



Resilience in Children and Adolescents during the Covid-19 pandemic

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ABSTRACT

Purpose: The coronavirus pandemic has affected people's lives. Children and adolescents are a group affected by the consequences of the pandemic. The purpose of this study was to investigate the levels of resilience in children and adolescents in relation to school grade, gender and school performance during the Covid-19 pandemic.

Methods: In the present study 836 primary and secondary school students completed an online questionnaire on resilience during the second and third wave of the pandemic Covid-19 in Greece.

Results: Primary school students reported higher levels of resilience as compared to junior high school and high school students. Furthermore, resilience levels were higher for primary and high school girls, while the reverse was true only for high school students. School performance positively correlated with resilience.

Conclusion: It appears that children are better able to cope with challenges and stress demonstrating a capacity to recover from stress, adversity, failure, challenge, or even trauma. The results have implications about the design and the implementation of primary and secondary prevention of social emotional programs in the school community.

Keywords: *children and adolescent resilience; Covid-19; lockdown*

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Introduction

The coronavirus pandemic in 2019 (COVID-19) has affected the lives of millions of people, including children and adolescents. It is expected that the impact on the behavior and mental health of students will be significantly affected, as a result of major changes in their daily program. This occurred due to school closure, measures and restrictions that were imposed by the state in order to limit the spread of the virus in the community [1]. Zhou and colleagues reported that Chinese adolescents have experienced very high rates of anxiety and depression during the COVID-19 outbreak [2]. In particular, studies have shown that children and adolescents demonstrated insecure attachment, irritability, distraction, sleep disorders, hyperactivity, reduced appetite, general psychological distress, and fear of infecting a family member [3, 4]. Previous epidemiological studies have claimed that children are vulnerable to behavioral and emotional difficulties in the pandemic disasters [5, 6, 7]. Also, psychological services around the world are concerned about the long-term effects of the pandemic on students' mental health due to the coronavirus disease and quarantine. Thus, the rates of post-traumatic stress disorder are increased in populations experiencing the traumatic effects of the pandemic [8,9,10].

However, certain variables such as age, personality, developmental level, cognitive and emotional abilities, coping strategies and resilience can affect children's reactions to disaster [11, 12]. Especially during potentially traumatic events, some people may experience adverse conditions, reacting mildly and without being greatly affected. The resilience which they have developed depends on the quality of the individual's interactions with the environment, which allows individuals to maintain their psychological, social, and physical well-being [13]. The family and the school are two fundamental systems that influence the behavior and mental health of young people. Cooperation, between these two, should be strengthened to help the young deal with the difficulties created by home quarantine, limitations of transports, social distance, and contact with the peers. With direct and close communication between these two systems, the problems are identified early and the child or adolescent

receives targeted psychological services that reduce the symptoms [14]. Masten and Motti-Stefanidi report that resilience in disaster is a multisystem challenge, requiring the collaboration and insights of people from many systems and disciplines [15]. Family, school environment and school performance, learning motivation, individual traits, skills and abilities and the community's attitude towards young people's well-being can contribute to the coping of adverse conditions, such as a pandemic disease [16, 17].

Recent studies have found that children are more resilient than adolescents despite adverse conditions [18]. Gender differences have been noted in favor of girls [19, 20], while a positive correlation between high school performance and resilience has been found [21, 22]. However, few studies have been conducted so far taking into account children's and adolescents' perceptions of resilience, especially amidst the pandemic. The purpose of this study was to investigate resilience among primary and secondary school students, as well as, how these vary in terms of gender, family characteristics and school performance during the second and third quarantine period in Greece. Based on the review of the literature, it is expected that there will be differences between students in terms of school grade, gender and school performance in relation to the variable of resilience.

Material and Method

Sample - Measures

The sample consisted of 836 students, children and adolescents, aged 9-18 years, 362 (43.3%) boys and 474 (56.7%) girls. Specifically, 187 (22.4%) were 5th and 6th-grade primary school students, 217 (26.0%) junior high school students, and 432 (51.7%) high school students. All students were enrolled in Greek public schools. The majority of students reported that their last year's school performance was "very good" (43.3%) and "excellent" (27.9%) and they had high grades (18-20). 81.1% answered that they have at least one sibling, and most of them lived with both parents (60.6%) and 16% were single parents families. Students who lived with two parents and an

elderly person were 8% of the sample and 15.3% were students who lived with one parent and an elderly person.

The Child and Youth Resilience Measure (CYRM-12) [24] was used to measure resilience in children and adolescents. The short form of the CYRM questionnaire included twelve items measured in a 3-point Likert scale ranging from 1-3 and students responded whether they applied to them (yes, sometimes or no). The short form is measured by a single score and according to the manual as yet no subscales have been identified. Higher scores indicate higher levels of characteristics associated with resilience. The original questionnaire included three subscales i.e., individual characteristics, relationships with primary caregivers, and sense of belonging. The scale was translated into Greek by the method of back translation by the researchers. Cronbach's alpha was calculated at .840.

In addition, students were asked to complete a few demographical questions with regard to gender, age, school performance, parental occupation, the persons with whom the child resides, hobbies and activities during home quarantine and two questions related to Covid-19.

Procedure

The study was conducted between December 2020 and May 2021 during the Covid-19 pandemic in Greece. For this study, an online questionnaire using google forms was sent to the e-mails of parents of children and adolescents. Informed parental consent was granted in order for the participants to fill out the questionnaires online.

Statistical Analyses

Statistical analysis was performed using SPSS software version 25 for Windows. The categorical data were described using absolute (n) and relative

frequency (%). For the quantitative data, they were described either by mean (M) and standard deviation (SD). The regularity of the data was tested by asymmetry and kurtosis, Kolmogorof-Smirnov and Shapiro-Wilks test. For the investigation of differences between the two groups the t-test was used and the Levene's test was tested, while in variables with more than 3 levels an analysis of variance (ANOVA) was performed with post-hoc analyses Bonferroni. Two-way ANOVA was used to investigate the effects of different variables when differences were found in the single-factor analyses. The level of statistical significance was set at $p < .05$.

Results

In terms of grade, primary school students reported the highest resilience ($M=32.32$, $S.D.=5.04$) both compared to junior high school students ($M=30.79$, $S.D.=4.57$) as well as with high school students ($M=30.87$, $S.D.=4.90$) (Table 1). No differences were found between junior high school and high school.

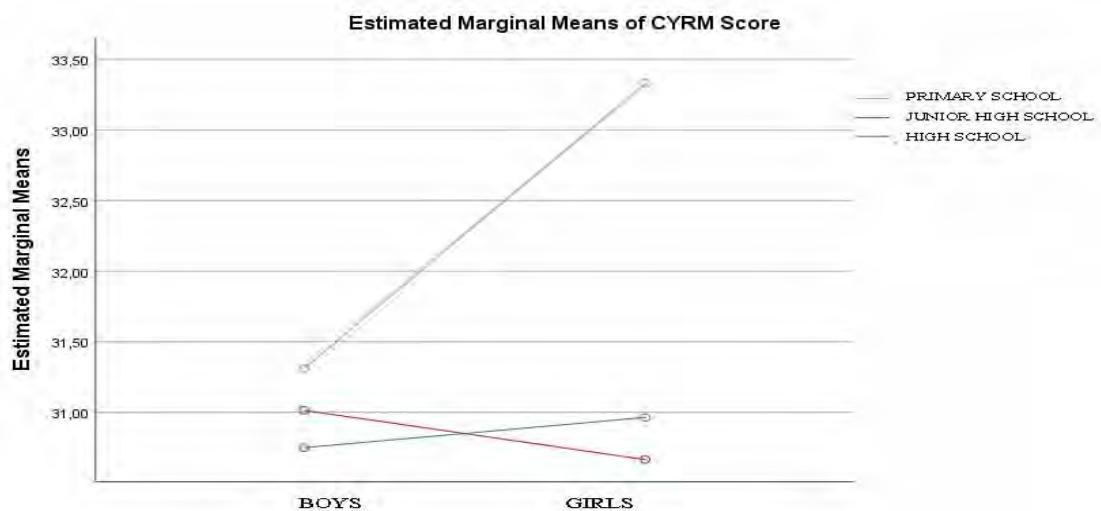
As differences in school grades were found, a two-way analysis of variance was performed with gender and school grade as independent variable and resilience as dependent variable. An interaction between gender and school grade was found [$F=3,276$, $p=.038$]. More specifically, primary school girls reported higher levels of resilience than primary school boys. The same occurred to a lesser extent with high school girls while for junior high school girls the reverse pattern was observed (Graph 1).

In terms of academic performance, results showed that there was an interaction between the school grade and academic performance in Resilience ($p < .001$), meaning that very good and excellent

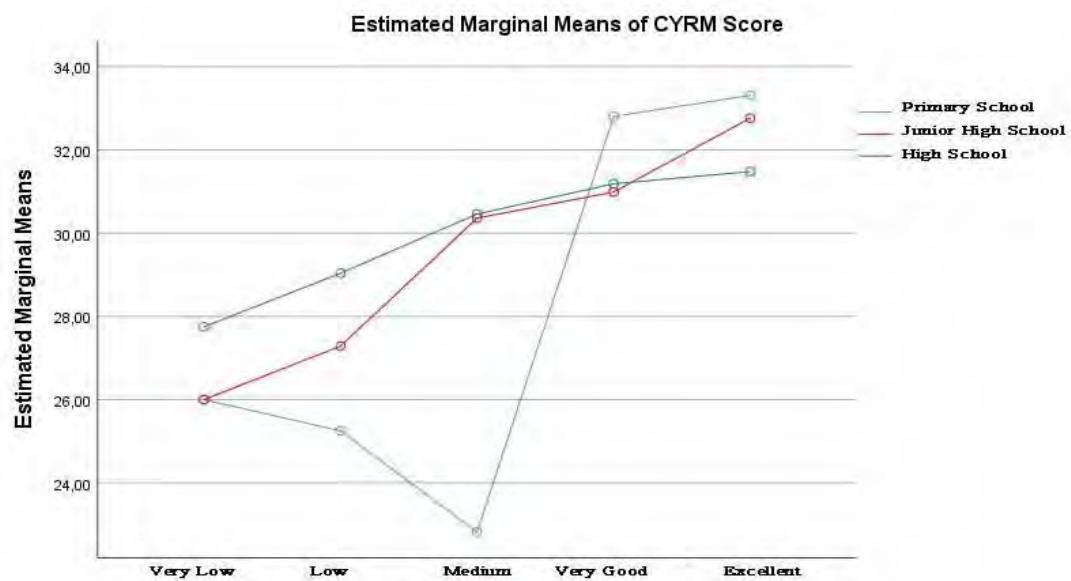
Table 1

Mean comparisons for Resilience (CYRM) in terms of School Grades

Primary School (n = 187)	Junior High School (n = 217)	High School (n = 432)	F	p
Resilience (CYRM) ^{a,b}	32.32	30.79	30.87	6.721 .001



Graph 1 *Interaction between gender and school grade on resilience*



Graph 2 *Interaction between school grade and academic performance on resilience*

self reported academic performance meant high levels of resilience while very low and low academic performance was reported by low resilience for primary school students.

Examining the individuals with whom the students lived, no main effect was found on resilience ($p = 0.914$). However, the levels of resilience were elevated in children living with both parents ($M=31.61, S.D.=4.33$) compared to those living with a single parent ($M=30.21, S.D.=5.82$). No significant differences were found in resilience in terms of number of siblings ($p = .0259$).

Regarding whether someone in the family has been infected with COVID-19, the levels of resilience were higher in children who do not have a family history of COVID-19 ($M = 31.42, S.D. = 4.52$) as compared to those who have ($M = 29.64, S.D.= 6.52$). As to whether someone in the family belongs to a vulnerable group, no main effect was found in resilience ($p = .244$).

Discussion

The results of the present study showed that Greek students of all school levels who participated in the study reported higher levels of resilience confirming similar findings from other countries [23]. Studies confirm that resilience is a protective factor against acute stress symptoms in students. The majority of students in the literature are shown to adapt to the new daily life after the imposition of restrictive measures and followed the guidelines [18, 25]. In terms of age differences, results showed that primary school students scored high in resilience than junior high school and high school students [27]. This finding is in line with other evidence claiming that children are not so much affected as adolescents by the crisis partly because they have not developed full cognitively and do not realize the degree of difficulty and risk of the condition caused by a virus [23]. Bhatia cites a number of studies that suggest that adolescents perceived changes due to quarantine more quickly and appeared to be more vulnerable and had more stressful and depressive symptoms than children [26].

Moreover, looking at the gender differences, it appears-

-red that girls in primary and high school reported higher levels of resilience than boys, with the opposite being the case in junior high school. The difference in resilience levels between boys and girls disagrees with previous findings that generally show that girls report more frequent symptoms of depression, anxiety and stress [28, 30]. However, empirical evidence with Greek data demonstrated no differences in gender between students [21]. Similar findings to the present study are presented by Sánchez-Teruel, Robles-Bello and Valencia-Naranjo in high school students where girls reported higher levels of resilience because they showed adaptive behavior to the new context, which is also associated with high self-efficacy and engaged in activities that acted as protective factors for them [29]. Girls in high school felt an additional weakness due to biological and psychological and emotional changes but also because they show greater introversion than boys' external reactions [30, 31]. Activities and characteristics of families and parent-adolescent relationships may illustrate this difference [32].

Regarding the academic performance of students of all school grades, it is noted that students with reportedly higher grade point average were more resilient to difficulties. It seems that during the quarantine students had more time to deal with the lessons and avoided thoughts that would cause them stress, anxiety and fear [34] and distance learning offered opportunities to young people who often struggle in a traditional school environment, to achieve an individual rate of learning, to enhance their self-efficacy, self-esteem, perceptual ability, flexibility and perseverance [33]. There were no statistically significant differences in terms of the people whom students live (types of families and presence of elderly) and with the presence of siblings, but generally students who lived with two parents showed higher scores of resilience than single parent family students. Nevertheless, students who did not have a family member who had been infected by Covid-19 reported higher levels of resilience. It appears that the experience of the quarantine of a member of the family, the

concern for their state of health, and the fear of transmission to other members may explain this result. Anxious and stressed were the students when a family member fell ill with COVID-19 and in Research by Saurabh and Ranja [35].

The present study has a number of limitations. It is a descriptive correlational study that cannot identify causal relationships. Whilst data were collected amidst the pandemic, one cannot argue that the findings on resilience were due to the pandemic. Second, only a few studies were so far conducted on resilience with samples of children and adolescents using self-reports of students themselves. Most surveys were answered by parents reporting about their children's mental health [8, 23, 32]. Third, no information was taken about children's locale therefore we could not take into account possible differences in the epidemiological situation in the area and in the measures taken by the state in relation to the students' self-reported resilience.

A replication of the present study is proposed at a later time in order to identify trends and future directions. As the epidemiological map of the country changes daily, future research can examine levels of resilience and how these are associated with increased numbers of children's vaccination. Identifying the correlates of resilience will provide valuable input about the psychological impact of the pandemic and help design effective prevention and intervention programs in order to strengthen children and adolescents when dealing with adversities.

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