-0.064	-0.036	0.003	-0.171*	-0.111	-0.169*	0.026	-0.031	0.107	0.009	–
Observed range	28-84	14-70	11-33	5-15	2-6	4-12	7-21	2-6	5-15	10-30	3-9	2-6	5-15	12-18
M (SD)	69.55 (9.04)	40.72 (11.13)	27.54 (3.99)	12.13 (1.95)	5.11 (1.10)	10.30 (1.64)	17.37 (2.91)	5.24 (0.90)	12.13 (2.34)	24.64 (3.21)	7.63 (1.36)	4.80 (1.01)	12.21 (1.78)	14.16 (1.44)
Cronbach's α	0.892	0.891	0.794	0.560	0.747	0.544	0.776	0.273	0.760	0.668	0.521	0.361	0.434	-

*: p<0.05; **: p<0.01; Resilience: Resilience total; PIU: Problematic Internet use; IndPS: Personal skills; IndPeer: Peer support; IndSS: Social skills; CrPhys: Physicial caregiving; CrPsyc: Psychological caregiving; CntS: Spiritual; CntEd: Education; CntC: Cultural; SD : Standard deviation.

low correlation between PIU and resilience and all its sub-dimensions. Also, the Mean and Standard deviation of data with a normal distribution are presented in Table 1.

Mediation

Multiple regression analysis was conducted to test predictive power of the resilience subscales and resilience sub-dimensions on PIU. Resilience, resilience subscales and sub-dimensions were included in the stepwise regression model as a predictor (independent variables) of PIU (dependent variable). Two models emerged after the applied stepwise regression. The first model showed that the spiritual variable is solo variable predicting PIU negatively and significantly (β=-0.30, p<0.001). In the second model, data revealed that in addition to spiritual variable, personal skills contributes 2.1% to the total variance and predicts PIU negatively and significantly (β=-0.17, p<0.05). As a result, these two variables together explain 11% of the total variance. The result of multiple regression analysis examining the effect of resilience subscales and resilience sub-dimensions on PIU are presented in Table 2.

Comparing Resilience in Terms of Socio-Demographic Variables

A One-way ANOVA was used to compare the effect of socio-demographic variables such as ethnicity, achievement at school and out of school activities on the resilience.

The participants' resilience mean scores were compared in terms of ethnicity (Table 3). The results of the ANOVA revealed that statistically significant differences were found between the groups in terms of resilience scores [F (4, 115)=5.206, p<0.01]. Resilience scores of the Black (M=64.12, SD=9.886) students

Table 2: Linear regression analysis of resilience sub-dimensions for prediction of PIU

		B	SE	ß	t	p	R^2
Model 1	(Constant)	59.771	4.086		14.629	0.000	0.089
	CntS	−2.496	0.527	−0.305**	4.736	0.000	
Model 2	(Constant)	67.739	5.181		13.075	0.000	
	CntS	−2.201	0.556	−0.247**	3.637	0.000	0.110
	IndPS	−0.955	0.389	−0.167*	2.456	0.015	

*: p<0.05; **: p<0.001; PIU: Problematic Internet use; SE: Standard error.

Table 3: One-way analysis of Variance (ANOVA) on resilience and variables

	Variable	n	M	SD	F	df	p	η^2	Difference
Resilience	Ethnicity								
	Mixed	4	69.63	9.102					
	Black	24	64.12	9.886	5.206	4. 115	<0.01	0.15	2-3
	White	79	72	7.772					2-5
	Asian	5	67.51	13.19					
	Multiple	8	76.13	4.291					
	Achievement at school								
	Below avarage	17	57.33	9.283					
	Average	116	71.43	7.679	21.216	2. 210	<0.01	0.16	1-3
	Above average	80	69.53	9.017					1-2
	Out of school activities								
	Yes	149	70.71	9.188					
	No	47	68.7	7.976	3.927	2. 200	<0.05	0.03	1-3
	Not really	7	61.86	6.962					

n: Sample size; M: Median; SD: Standard deviation.

were lower than that of the multiple ethnicities (M=76.13, SD=4.291) and White (M=72, SD=7.772) students. The calculated eta square effect size value demonstrated that this had an intermediate effect (49).

Significant differences between the students' resilience scores in relation to their academic performance were found [F (2, 210)=21.216, p<0.01]. As can be seen in Table 3, resilience scores of students who performed below avarage (M=57.33, SD=9.283) at school were lower than those whose performances were average (M=71.43, SD=7.679) and above average (M=69.53, SD=9.017) at school. The calculated eta square effect size value revealed it had an intermediate effect (49).

There were also significant differences in the students' resilience scores in relation to their out of school activities [F (2, 200)=3.927, p<0.05]. Resilience scores of the students who rarely participated in activities outside school (M=61.86, SD=6.962) were lower than those who were involved in activities outside school (M=70.71, SD=9.188). The calculated eta square effect size value demonstrated that this had a small effect (49) (Table 3).

DISCUSSION

In this present study, the findings revealed that personal skills and spirituality that sub-dimensions of resilience predicts PIU negatively.

Personal skills are related to self-efficacy, self-esteem, and capacity to solve problems (9). Holding in mind that belief in self-efficacy is an important determinant of human' behavior (10), individuals who evaluate themselves inadequate tend to engage in activities in which they will feel more comfortable (such as PIU) (11). Besides, Internet use is highly correlated with individuals perception of the Internet as a coping style and a way of compensation some deficiencies, such as low self-esteem (50). When individuals evaluate themselves negatively (low self-esteem), they may perceive the Internet as a way to compensate for these negativities and excessive Internet use is a likely outcome (51). Our scan of the literature revealed studies reporting that negative link between self-efficacy, self-esteem and PIU (51,52). In addition, Khosroshahi

and Nosrat Abad (53) found that PIU was related negatively to problem-solving coping strategies. Thus, PIU may occur if individuals are unaware of their strengths and cannot solve problems effectively when they experience stressful situations. Those who have poor problem-solving skills and are unaware of their own strengths may use the Internet excessively in an endeavor to deal with or avoid problems. This result of our study supports other studies (11,52,54,55).

Spirituality has become a common concept in contemporary addiction literature (56). Spirituality is defined as an inner resource that facilitates a sense of belonging with other people (56,57). If individuals need for belonging is met, they are likely to overcome their psychiatric problems and troubles as well as not rely on cyberspace (14,24,58). Suler (59) pointed that individuals use the Internet to meet their specific needs, and one of these needs is a sense of belonging. Because individuals spend too much time online, it is assumed that they will use too much energy in establishing relationships and support networks through other users and experience a sense of belonging to a community (60). Therefore, sense of belonging is expected to be negatively associated with PIU. In addition, another study revealed that people who are part of a community and feel like they belong to that community may form supportive networks (23). This could prevent people from using the Internet excessively. Another finding of the studies revealed that negative relationship between sense of belonging and PIU (14,58,61,62). The findings of the present research are consistent with the previous studies in which spirituality and PIU correlated negatively (63,64).

Our present study revealed that peer support that sub-dimension of resilience scale was not predicted PIU. Adolescence is the period in which adolescents are most affected by their other peers (65). In this period, communication with peers rather than families is more important for them (66). Numerous empirical studies have shown that adolescents associated with deviant peers are at high risk for various problematic behaviors such as depression and substance abuse (67,68). Recent studies have also noted that adolescence who join with deviant peers are at risk for PIU (69,70). In another study, adolescents develop PIU, the more inadequate they are in expressing themselves and communicating with their peers. Also, adolescents at risk of PIU if they are incapable of expressing themselves and communicating in their relationship with their peers (18,71). Therefore, while peer support is expected to predict PIU, its lack of effect is considered as a surprising finding. To the best of our knowledge, the unexpected results of the present study may be due to sampling error. As such, future studies should investigate the direct relationships between peer support and PIU.

Our study results revealed that White students had higher resilience scores than Black students. Research has shown that individuals with high resilience enjoy superior social communication with others (72). Relations with peers as well as their support are a protective factor for resilience (41). Studies have revealed that White students have wide social networks and relationships (73-76). Herbert et al. (73) found that the relationship between resilience and social support differ significantly by ethnicity. Results show that positive relationship between social support and resilience levels of Whites, and no relationship between other ethnicities. It has been noted that why and how individuals use social support due to cultural differences can form the basis of ethnic differences in the relationship between social support and resilience. The present study revealed that the latter may be explained by the low resilience scores of Black students in comparison to White students.

As a result of the study, students with the below school performance had lower resilience scores than students with average and above average. While Werner (41) noted that academic success is a protective factor for resilience. Jenson and Fraser (77) found school failure is a risk factor. In this study, the students who performed well at school had higher resilience scores than those who performed poorly. The latter finding concurs with Hanson et al. (78), Liebenberg et al. (79), and Sandín Esteban and Sánchez Martí (80).

Our study revealed that, resilience scores of the students who were involved in activities outside school were higher than those who rarely participated in activities outside school. Individuals with a special interest, hobby, and who enjoy various activities are more likely to be (81-83). Furthermore, Olsson et al. (84) and Werner (41) found that having a hobby is a protective factor for resilience. According to Gilligan (82), activities engaged in during spare time increases resilience. This is in accordance with the findings of the present study.

Limitations, Implications and Future Directions

This study, as in every study, has certain limitations. First, because the participants included 220 adolescents from a high school in Melbourne, Australia, the generalizability of the findings to individuals of different ages, regions, and groups is limited. Thus, it recommended that other studies be conducted with participants of various ages who are from different regions. Second, the data obtained from the participants were restricted to self-reports. Third point that can be

considered among the limitations of the study is related to the psychiatric status of the sample. The lack of information about the psychopathology severity of the sample is the limitation of the study. Because resilience is affected by psychopathology, participants' psychiatric status should be considered in future studies.

The result of this study may benefit clinicians and students themselves to reduce adolescent PIU. Our findings appear to suggest that self-esteem, self-efficacy, and problem-solving skills are important characteristics that help youth to cope with PIU. Strengthening the mentioned factors will reduce the risk of PIU. Clinicians should consider these factors in treatment. Apart from this, bearing in mind that cognitive distortions affect self-efficacy, other researchers may examine the cognitive distortions of individuals with PIU. Moreover, considering the negative relationship between resilience and PIU, it is imperative to strengthen youths' resilience in order to prevent PIU and enable them to adopt a protective role. This study has also found that some groups are in more essential of resilience training than others. For instance, students who rarely participated in activities outside school had lower resilience than were involved in activities outside school. Also, students with low school performance have lower resilience. From this point of view, considering these variables in resilience strengthening programs suggested. In addition, as resilient individuals are less at risk of suffering PIU, since engaging in a hobby outside of school may strengthen resilience, it can also act as a protective factor concerning PIU. Consequently, it is recommended that youth be encouraged to activities they enjoy.

Contribution Categories		Author Initials
Category 1	Concept/Design	M.D.
	Data acquisition	M.D.
	Data analysis/Interpretation	F.T.
Category 2	Drafting manuscript	F.T.
	Critical revision of manuscript	M.D.
Category 3	Final approval and accountability	M.D., F.T.

Ethical Approval: This study obtained ethical approval from a Committee of Hasan Kalyoncu University Institute of Social Sciences in Gaziantep, Turkey.

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