

The impact of impulsivity and school attendance on COVID-19 spread: A web-based cross-sectional questionnaire

Mehmet Karadag¹  | Bahadir Demir² 

¹Child and Adolescent Psychiatry
Department, Gaziantep University Medical
School, Gaziantep, Turkey

²Psychiatry Department, Gaziantep
University Medical School, Gaziantep, Turkey

Correspondence

Mehmet Karadag, Child and Adolescent
Psychiatry Department, Gaziantep University
Medical School, Gaziantep PA:27310, Turkey.
Email: karadagm@gantep.edu.tr

Abstract

Some personal and social decisions can be influential in the spread of COVID-19. There are no studies examining school attendance, impulsivity, COVID-19 phobia, and psychological resilience together while the effect of some individual and social measures on COVID-19 has been frequently investigated. In this study 360 participants were evaluated through an online questionnaire method during the peak of the COVID-19 pandemic. Sociodemographic data form prepared by the researchers, COVID-19 Phobia Scale, Barratt Impulsivity Scale, and Brief Resilience Scale were used in the study. In all, 20.6% ($n = 74$) of participants had previously experienced COVID-19. The rate of individuals who experienced the death of any of their relatives due to COVID-19 was 17.8%. Only 65.8% of respondents fully complied with government-implemented measures for the outbreak. School attendance ($OR = 1.983$, $p = .033$) and impulsivity ($OR = 1.115$, $p < .001$) were found to be positively correlated with COVID-19. The presence of a significantly higher psychiatric disease admission history in patients with COVID-19 in binary comparisons did not reach the level of significance in regression analysis. Our results suggest that high school attendance and impulsivity scores are positively correlated with COVID-19 in young people. Government strategies related to schools need to be carefully reviewed for this reason.

KEYWORDS

COVID-19, impulsivity, lockdown, phobia, resilience, school

1 | INTRODUCTION

Governments around the world are imposing a variety of restrictions to prevent the spread of the coronavirus disease 2019 (COVID-19) pandemic, which emerged in Hubei, China in December 2019 and was declared a pandemic by the World Health Organization in March 2020 (WHO, 2020). COVID-19 has had a sudden psychological impact in China as well as all over the world. A study conducted in the early stages of the epidemic found that more than half of respondents ranked the psychological impact of the COVID-19 outbreak in China as moderate-to-severe, and roughly one-third felt moderate-to-severe anxiety (Wang, Pan, Wan, Tan, Xu, Ho, et al., 2020). These restrictions included not going outside without a mask, closing schools, cafés, restaurants, banning collective organizations, curfew, lockdown, and so forth. Some individuals violated these rules whereas others strictly complied with the rules implemented by the governments. One explanation is that social isolation and lockdown cause psychological stress, which has an impact on the quality of life and the economy (H. T. Le, Lai, et al., 2020; Tran et al., 2020). There are other explanations for compliance with restrictions. The first is personality traits, and the other is cultural differences. It was shown in a recent study involving 263 people that the rate of compliance with restrictions was affected by personality and (perceptions of) situations (Zajenkowski et al., 2020). In a study examining the differences between mask-wearing attitudes in Asia and Europe found that face masks were worn by a substantially less percentage of Polish respondents (Poles, 35.0%; Chinese, 96.8% $p < .001$). Physical symptoms similar to COVID-19 infection ($p < .001$), recent medical consultation ($p < .01$), recent COVID-19 testing ($p < .001$), and hospitalization ($p < .01$) were all reported by significantly more Polish respondents (Wang, Pan, Wan, Tan, Xu, McIntyre, et al., 2020). Another study comparing Asian versus Americans that included 1445 participants implicated that face mask use and demands for COVID-19-related health information were shown to differ, with differing mental health effects. Moreover, physical symptoms, contact history, and perceived risk of developing COVID-19 were all higher among Americans. Stress and depression symptoms were more common in Americans, while acute-traumatic stress symptoms were more common among Chinese (Wang et al., 2021).

Impulsivity is defined as the sudden responses of the individual to internal or external stimuli, regardless of the dangerous situations that may occur for them and those around them (Moeller et al., 2001). Many psychological intervention methods are used in the treatment of impulsivity (Bear & Nietzel, 1991). The most evidence-based treatment is cognitive behavior therapy (CBT), especially Internet CBT that can prevent the spread of infection during the pandemic (C. S. H. Ho, Chee, et al., 2020; Zhang & Ho, 2017). A study evaluating the relationship between impulsivity and HIV infection reported that more impulsive young people were at higher risk of contracting HIV infection. The same study reported that high knowledge about HIV and AIDS and high anxiety were correlated to a less risky sexual experience (Dévieux et al., 2002). It was stated that untreated Attention Deficit Hyperactivity Disorder (ADHD) was associated with an increased risk of COVID-19 and that drug treatment turned this risk into normal in the study conducted on individuals with ADHD, which consists of inattention, hyperactivity, and impulsivity subscales (Merzon et al., 2020). It has also been reported that the risk and mortality of COVID-19 are higher in some psychiatric disorders, such as schizophrenia spectrum disorder (Nemani et al., 2021). Impulsivity is closely related to borderline personality disorder (BPD) as it is to many other diseases. Several researches in Asia, mainly in China and Hong Kong, looked at the component structure of BPD and found four primary factors: emotion dysregulation, impulsivity, cognitive dysfunction, and unstable interpersonal connections (Keng et al., 2019). High impulsivity and high compulsivity could potentially lead to more problematic addiction and compulsive behaviors while on lockdown. Individuals with high impulsivity and low compulsivity, for example, would participate in impulsive activities under lockdown, but they would not do so on a regular basis. Intercalary, individuals with low

impulsivity and high compulsivity may engage in specific behaviors on a regular basis under lockdown, but they may be able to inhibit these newly acquired routine behaviors if they become maladaptive. When these features are coupled, however, an individual may engage in typical coping activities (owing to compulsive tendencies) and find it difficult to stop them if they become maladaptive (due to the impaired response inhibition that characterizes impulsivity). As a result, those who are both high compulsive and impulsive may be at a higher risk of developing long-term, maladaptive coping habits during the present pandemic (Albertella et al., 2021). Moreover, it is known that comorbidity of psychiatric diseases and Internet addiction is common (R. C. Ho et al., 2014). For this reason, special attention should be paid to Internet addiction in people with high impulsivity. Some studies found that low levels of resilience are related to high levels of impulsivity (Choi et al., 2015). For this reason, it is important to evaluate impulsivity and resilience together. However, the literature has been found to be insufficient in this regard. Psychological resilience means that the individual facing difficulties adapts positively to them and has a high level of coping skills (Luthar & Cicchetti, 2000). It was observed in a study conducted in the first weeks of the COVID-19 outbreak that the psychological resilience of individuals was lower compared with normal conditions (Killgore et al., 2020).

The continuation of the COVID-19 outbreak, uncertainty of patient outcomes, practices such as physical and social isolation to protect the health of the public, and news on written, visual, and social media covering the number of individuals infected with COVID-19 and the deaths caused by it have caused COVID-19-related phobia in many people around the world (Guan et al., 2020; Huang & Zhao, 2020). Research has found that lockdown, quarantine, and social isolation increase psychological symptoms, such as depression, anxiety, phobia, trauma, and so forth (X. T. T. Le, Dang, et al., 2020; Tran et al., 2020).

The COVID-19 pandemic is still having an effect on society, especially in schooling. While many countries interrupted face-to-face education during the peak periods of the epidemic, they switched to face-to-face education with the decrease in the number of cases. The prolonged lockdown has a number of negative effects on mental health, particularly for second-survey respondents aged 12–21.4 years, who showed a greater psychological impact of COVID-19. This age group was primarily made up of pupils who had been affected by protracted school closures, necessitating online education help as well as concern about tests and matriculation arrangements (Wang, Pan, Wan, Tan, Xu, McIntyre, et al., 2020). While government precautions such as high standards of hygiene (e.g., through regular hand sanitizing, deep cleaning, and avoiding pupils sharing equipment) and splitting classes into smaller groups are taken, students were also expected to comply with the physical distance and mask rules during the periods when the school is open. In addition to all these, it is thought that students with high impulsivity have difficulty in obeying these rules (Harazni & Alkaissi, 2016).

This study first aims to determine whether impulsivity, psychological resilience, and COVID-19 phobia scores affect the risk of COVID-19 in the Turkish sample. In addition, the effect of school attendance on being infected is other purpose of the study. Past studies examined often belong to the early stages of the COVID-19 outbreak and the number of studies with such a high rate of infected people is very limited. We think that our study evaluates more than one parameter (impulsivity, resilience, COVID-19 phobia, and school attendance) and that it was carried out at a time when the epidemic peaked will contribute to the literature.

2 | METHOD

2.1 | Sample

Ethics committee approval was obtained from Hasan Kalyoncu University Ethics Committee (E-804.01.2012140005/2020). The current study was conducted through a web-based research. The questionnaire form link prepared on Google Forms was sent to the participants through various social media and email groups.

Immediately after clicking on the electronic link, participants confirmed their participation in the current study from the first page of the questionnaire displayed and redirected to the questionnaire, and completed the study.

2.2 | Instrument

Participants filled in the sociodemographic data form prepared by the researchers, COVID-19 Phobia Scale, Barratt Impulsivity Scale, and the Brief Resilience Scale (BRS). In all, 360 young people aged 16–24 years participated in the study, which was conducted between November 2020 and January 2021.

2.3 | Sociodemographic information form

This form was prepared by the researchers based on the information obtained from the literature. The form included questions about gender, age, and educational status, whether they went to school, whether they had a psychiatric disease previously determined by a mental health specialist, their attitudes towards COVID-19, and whether they had COVID-19.

2.4 | COVID-19 Phobia Scale

COVID-19 Phobia Scale consists of five-point Likert-type questions and validity reliability was tested with 1243 participants. The questions in the scale are as follows: 1, Strongly Disagree; 2, Disagree; 3, Undecided; 4, Agree; 5, Strongly Agree. Exploratory and confirmatory factor analyses revealed the final version of the COVID-19 Phobia Scale, consisting of four subscales consisting of 22 items, namely, worry, mood, reassurance seeking/prevention, and avoidance. The internal consistency of the COVID-19 Phobia Scale measured by Cronbach's α coefficient was 0.84 (Dilbaz et al., 2020).

2.5 | Barratt Impulsivity Scale

It is a scale filled by the patient used to evaluate impulsivity (Patton et al., 1995). It consists of 30 items and has three subscales: attentional or cognitive impulsivity, motor impulsivity, and nonplanning impulsivity. Carelessness is defined as rapid decision-making, motor impulsivity; taking action without thinking, not making plans; being focused on that moment or not thinking about the future. Four different subscores are obtained when evaluating BIS-11: total, nonplanning, attention, and motor impulsivity scores. The higher the total BIS-11 score, the higher the level of impulsivity of the patient. The Turkish validity and reliability study of BIS-11 was conducted by Güleç et al. (2008). Cronbach's α s for internal consistency were 0.78 (students) and 0.81 (patients), and 2-month test-retest reliability was 0.83 (students).

2.6 | Brief Resilience Scale

BRS was developed to enable people to understand themselves, measure their potentials, and resilience. "BRS" was developed by Smith et al. (2010) and was adapted to Turkish by Doğan after the reliability and validity studies of the scale (2015). The scale is five-point Likert-type (5, Completely Suitable; 4, Suitable; 3, Partially Suitable; 2, Not Suitable; 1, Not Suitable at All) and consists of six items and one scale. Three negative items (i2, i4, and i6) are

reverse coded in the scale. The lowest 6 and the highest 30 scores can be obtained from the scale. High score indicates high psychological resilience. Cronbach's α coefficient is 0.79. Corrected item correlation coefficients of the scale items range from 0.45 to 0.63 (Doğan, 2015; Smith et al., 2010).

2.7 | Data analysis

IBM SPSS Statistics 25 package software was used to analyze the data. Variables were investigated using Kolmogorov–Smirnov or Shapiro–Wilk test to determine whether they were normally distributed. Descriptive statistics were given mean and standard deviation or median and min–max values for continuous data, number, and percentage values for qualitative data. Independent groups *t* test was used for normal distribution for continuous data and Mann–Whitney *U* test was used for nonnormally distributed variables in group comparisons (without COVID-19 experience vs with COVID-19 experience, and no COVID-19 deaths vs COVID-19 deaths). χ^2 test or Fisher's exact test was used when appropriate to examine differences in categorical data. Logistic regression analysis was used to calculate the risk of COVID-19 infection. Statistical significance level was considered $p < .05$.

3 | RESULTS

The mean age of the young people participating in the study was 18.8 years (± 2.4) and their gender was 69.4% ($n = 250$). In all, 54.4% of respondents ($n = 196$) were not currently attending any school due to COVID-19 related shutdowns. In addition, 11.7% ($n = 42$) had previously applied to the psychiatry department for any reason. It was learned that anxiety disorders were the most common diagnosis in these admissions (21.5%). The most commonly used drug therapy was Selective Serotonin Reuptake Inhibitors (5.6%). Frequency distributions and percentages of participants' sociodemographic properties are presented in Table 1.

Results of variables related to the COVID-19 outbreak are presented in Table 2. Young people followed the information about the outbreak most frequently on television (36.1%), second on social media (34.2%), and third on the Internet (28.3%). Only 1.4% of respondents did not follow the COVID-19 news. In all, 65.8% fully complied with government-implemented measures for the COVID-19 outbreak whereas 34.2% reported partially compliant. Furthermore, 20.6% ($n = 74$) of participants had previously experienced a COVID-19 infection. The proportion of their relatives diagnosed with COVID-19 increased to 68.9%. The rate of individuals who experienced the death of any of their relatives due to COVID-19 was 17.8%. There was no significant difference in Barratt Impulsivity Scale scores between groups that fully or partially complied with COVID-19 measures ($p = .555$) whereas there was a difference in COVID-19 Phobia Scale ($p = .032$). Those with higher COVID-19 phobia were more in line with the measures, as expected.

The applied scale results are presented in Table 3. The mean COVID-19 Phobia Scale of the participants was 77.8 ± 17 , the mean Barratt Impulsivity Scale was 66.7 ± 7.5 , and the BRS was 18.1 ± 2.6 . The comparison between young people with and without COVID-19 revealed a statistically significant difference in Barratt Impulsivity Scale means ($p < 0.001$), the presence of a previous psychiatric history ($p = 0.010$), and the presence of impulsivity ($p < 0.001$). Those who had COVID-19 infection consisted of individuals with a more impulsivity and previous history of psychiatric illness according to these results.

There was a statistically significant difference in COVID-19 Phobia Scale ($p = 0.017$), Barratt Impulsivity Scale ($p = 0.046$), and history of previous psychiatric admission ($p = 0.005$) in statistical analyses comparing participants whose relatives died and did not die due to COVID-19 infection. COVID-19 phobia was higher in

TABLE 1 Frequency distributions and percentages of participants' sociodemographic properties

Sociodemographic variable	Category	
Age		18.8 (\pm 2.4)
Gender	Male	110 (30.6%)
	Female	250 (69.4%)
What grade are they in?	High school student	160 (44.4%)
	High school graduate	49 (13.6%)
	University student	118 (32.8%)
	University graduate	33 (9.2%)
Do they go to school?	No	196 (54.4%)
	Yes	164 (45.6%)
History of previous psychiatric admission	Yes	42 (11.7%)
	No	318 (88.3%)
Diagnosis if there is a history of previous psychiatric admission	ADHD	6 (1.7%)
	Anxiety disorders	21 (5.8%)
	Obsessive-compulsive disorder	2 (0.6%)
	Depressive disorders	11 (3.1%)
	Bipolar disorder	2 (0.6%)
Drug used if there is a history of previous psychiatric admission	SSRIs	20 (5.6%)
	Antipsychotics	2 (0.6%)
	Psychostimulants	2 (0.6%)
	Mood stabilizers	2 (0.6%)
Number of siblings		3.3 (\pm 2)
Family status	Parents separated	22 (6.1%)
	Parents married	316 (87.8%)
	One of the parents dead	22 (6.1%)
Mother's age		45.9 (\pm 6.5)
Mother's occupational status	Not working	280 (78.4%)
	Working	60 (16.8%)
	Retired	9 (2.5%)
Mother's education status	Illiterate	54 (14.8%)
	Primary school graduate	116 (32.3%)
	Secondary school graduate	67 (18.7%)
	High school graduate	80 (22.2%)
	University graduate	43 (12.0%)
History of mother's psychiatric admission	No	327 (91.1%)
	Yes	32 (8.9%)

TABLE 1 (Continued)

Sociodemographic variable	Category	
Father's age		50.1 (\pm 7.1)
Father's occupational status	Not working	2 (0.6%)
	Working	281 (83.1%)
	Retired	55 (16.3%)
Father's education status	Illiterate	11 (3.1%)
	Primary school graduate	86 (24.0%)
	Secondary school graduate	90 (25.1%)
	High school graduate	89 (24.7%)
	University graduate	83 (23.1%)
History of father's psychiatric admission	No	351 (97.5%)
	Yes	9 (2.5%)

Note: Missing data were not included in the numbers, but included by distributing it to percentages. Numerical data are expressed as mean (standard deviation), and categorical data as *n* (%).

Abbreviations: ADHD, Attention Deficit Hyperactivity Disorder; SSRIs, Selective Serotonin Reuptake Inhibitors.

TABLE 2 Results of variables related to the COVID-19 outbreak

Variables	Category	N (%)
Where do they keep up with the COVID-19 news?	Television	130 (36.1%)
	Internet	102 (28.3%)
	Social media	123 (34.2%)
	Not keeping up	5 (1.4%)
Do they comply with COVID-19 measures?	Partially	123 (34.2%)
	Completely	237 (65.8%)
Did they experience COVID-19?	No	286 (79.4%)
	Yes	74 (20.6%)
Did one of their relatives experience COVID-19?	No	112 (31.1%)
	Nuclear family	12 (3.6%)
	Extended family	98 (27.2%)
	Friends	76 (21.1%)
	More than one	61 (16.9%)
Did one of their relatives die from COVID-19?	No	296 (82.2%)
	Nuclear family	3 (0.8%)
	Extended family	21 (5.8%)
	Friends	28 (7.8%)
	More than one	12 (3.3%)

TABLE 3 Results of comparison between young people with and without COVID-19 infection

	Whole sample (n = 360)	Without COVID-19 experience (n = 86)	With COVID-19 experience (n = 74)	p
COVID-19 Phobia Scale	77.8 (±17)	76.9 (±16.2)	79.5 (±19.2)	0.060
Barratt Impulsivity Scale score	66.7 (±7.5)	65.4 (±6.7)	71.5 (±8.02)	<0.001
<i>Impulsivity</i>				<0.001
Yes	49 (13.6%)	23 (8%)	26 (35.1%)	
No	311 (86.4%)	263 (92%)	48 (64.9%)	
Brief Resilience Scale	18.1 (±2.6)	18.1 (±2.6)	18.1 (±2.6)	0.831
<i>History of previous psychiatric admission</i>				0.001
Yes	42 (11.6%)	27 (9.4%)	15 (20.3%)	
No	318 (88.3%)	259 (90.6%)	59 (79.7%)	

TABLE 4 Results of young people whose relatives died due to COVID-19 and did not die

	No COVID-19 deaths (n = 296)	COVID-19 deaths (n = 64)	p
COVID-19 Phobia Scale	76.5 (±16.8)	81.9 (±16.8)	.017
Barratt Impulsivity Scale	66.4 (±7.7)	67.9 (±5.9)	.046
<i>Impulsivity</i>			.908
Yes	40 (13.5%)	9 (14%)	
No	256 (86.5%)	55 (86%)	
Brief Resilience Scale	18.0 (±2.7)	18.2 (±2.3)	.995
<i>History of previous psychiatric admission</i>			.005
Yes	28 (9.4%)	14 (21%)	
No	268 (90.6%)	50 (79%)	

individuals whose relatives died due to COVID-19, as well as impulsivity and previous history of psychiatric illness according to these results. However, It was also found that impulsivity decreased relatively in individuals who witnessed the death of a relative when the Barratt Impulsivity Scale averages and statistical significance rates were examined. Results of young people whose relatives died due to COVID-19 and did not die are presented in Table 4.

Regression analysis examining the relationship between COVID-19 infection and sociodemographic data and measurement tools included age, gender, young people's school attendance, previous psychiatric admission, partial or complete compliance with COVID-19 measures, impulsivity, COVID-19 phobia, and psychological resilience scores. School attendance (OR = 1.983, $p = .033$) and impulsivity (OR = 1.115, $p < .001$) were found to be positively correlated with COVID-19 as a result of the analysis conducted. The presence of a significantly higher psychiatric disease admission history in patients with COVID-19 in previous analyses did not reach the level of significance in regression analysis. The relationship between COVID-19 infection and sociodemographic and measurement tools is presented in Table 5.

TABLE 5 The relationship between COVID-19 infection and sociodemographic and measurement tools

Risk factor	B	OR (95% CI)	Sig
Age	-0.013	0.987 (0.869–1.1120)	.837
Gender (reference: female)	0.138	1.148 (0.622–2.115)	.659
School attendance (reference: yes)	0.685	1.983 (1.057–3.721)	.033
History of previous psychiatric admission (reference: no)	0.603	1.828 (0.852–3.924)	.122
Is it in compliance with COVID-19 measures? (reference partially)	0.135	1.145 (0.625–2.096)	.661
Barratt Impulsivity Scale	0.109	1.115 (1.072–1.160)	<.001
COVID-19 Phobia Scale	0.011	1.011 (0.993–1.028)	.230
Brief Resilience Scale	0.003	1.003 (0.903–1.115)	.951

Note: OR, Odds Ratio (95% Confidence Interval); Sig, *p* value. For the multivariate analysis, the possible factors identified with univariate analysis were further entered into the logistic regression analysis to determine independent predictors of participant outcome. Hosmer–Lemeshow goodness of fit statistics were used to assess model fit. A 5% type-I error level was used to infer statistical significance. *N* = 360.

4 | DISCUSSION

We found that the rate of COVID-19 infection is positively correlated with impulsivity and school attendance. It was reported in a modeling study conducted in 11 European countries that general quarantine reduced the transmission rate of COVID-19 infection by 81% (Flaxman et al., 2020). These results support the results of our study. It was seen in our study that school attendance increased the risk of COVID-19 approximately twofold. Schools are closed and transition to online education is made in cases where there is a general quarantine practice. This reduces the number of people outside the home and prevents time spent in environments where it is difficult to comply with physical distance rules, such as classrooms. It has been documented by many studies that school-aged individuals play an important role in the spread of infection even though it is known that they are less affected by COVID-19 (Hyde, 2020; Vermund & Pitzer, 2020). It has been reported that the transition of schools to online education reduces the spread rate of COVID-19 infection, as well as causing disruptions in education (Sikali, 2020). For this reason, decision makers should be sensitive when making decisions about schools.

Impulsivity has been reported to be negatively associated with the potential use of contact tracking application in a recent study conducted in France (Guillon & Kergall, 2020). This study was also determined that the impulsive group had negative thoughts about the prolongation of quarantine conditions. Similar results were obtained from a study conducted in Turkey. A negative correlation was found between impulsivity and compliance with preventive measures in this study (Alper et al., 2020). There was no significant difference between the participants who fully or partially complied with COVID-19 measures in terms of impulsivity whereas the positive relationship between COVID-19 and impulsivity may raise a question such as the low awareness of impulsive participants about measures in their self-reports in our study. In the literature, it has been reported that in addition to personality traits, economic and social components also affect compliance with COVID-19 measures (H. T. Le, Lai, et al., 2020). The fact that there was no significant difference between impulsivity and compliance with the importance of COVID-19 in our sample group may support that other influencing factors may also play a role. However, since no data were collected from the participants on this subject, it is not possible to give clear results. According to a survey, 66.9% of 341 participants reported a loss of household income as a result of COVID-19's influence. People with undergraduate degrees, those working in industries other than healthcare, and those on a fixed-term contract had a higher chance of losing their jobs (Tran et al., 2020).

In our study, COVID-19 phobia was found to be high in many individuals. A study was found that adolescents with subthreshold psychiatric/psychological problems and COVID-19-related acute stress disorder and posttraumatic stress disorder symptoms reported the highest levels of personal stress, while adolescents with psychiatric/psychological disorders reported the greatest levels of stress. Prioritizing psychosocial stresses among the adolescent population should be a top priority for health efforts (Mensi et al., 2021). Individuals who fully complied with COVID-19 measures had higher phobia scores associated with COVID-19 as expected in our study. High perceived stress associated with COVID-19 and increased fear are positively associated with compliance with measures (Guillon & Kergall, 2020; Jungmann & Witthöft, 2020). Witnessing or hearing the death of a relative creates significant changes in people's behavior and emotions (Millar et al., 2020). As a matter of fact, an increase in phobia scores and a decrease in impulsivity scores were observed in our study. COVID-19-related deaths affect the relatives of patients as well as the healthcare staff. Studies have shown that posttraumatic stress symptoms increase and cause emotional and behavioral changes in healthcare professionals who witness the deaths of COVID-19 patients (Mosheva et al., 2021; Portoghese et al., 2021). Finally, fear of COVID-19 was consistently found to be the primary predictor of beneficial behavior change (e.g., social distancing and enhanced hand cleanliness), with no effect from politically significant variables (Harper et al., 2020).

COVID-19 phobia, impulsivity, and psychological resilience of individuals were examined and there was no correlation between them in our study. It was also found that psychological resilience scores did not differ between individuals with and without COVID-19. Previous studies demonstrated that fear of COVID-19 can be associated with beliefs, knowledge levels, risk perceptions, and sociodemographic characteristics (Malesza & Kaczmarek, 2021). However, the effect of resilience, which is an important component of the individual background, on COVID-19 phobia has rarely been examined. A study conducted in China showed a high prevalence of psychological distress among the general population at the peak of the COVID-19 outbreak, which was negatively correlated with resilience (Ran et al., 2020). Increased personal endurance and coping skills were associated with lower levels of lockdown fatigue in another study. Another study findings supported the hypothesis that the construct of resilience statistically significantly affects the level of COVID-19 phobia (Lindinger-Sternart et al., 2021). No results were reached to support these results in our study. This difference suggests that there may be few individuals with psychological problems among the participants in our study, as well as that the results in other studies are not yet definitive and should be supported by further research. The COVID-19 pandemic was found to cause hemodynamic changes in the brain (Olszewska-Guizzo et al., 2021). This study mainly used self-reported questionnaires to measure psychiatric symptoms and impulsivity. The gold standard involves functional neuroimaging to assess frontal lobe function that is involved in impulsivity and emotion regulation (C. S. H. Ho, Lim, et al., 2020; Husain, Tang, et al., 2020; Husain, Yu, et al., 2020).

The main limitations of our study lie in the data used in the analysis. Since the forms are delivered to the participants via social media and mail groups, no comments can be made on the response rates. First, our sample does not represent the entire population of Turkey given our recruitment process. However, our recruitment process may have also led to participants who are more interested in COVID-19 compared with the general population. In addition, the cross-sectional design used in our study makes it difficult to draw conclusions about causal effects. Our regression results may have alternative interpretations in the case of retrospective causality or if unobserved factors affect both our dependent and independent variables. However, we included multiple socioeconomic and demographic characteristics as control variables to limit neglected variable worry.

5 | CONCLUSION

Provide new information that can help guide future quarantine strategies during infectious disease outbreaks in Turkey despite these limitations. For example, the high risk of COVID-19 among school attendees may lead to a review of decisions on the opening of schools or tightening measures in the school. It can also help develop the idea

that additional measures and projects should be taken to increase the compliance of individuals with high impulsivity with COVID-19 measures.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

ORCID

Mehmet Karadag  <http://orcid.org/0000-0002-4130-0494>

Bahadır Demir  <http://orcid.org/0000-0003-2798-6255>

REFERENCES

- Albertella, L., Rotaru, K., Christensen, E., Lowe, A., Brierley, M.-E., Richardson, K., Chamberlain, S. R., Lee, R. S. C., Kayayan, E., & Grant, J. E. (2021). The influence of trait compulsivity and impulsivity on addictive and compulsive behaviors during COVID-19. *Frontiers in Psychiatry, 12*, 162.
- Alper, S., Bayrak, F., & Yilmaz, O. (2020). Psychological correlates of COVID-19 conspiracy beliefs and preventive measures: Evidence from Turkey. *Current Psychology, 40*(11), 5708–5717.
- Bear, R. A., & Nietzel, M. T. (1991). Cognitive and behavioral treatment of impulsivity in children: A meta-analytic review of the outcome literature. *Journal of Clinical Child and Adolescent Psychology, 20*(4), 400–412.
- Choi, J.-W., Cha, B., Jang, J., Park, C.-S., Kim, B.-J., Lee, C.-S., & Lee, S.-J. (2015). Resilience and impulsivity in euthymic patients with bipolar disorder. *Journal of Affective Disorders, 170*, 172–177.
- Dévioux, J., Malow, R., Stein, J. A., Jennings, T. E., Lucenko, B. A., Averhart, C., & Kalichman, S. (2002). Impulsivity and HIV risk among adjudicated alcohol- and other drug-abusing adolescent offenders. *AIDS Education and Prevention, 14*(5 Suppl.), 24–35.
- Dilbaz, N., Noyan, O. C., Alpar, G., & Kazan, O. K. (2020). Development of the COVID-19 Phobia Scale: Validity and reliability study. *The Journal of Neurobehavioral Sciences, 7*(3), 142.
- Doğan, T. (2015). Kısa psikolojik sağlamlık ölçeği'nin Türkçe uyarlaması: Geçerlik ve güvenirlik çalışması. *The Journal of Happiness & Well-Being, 3*(1), 93–102.
- Flaxman, S., Mishra, S., Gandy, A., Unwin, H. J. T., Mellan, T. A., Coupland, H., Whittaker, C., Zhu, H., Berah, T., & Eaton, J. W. (2020). Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe. *Nature, 584*(7820), 257–261.
- Guan, W.-j., Ni, Z.-y., Hu, Y., Liang, W.-h., Ou, C.-q., He, J.-x., Liu, L., Shan, H., Lei, C.-l., & Hui, D. S. C. (2020). Clinical characteristics of coronavirus disease 2019 in China. *New England Journal of Medicine, 382*(18), 1708–1720.
- Guillon, M., & Kergall, P. (2020). Attitudes and opinions on quarantine and support for a contact-tracing application in France during the COVID-19 outbreak. *Public Health, 188*, 21–31.
- Güleç, H., Tamam, L., Turhan, M., Karakuş, G., Zengin, M., & Stanford, M. S. (2008). Psychometric properties of the Turkish version of the Barratt impulsiveness scale-11. *Klinik Psikofarmakoloji Bulteni, 18*(4), 251–258.
- Harazni, L., & Alkaissi, A. (2016). The experience of mothers and teachers of attention deficit/hyperactivity disorder children, and their management practices for the behaviors of the child a descriptive phenomenological study. *Journal of Education and Practice, 7*(6), 1–21.
- Harper, C. A., Satchell, L. P., Fido, D., & Latzman, R. D. (2021). Functional fear predicts public health compliance in the COVID-19 pandemic. *International Journal of Mental Health and Addiction, 19*(5), 1875–1888.
- Ho, C. S. H., Chee, C. Y., & Ho, R. C. (2020). Mental health strategies to combat the psychological impact of COVID-19 beyond paranoia and panic. *Annals of the Academy of Medicine, Singapore, 49*(1), 1–3.
- Ho, C. S. H., Lim, L. J. H., Lim, A. Q., Chan, N. H. C., Tan, R. S., Lee, S. H., & Ho, R. (2020). Diagnostic and predictive applications of functional near-infrared spectroscopy for major depressive disorder: A systematic review. *Frontiers in Psychiatry, 11*, 378.
- Ho, R. C., Zhang, M. W. B., Tsang, T. Y., Toh, A. H., Pan, F., Lu, Y., Cheng, C., Yip, P. S., Lam, L. T., & Lai, C.-M. (2014). The association between internet addiction and psychiatric co-morbidity: A meta-analysis. *BMC Psychiatry, 14*(1), 1–10.
- Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: A web-based cross-sectional survey. *Psychiatry Research, 288*, 112954.
- Husain, S. F., Tang, T.-B., Yu, R., Tam, W. W., Tran, B., Quek, T. T., Hwang, S.-H., Chang, C. W., Ho, C. S., & Ho, R. C. (2020). Cortical haemodynamic response measured by functional near infrared spectroscopy during a verbal fluency task in patients with major depression and borderline personality disorder. *EBioMedicine, 51*, 102586.

- Husain, S. F., Yu, R., Tang, T.-B., Tam, W. W., Tran, B., Quek, T. T., Hwang, S.-H., Chang, C. W., Ho, C. S., & Ho, R. C. (2020). Validating a functional near-infrared spectroscopy diagnostic paradigm for major depressive disorder. *Scientific Reports*, *10*(1), 1–9.
- Hyde, Z. (2020). COVID-19, children, and schools: Overlooked and at risk. *Medical Journal of Australia*, *213*(10), 444–446.
- Jungmann, S. M., & Withhöft, M. (2020). Health anxiety, cyberchondria, and coping in the current COVID-19 pandemic: Which factors are related to coronavirus anxiety? *Journal of Anxiety Disorders*, *73*, 102239.
- Keng, S.-L., Lee, Y., Drabu, S., Hong, R. Y., Chee, C. Y. I., Ho, C. S. H., & Ho, R. C. M. (2019). Construct validity of the McLean screening instrument for borderline personality disorder in two Singaporean samples. *Journal of Personality Disorders*, *33*(4), 450–469.
- Killgore, W. D. S., Taylor, E. C., Cloonan, S. A., & Dailey, N. S. (2020). Psychological resilience during the COVID-19 lockdown. *Psychiatry Research*, *291*, 113216.
- Le, H. T., Lai, A. J. X., Sun, J., Hoang, M. T., Vu, L. G., Pham, H. Q., Nguyen, T. H., Tran, B. X., Latkin, C. A., & Le, X. T. T. (2020). Anxiety and depression among people under the nationwide partial lockdown in Vietnam. *Frontiers in Public Health*, *8*, 656.
- Le, X. T. T., Dang, K. A., Toweh, J., Nguyen, Q. N., Le, H. T., Toan, D. T. T., Phan, H. B. T., Nguyen, T. T., Pham, Q. T., & Ta, N. K. T. (2020). Evaluating the psychological impacts related to COVID-19 of Vietnamese people under the first nationwide partial lockdown in Vietnam. *Frontiers in Psychiatry*, *11*, 824.
- Lindinger-Sternart, S., Kaur, V., Widyaningsih, Y., & Patel, A. K. (2021). COVID-19 phobia across the world: Impact of resilience on COVID-19 phobia in different nations. *Counselling and Psychotherapy Research*, *21*(2), 290–302.
- Luthar, S. S., & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. *Development and Psychopathology*, *12*(4), 857–885.
- Malesza, M., & Kaczmarek, M. C. (2021). Predictors of anxiety during the COVID-19 pandemic in Poland. *Personality and Individual Differences*, *170*, 110419.
- Mensi, M. M., Capone, L., Rogantini, C., Orlandi, M., Ballante, E., & Borgatti, R. (2021). COVID-19-related psychiatric impact on Italian adolescent population: A cross-sectional cohort study. *Journal of Community Psychology*, *49*, 1457–1469.
- Merzon, E., Manor, I., Rotem, A., Schneider, T., Vinker, S., Golan Cohen, A., Laudén, A., Weizman, A., & Green, I. (2020). ADHD as a risk factor for infection with Covid-19. *Journal of Attention Disorders*, *25*(13), 1783–1790.
- Millar, K. M., Han, Y., Bayly, M. J., Kuhn, K., & Morlino, I. (2020). Confronting the COVID-19 pandemic: Grief, loss, and social order.
- Moeller, F. G., Barratt, E. S., Dougherty, D. M., Schmitz, J. M., & Swann, A. C. (2001). Psychiatric aspects of impulsivity. *American Journal of Psychiatry*, *158*(11), 1783–1793.
- Mosheva, M., Gross, R., Hertz-Palmor, N., Hasson-Ohayon, I., Kaplan, R., Cleper, R., Kreiss, Y., Gothelf, D., & Pessach, I. M. (2021). The association between witnessing patient death and mental health outcomes in frontline COVID-19 healthcare workers. *Depression and Anxiety*, *38*, 468–479.
- Nemani, K., Li, C., Olfson, M., Blessing, E. M., Razavian, N., Chen, J., Petkova, E., & Goff, D. C. (2021). Association of psychiatric disorders with mortality among patients with COVID-19. *JAMA Psychiatry*, *78*(4), 380–386.
- Olszewska-Guizzo, A., Mukoyama, A., Naganawa, S., Dan, I., Husain, S. F., Ho, C. S., & Ho, R. (2021). Hemodynamic response to three types of urban spaces before and after lockdown during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *18*(11), 6118.
- Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology*, *51*(6), 768–774.
- Portoghese, I., Galletta, M., Meloni, F., Piras, I., Finco, G., D'Aloja, E., & Campagna, M. (2021). Dealing with COVID-19 patients: A moderated mediation model of exposure to patients' death and mental health of Italian health care workers. *Frontiers in Psychology*, *12*, 622415.
- Ran, L., Wang, W., Ai, M., Kong, Y., Chen, J., & Kuang, L. (2020). Psychological resilience, depression, anxiety, and somatization symptoms in response to COVID-19: A study of the general population in China at the peak of its epidemic. *Social Science & Medicine*, *262*, 113261.
- Sikali, K. (2020). The dangers of social distancing: How COVID-19 can reshape our social experience. *Journal of Community Psychology*, *48*, 2435–2438.
- Smith, B. W., Tooley, E. M., Christopher, P. J., & Kay, V. S. (2010). Resilience as the ability to bounce back from stress: A neglected personal resource? *The Journal of Positive Psychology*, *5*(3), 166–176.
- Tran, B. X., Nguyen, H. T., Le, H. T., Latkin, C. A., Pham, H. Q., Vu, L. G., Le, X. T. T., Nguyen, T. T., Pham, Q. T., Ta, N. T. K., Nguyen, Q. T., Ho, C. S. H., & Ho, R. C. M. (2020). Impact of COVID-19 on economic well-being and quality of life of the vietnamese during the national social distancing. *Frontiers in Psychology*, *11*, 565153. <https://doi.org/10.3389/fpsyg.2020.565153>
- Vermund, S. H., & Pitzer, V. E. (2020). Asymptomatic transmission and the infection fatality risk for COVID-19: Implications for school reopening. *Clinical Infectious Diseases*, *72*(9), 1493–1496.

- Wang, C., Chudzicka-Czupala, A., Grabowski, D., Pan, R., Adamus, K., & Wan, X. (2020). The association between physical and mental health and face mask use during the COVID-19 pandemic: A comparison of two countries with different views and practices. *Frontiers in Psychiatry, 11*, 569981.
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health, 17*(5), 1729.
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., McIntyre, R. S., Choo, F. N., Tran, B., Ho, R., & Sharma, V. K. (2020). A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, Behavior, and Immunity, 87*, 40–48.
- Wang, C., Tripp, C., Sears, S. F., Xu, L., Tan, Y., Zhou, D., Ma, W., Xu, Z., Chan, N. A., & Ho, C. (2021). The impact of the COVID-19 pandemic on physical and mental health in the two largest economies in the world: A comparison between the United States and China. *Journal of Behavioral Medicine, 44*(6), 741–759.
- WHO Director. (2020). *General's opening remarks at the media briefing on COVID-19*. World Health Organization.
- Zajenkowski, M., Jonason, P. K., Leniarska, M., & Kozakiewicz, Z. (2020). Who complies with the restrictions to reduce the spread of COVID-19?: Personality and perceptions of the COVID-19 situation. *Personality and Individual Differences, 166*, 110199.
- Zhang, M. W., & Ho, R. C. (2017). Moodle: The cost effective solution for internet cognitive behavioral therapy (I-CBT) interventions. *Technology and Health Care: Official Journal of the European Society for Engineering and Medicine, 25*(1), 163–165.

How to cite this article: Karadag, M., & Demir, B. (2022). The impact of impulsivity and school attendance on COVID-19 spread: A web-based cross-sectional questionnaire. *Psychology in the Schools, 1–13*.

<https://doi.org/10.1002/pits.22700>