

Adolescents' Stress Reactions in Response to COVID-19 Pandemic at the Peak of the Outbreak in Italy

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Abstract

In this study, we evaluated the variation on stress reactions in Italian adolescents during the peak of the COVID-19 pandemic as related to national diffusion of the outbreak, demographic characteristics, and personal experiences related to COVID-19. An online survey was disseminated from April 1 to April 5, 2020. The sample was composed of 5,295 Italian adolescents (75.2% females; mean age = 16.67 years, $SD = 1.43$), 28.9% of whom presented moderate to high stress reactions during the peak of the pandemic. Older adolescents and females were more likely to be affected by the pandemic. The impact was similar regardless of the varying presence of COVID-19, whether in Lombardy or in regions less affected. Personal experiences with COVID-19 were all associated with stress reactions (direct experience, indirect experience via a friend, or an acquaintance infected). The global nature of the stressor influenced a collective psychological reaction not affected by the specific geographical diffusion of the pandemic.

Keywords

adolescent development, COVID-19, Italy, stress reactions

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The first case of the 2020 coronavirus disease (COVID-19) in Italy occurred on February 21 in Lombardy (Codogno). On April 15, 78 days later, COVID-19 had caused the death of 136,116 people around the world (World Health Organization, 2021). Of those deaths, 21,645 (around 15.9%) occurred in Italy (Italian Ministry of Health, 2020); of these, 11,377 were in Lombardy (around 8.4%). The estimated case fatality rate on April 15 in Italy was around 13.13% and rapidly increased week by week after the first case was detected. In the first weeks of the epidemic, it was around 3.5%; by March 16, it had risen to 7.7%. A series of restrictions of increasing geographical progression started on February 23, 2020. The lockdown began with 10 municipalities in Lombardy and one in Veneto. Then, on February 25, it was extended to other municipalities in different regions in northern Italy (Emilia Romagna, Friuli Venezia Giulia, Lombardy, Veneto, Piedmont, and Liguria). On March 9, the lockdown was extended to the entire country. Schools and universities had already been closed since March 5, with more than 8 million children and adolescents affected by this shutdown.

The COVID-19 epidemic is a public-health emergency worldwide, and it raises enormous concerns about people's psychological well-being at different levels. The literature shows a strong psychological impact of infectious diseases, particularly on patients, survivors, caregivers, and health professionals involved in their care (Bo et al., 2020; Chew et al., 2020; Mak et al., 2009).

Psychological responses on noninfected individuals and the general population are minor, but research is still consistent in reporting emotional and psychopathological consequences both at the acute level and in the long term. On an individual level, acute effects include fear and anxiety about one's own risk of being infected and/or dying, fear of the possibility that a family member will be infected, fear of separation from or loss of loved ones, and feelings of helplessness, anxiety, depression,

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frustration, and anger (Dodgson et al., 2010; Peng et al., 2010; Van Bortel et al., 2016; Wang et al., 2020). A high prevalence of psychological, psychiatric, and posttraumatic symptoms have been documented in individuals of the noninfected communities during the SARS, Ebola, and influenza A(H1N1)pdm09 outbreaks (Jalloh et al., 2018; X. Liu et al., 2012; Peng et al., 2010; Yeung et al., 2017). Regarding posttraumatic and psychological stress symptoms in adults in response to COVID-19, studies conducted during Phase 1 (outbreak and lockdown) or at the beginning of Phase 2 (the end of the lockdown and the beginning of return to normality) reported a large variability of estimates, mainly because of the different measures of assessment and differences in sample characteristics (Jiang et al., 2020; N. Liu et al., 2020; Wang et al., 2020). A recent rapid meta-analysis showed that the pooled prevalence of posttraumatic stress symptoms and psychological stress was, respectively, 25% and 24% (Cooke et al., 2020).

Research on the psychological impact of contagious disease outbreaks in children and adolescents is still scarce. It was recently stated that “this is an important gap for research” (Lee, 2020). The need to monitor children’s and adolescents’ stress reactions during the acute phase, along with all the subsequent phases in a long-term period of epidemic trend, is necessary to define more effective prevention and intervention strategies. In addition, it is important to study whether the pandemic itself affects the well-being of children and adolescents as well as the impact of its associated conditions, such as extended school closure and social-distancing measures (Lee, 2020). Adolescents are an important generation for a country to restart after a traumatic or highly stressful event; risks and resources of this generation are of paramount importance for society at large (Guerra et al., 2011). Empirical studies analyzing psychological consequences of COVID-19 in adolescents have focused mainly on anxiety and depressive symptoms as possible outcomes (Duan et al., 2020; Ellis et al., 2020; Hawke et al., 2020; Kılınçel et al., 2020; Li et al., 2020; Qiu et al., 2020; Zhou et al., 2020). However, prevalence rates of these symptoms are available for only a few studies, and they are very heterogeneous, depending on the severity of symptoms and the measurement used. Approximately 44% of Chinese adolescents reported mild to severe depressive symptoms and 37% mild to severe anxiety symptoms (Qiu et al., 2020; Zhou et al., 2020), and 28% of Canadian adolescents reported mild depressive symptoms (Ellis et al., 2020). Using a clinical threshold, Duan et al. (2020) showed that in China, 22% of adolescents during the COVID-19 outbreak reported clinical depressive symptoms. The study conducted by Li and colleagues (2020) showed that 12% of children and adolescents ages 8 to 18 years

reported a severe comorbidity profile with severe intrusion, severe avoidance, and evident anxiety symptoms.

These findings underline quite high proportional rates of depressive and anxiety symptoms in adolescents. However, researchers are not able to really evaluate whether these levels are related to the event without a comparison with preexisting levels. In the current study, our aim is to evaluate the specific stress reactions to the pandemic outbreak, trying to examine explicitly the impact of this event on intrusion, avoidance, and arousal reactions. The event in the current study was defined as the starting point of the pandemic in Italy: We aim to give a picture of stress levels in the month immediately after the pandemic outbreak.

In particular, we aim to assess the presence of stress reactions of Italian adolescents during the peak of the COVID-19 pandemic and to identify risk factors contributing to psychological stress related to (a) demographic characteristics (i.e., sex and age), (b) the national outbreak diffusion (i.e., area where participants live), and (c) personal experiences related to the COVID-19 disease (i.e., direct experience with the disease or relatives infected, indirect experience via a friend’s infection, and indirect experience via the infection of an acquaintance).

Method

Population and data

We assessed adolescents’ psychological response during the peak of the COVID-19 outbreak in Italy using an anonymous online questionnaire. The online survey was disseminated through a popular student website for sharing notes and receiving help with homework (i.e., <https://www.skuola.net/>), via a pop-up window asking the users to be part of the study. All respondents provided explicit informed consent at the beginning of the survey. Only adolescents between 14 and 20 years old were allowed to partake in the survey. In Italy, 14 is the minimum age at which consent may be given to process online data; participants also had to be high school students. It was possible to leave the survey at any point by simply closing the pop-up window. All data were collected without any information about the identity of the respondents. At the end of the survey, the contacts of a national helpline for children and adolescents (i.e., telephone number and website chat) were provided, and anyone in need of psychological support was urged to get in touch. The research, according to ethical standards of the institutional committees on human experimentation and the Helsinki Declaration of 1975, was approved by the Ethical Committee of the University of Florence.

Table 1. Descriptive Statistics of the Sample and Related Indicators of the Spread of COVID-19 on April 1, 2020

Area	N	Percentage of the sample	Percentage of high school students in Italian population (%) ^a	COVID-19 ^b			
				Infected	Infected per 1,000 inhabitants	Deaths	Deaths per 1,000 inhabitants
Lombardy	857	16.2	14.8	44,773	4.5	7,593	0.75
Group A	1,464	27.6	27.9	45,748	2.5	4,402	0.24
Group B	571	10.8	11.3	9,083	1.3	535	0.07
Group C	2,403	45.4	46.0	10,970	0.4	625	0.02

^aThe most updated national statistics refer to 2018 (data accessible through <http://dati.istat.it>).

^bItalian Ministry of Health (2020) data.

Data collection took place over the course of 5 days, from April 1, 2020, to April 5, 2020. Overall, 1,546 respondents completed and submitted the full survey on the first day (April 1), 1,998 respondents did it on the second day (April 2), 385 did it on the third day (Saturday, April 3), 454 did it on the fourth day (Sunday, April 4), and 925 respondents did it on the fifth day (April 5). Thirteen participants reported living outside of Italy (e.g., Germany, Switzerland) and were excluded from the study. Consequently, the final sample was composed of 5,295 Italian adolescents (75.2% females; mean age = 16.67 years, $SD = 1.43$, range = 14–20 years). The distribution across ages was as follows: 14-year-olds ($N = 364$, 6.9%), 15-year-olds ($N = 833$, 15.7%), 16-year-olds ($N = 1,201$, 22.7%), 17-year-olds ($N = 1,219$, 23.0%), 18-year-olds ($N = 1,235$, 23.3%), and 19- to 20-year-olds ($N = 443$, 8.4%).

According to the map of confirmed COVID-19 cases retrieved on April 1, 2020 (Italian Ministry of Health, 2020) and the progressive lockdown measures defined during different phases of the outbreak, we classified the regions where the participants lived into four groups. The first group consisted of adolescents living in Lombardy, where the disease infection started and where the highest rates of infected people and deaths per 1,000 inhabitants were registered. Seven regions belong to Group A (Emilia-Romagna, Liguria, Marche, Piemonte, Trentino Alto Adige, Valle D'Aosta, and Veneto), four to Group B (Abruzzo, Friuli-Venezia Giulia, Tuscany, and Umbria), and eight to Group C (Basilicata, Calabria, Campania, Lazio, Molise, Puglia, Sardinia, and Sicily). The distribution of participants in the groups reflected the general distribution of high school students (Lombardy = 16.2% vs. 14.8%; Group A = 27.6% vs. 27.9%; Group B = 10.8% vs. 11.3%; and Group C = 45.4% vs. 46.0%; data accessible through <http://dati.istat.it>). Descriptive statistics are reported in Table 1: From Lombardy to Group C, the groups reflect

decreasing numbers of cases and deaths related to the COVID-19 outbreak and the spread of the disease.

We collected information about personal experiences involving COVID-19 both in relation to the participants' infection and the infection of the people around them. We found that only 13 participants had been diagnosed (0.25% of the sample). The following people around the participants were infected: relative/close persons = 0.7%, father and/or mother = 0.6%, sibling = 0.3%, and grandparents, uncles, aunts, and cousins = 5.7%. We created three dummy variables according to the participants' personal experience with COVID-19: (a) direct experience with the disease (i.e., participants themselves or their relatives had been diagnosed; $N = 355$, 6.7%), (b) indirect experience with COVID-19 via an infected friend ($N = 271$, 5.1%), and (c) indirect experience via an infected acquaintance ($N = 2,006$, 37.9%). In all, 2,216 participants reported never having had direct or indirect experience with COVID-19 (41.9%).

Key measures

The Impact of Event Scale-6 (IES-6) is a validated, shortened version (Thoresen et al., 2010) of the full IES-revised (IES-R; Weiss, 2004) and is used to assess subjective distress caused by traumatic or stressful events. The short version was recently validated in Italy (Giorgi et al., 2015). The IES-6 and the IES-R are not used to diagnose posttraumatic stress disorder (PTSD); however, cutoff scores for the screening of high-risk subjects for posttraumatic symptoms have been defined in the literature (Beck et al., 2008; Thoresen et al., 2010). The IES-6 showed good to excellent internal consistency across different samples (Cronbach's $\alpha > .86$; Giorgi et al., 2015; Hosey et al., 2019; Thoresen et al., 2010). It also showed external construct validity with strong correlations with measures of related constructs (i.e., mental health, anxiety, and depression,

Giorgi et al., 2015; Hosey et al., 2019; Thoresen et al., 2010). The IES-6 demonstrated good criterion validity compared with a reference-standard PTSD semistructured diagnostic clinician interview (Hosey et al., 2019). In addition, there were no differences between the performance of the IES-6 and IES-R when using the PTSD Checklist as a proximate measure of PTSD symptoms in evaluations of survivors of trauma, natural disasters, and personal violence (Thoresen et al., 2010).

The IES-6 includes six items for the three subscales of the following construct: intrusion (I), hyperarousal (H), and avoidance (A). One item of the short avoidance subscale (“I was aware that I still had a lot of feelings about it, but I didn’t deal with them”) was substituted with another from the original avoidance scale because it was more suitable for the emergency phase of data collection (“I stayed away from reminders of it”). The other items were “I thought about it when I didn’t mean to” (I), “Other things kept making me think about it” (I), “I tried not to think about it” (A), “I had trouble concentrating” (H), and “I had strong feelings, I was nervous” (H). The tenability of the measurement construct was tested in the current study through a confirmatory factor analysis. A second-order structure of the scale was tested (IES total score is measured by three factors, each one measured by two items) and showed excellent fit indices, $\chi^2(6) = 98.680$, $p < .001$, root mean square error of approximation (RMSEA) = 0.054, 95% confidence interval (CI) = [0.045, 0.064]; comparative fit index = .989. Reliability for the IES-6 in the present sample was good (Cronbach’s $\alpha = .76$).

The stressful event in this survey was defined as the starting point of the emergency phase in Italy, corresponding to the national restrictive measures of the Italian government and the declaration of the pandemic by the World Health Organization on March 11. Participants were asked to answer the questions about postevent stress reactions referring to the period between the start of national lockdown and data collection (i.e., approximately the previous 3 weeks) using a Likert scale ranging from 0 (*not at all*) to 4 (*extremely*).

Analytic methods

On the basis of the IES-6, we categorized responses as moderate to high stress reactions (SRs), as opposed to low SRs, if the respondents reported that they had been at least moderately distressed by the event—score of 2 on a scale from 0 to 4 on every item (Mollica et al., 2001; Silver et al., 2002). This definition is also consistent with the cutoff of 12 for the six-item scale, corresponding to the cutoff level of 33 for the full IES scale (Thoresen et al., 2010), which, with a cut point of 1.75, resulted in a sensitivity of 0.88 and a specificity of 0.85

compared with a reference-standard PTSD semistructured diagnostic clinician interview (Hosey et al., 2019). A set of logistic regressions was performed to test the association between SR and some risk factors: demographic characteristics (i.e., sex and age), the national outbreak diffusion, and personal experiences related to COVID-19 (i.e., direct experience with the disease or relatives infected, indirect experience via a friend’s infection, and indirect experience via the infection of an acquaintance).

Results

Results showed that 1,529 adolescents, representing 28.9% of all the respondents, reported moderate to extremely high levels of SRs to the COVID-19 pandemic. Among all of the respondents, 5.8% of adolescents reported five or six SRs with a very high frequency rate—very frequent or extremely frequent (score = 3–4). Considering the specific subscales, hyperarousal behaviors were the most frequent ($M = 3.99$, $SD = 2.30$), followed by intrusive thoughts ($M = 2.63$, $SD = 2.30$) and avoidance behaviors ($M = 2.05$, $SD = 2.14$).

Table 2 shows the results of the logistic regression analysis (univariate and multivariate odds ratio [OR]) that we used to test the association between SRs experienced during the peak of the Italian outbreak and demographic characteristics, area of residency, and personal experiences with COVID-19. Older adolescents were more likely to be affected by the pandemic ($OR = 1.137$, 95% CI = [1.090, 1.186], $p < .001$). Among those with moderate to high SRs, 22.7% were 14 to 15 years old, 27.8% were 16 years old, 28.4% were 17 years old, and 35% were 18 to 20 years old. SRs related to the COVID-19 emergency were reported 2.5 times more often by females than by males ($OR = 2.522$, 95% CI = [2.148, 2.960], $p < .001$); moderate to high SRs were reported by 33% of the females and 16% of the males.

The impact is similar regardless of the spread of COVID-19, whether in Lombardy or in regions less affected by the outbreak (vs. Lombardy, Group A: $OR = 0.869$, 95% CI = [0.721, 1.049], $p = .144$; Group B: $OR = 0.889$, 95% CI = [0.701, 1.126], $p = .328$; Group C: $OR = 1.080$, 95% CI = [0.911, 1.282], $p = .375$). In Lombardy, 29.2% of adolescents presented moderate to high SRs related to the COVID-19 pandemic, compared with 26.4% in Group A, 26.8% in Group B, and 30.8% in Group C.

Finally, all personal experiences with COVID-19 were associated with SRs to the pandemic. This association was highest in cases in which the individual had a direct experience with the disease (participants themselves or their relatives; $OR = 1.462$, 95% CI = [1.168, 1.832], $p < .001$), followed by cases in which the

Table 2. Univariate and Multivariate Effects of Sex, Age, Area of Residency, and Personal Experience With COVID-19 on Impact of Event Scale-6 Stress Reactions

Variable	Univariate			Multivariate		
	OR	95% CI	<i>p</i>	OR	95% CI	<i>p</i>
Age	1.137	[1.090, 1.186]	< .001	1.148	[1.100, 1.199]	< .001
Gender	2.522	[2.148, 2.960]	< .001	2.509	[2.135, 2.950]	< .001
Area where respondent lives						
Lombardy vs. Group A	0.869	[0.721, 1.049]	.144	0.941	[0.775, 1.142]	.536
Lombardy vs. Group B	0.889	[0.701, 1.126]	.328	0.966	[0.756, 1.233]	.779
Lombardy vs. Group C	1.080	[0.911, 1.282]	.375	1.233	[1.026, 1.481]	.025
Direct experience with the COVID-19 (respondent infected and/or relatives)	1.462	[1.168, 1.832]	< .001	1.431	[1.133, 1.808]	< .001
Indirect experience						
Via friend infection	1.328	[1.027, 1.718]	.031	1.357	[1.039, 1.772]	.025
Via acquaintance infection	1.250	[1.107, 1.412]	< .001	1.203	[1.156, 1.370]	< .001

Note: OR = odds ratio; CI = confidence interval. Gender: 1 = female, 0 = male; area where respondent lives: 1 = yes, 0 = no; direct experience, indirect experience via friend infection, indirect experience via acquaintance infection: 1 = yes, 0 = no; stress reactions: 1 = moderate to high stress reactions (score of ≥ 2 on a 0–4 scale for every item), 0 = absence of stress reactions (score of 0 or 1 on a 0–4 scale for every item).

individual had indirect experience via an infected friend ($OR = 1.328$, 95% CI = [1.027, 1.718], $p = .031$) and cases in which the individual had indirect experience via an infected acquaintance ($OR = 1.250$, 95% CI = [1.107, 1.412], $p < .001$). Adolescents who reported these experiences were more likely to report SRs than adolescents who did not: 37% compared with 28% for adolescents with and without direct experience, 35% compared with 28% for adolescents with and without indirect experience via friends, and 32% compared with 27% for adolescents with and without indirect experience via acquaintances.

The multivariate logistic regression analysis showed a similar pattern of findings, except for a trend of the regions less affected by the outbreak to present higher SRs compared with Lombardy (30.8% vs. 29.2%, respectively).

Discussion

In the current study, we found a considerable number of SRs to the COVID-19 pandemic in high school youths ages 14 to 20 during the peak of the outbreak in Italy. In particular, 28.9% of all of the respondents reported moderate to high SRs, and 5.8% of adolescents reported the presence of five or six behaviors with a very high frequency rate. Females reported SRs 2.5 times more than males, according to research that found that females show higher levels of SRs in adolescence (Haag et al., 2020).

Overall, these data are in line with the studies on adults that have reported the average prevalence of posttraumatic stress symptoms and psychological stress at 24% to 25% (Cooke et al., 2020), although higher

rates were registered in Italy, with SRs assessed at 27% at the beginning of the lockdown (Mazza et al., 2020) and posttraumatic symptoms assessed at 37% during the peak of the outbreak (Rossi et al., 2020).

Although we found lower rates in adolescents, our results also showed an age effect: Older participants reported a higher impact in terms of SRs (around 35% in 18-year-olds). Therefore, we might argue that this event can be perceived differently in relation to age. Younger respondents might be less aware of the implications of a such crisis and might be more dependent on parents and adults, so family-protective and resilience mechanisms might be more effective in buffering the stressful impact of the pandemic compared with the older respondents. The scarce research conducted on symptoms related to infectious diseases among children and adolescents compared with adults (Bonanno et al., 2010; Lee, 2020) calls for further studies to test these hypotheses in younger people.

The high psychological impact of COVID-19 compared with other infectious diseases (Jalloh et al., 2018), in particular for Italy, needs to be confirmed in other replication studies, but we can highlight the role of specific contextual and historical aspects. First, the character of the COVID-19 pandemic is unique: Mental health stressors need to be understood within a global crisis in the case of the COVID-19 pandemic, and consequently, the impact of the event is more compared with other epidemics such SARS and Ebola. Second, government restrictions related to self-isolation were very strict in Italy; consequently, they could contribute to increasing the perception of risk in the community. Third, Italy was the second country to experience spread

of the virus, which resulted in within-country internal fear, an unpredictable future, and cross-national isolation. The stigma might have exacerbated the impact.

The second important finding of the current study is the collective nature of the stressor that influenced a collective psychological reaction and was not affected by specific geographical diffusion. In line with other Italian data (Rossi et al., 2020), we found no significantly higher levels of stress reactions in Lombardy compared with the other regions, even though it has the highest number of deaths and infections in Italy. It seems that the national sharing of the pandemic, including the measure of lockdown at the national level, affected the levels of adolescents' well-being across Italy. The high level of SRs found in the regions less affected by the pandemic (Group C) is in line with this view.

Findings about the role of COVID-19 personal experiences confirmed previous research (Jalloh et al., 2018; Rossi et al., 2020). In addition, our findings add a gradient of risk to this literature, which is perfectly expressed in the odds ratio, meaning that the risk for SRs is higher when more intimate relationships are perceived as at risk. Relationships with infected relatives have the most relevant odds ratio, followed by friendships and then a casual social relationship. Future longitudinal research might confirm whether adolescents who experienced the infection within intimate contexts are also the most susceptible to enduring psychological effects. Finally, other types of stress exposure (i.e., family economic difficulties, social isolation, type of distance education) should be considered in future research to explain the variation in SRs.

Overall, these two findings considered together revealed that the proximal exposure to the stressful event is more meaningful than the regional exposure and diffusion of the virus. Different speculations can be advanced and tested in the future. First, in Lombardy, the region in which the highest rate of infected people and deaths have been registered, there is a higher level of proximal exposure compared with the other geographical areas. Thus, the finding about the regional diffusion might be hidden by the proximal exposure. Second, the stressful event as perceived at the national level can evolve into a traumatic event for those adolescents who had a proximal experience with COVID-19 and thus be associated with higher levels of symptoms.

Conclusions

Overall, stress reactions in Italian adolescents in response to the COVID-19 pandemic during the peak of the outbreak seem to be considerable. However, the typical

versus atypical natures of these reactions still need to be evaluated through longitudinal designs able to account for their stability and change. We emphasize that distress is a typical reaction to a threatening situation such as the COVID-19 pandemic, particularly unpredictable in Italy, one of the first countries in the world to deal with the outbreak. The high prevalence of some reactions can be evaluated as adaptive during the peak of the outbreak, in particular the avoidant reactions (e.g., "I stayed away from reminders of it," "I tried not to think about it"). Adolescents' responses revealed an acute stress that might be typical during an emergency phase, and it may change across different stages of the spread of the pandemic, turning into a more severe scenario. In particular, during this developmental age, criteria of continuity/discontinuity of stress reactions across time and their level of severity are critical for their implications on adolescents' mental health. According to the literature on general disasters, elevated symptoms are common among youths in the first few months following a high-impact disaster, but symptoms generally decline over the first year after the disaster (Bonanno et al., 2010). Adolescents' prevalence rates of this study are relevant for future literature because they constitute the starting point of the adolescents' stress reaction trajectories during the COVID-19 pandemic. We must monitor these rates across time to better understand their fluctuations in relation to societal changes following the first stressful impact and to analyze the role of possible moderators, such as the role of the lockdown and the prolonged school closures, the strict social-distancing measures, individual coping strategies, or more contextual protective factors referred to the family or the community context, on adolescents' mental health symptoms across time.

Future research will reveal whether, in which condition, and for whom these acute stress reactions will crystallize into posttraumatic stress symptoms or constitute risk factors for the onset of mental health difficulties such as anxiety and depression or will progressively decrease over time. In the last case, it is important for researchers to assess and measure the impact of the COVID-19 pandemic on transient distress by focusing also on trajectories of healthy functioning, recovery, or resilience.

Transparency

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Author Contributions

A. Nocentini and B. E. Palladino are joint first authors and developed the study concept. All of the authors contributed to the study design. Testing and data collection were performed by A. Nocentini and B. E. Palladino. A.

Nocentini and B. E. Palladino performed the data analysis and interpretation under the supervision of E. Menesini. A. Nocentini drafted the manuscript, and B. E. Palladino and E. Menesini provided critical revisions. All of the authors approved the final manuscript for submission.

Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

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