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**A web-based prosocial intervention can shape adolescents' values: Findings from a mixed-methods study**

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The Version of Record is available online at:

<https://doi.org/10.1007/s10212-023-00775-5>

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1        **A web-based prosocial intervention can shape adolescents' values: Findings from a mixed-**  
2    **methods study**

3  
4 **Abstract.** The possibility of inducing value change has attracted interest among scholars and  
5 practitioners in developmental and social psychology. This study proposes a new web-based  
6 intervention aimed at enhancing the importance adolescents ascribe to social-focused values (i.e.,  
7 self-transcendence and conservation), which was implemented and evaluated in the context of online  
8 schooling during the COVID-19 pandemic. Social-focused values primarily regulate how one relates  
9 to others and preserve cooperative relations. These values were found to predict positive outcomes,  
10 such as adolescents' well-being, school performance, prosocial behavior, and, most recently, COVID-  
11 19 preventive behaviors. The intervention was carried out with a group of 140 high-school students  
12 (Age:  $M = 16.53$ ,  $SD = 0.95$ ) living in Italy during the pandemic. The intervention group (N=84)  
13 completed four tasks, which were based on the value-changing mechanisms of priming, consistency  
14 maintenance (raising awareness and knowledge of prosociality), or direct persuasion (trying to  
15 convince another person to act prosocially). The intervention significantly increased the importance  
16 of conservation values (i.e., tradition, conformity, security) but not of self-transcendence values (i.e.,  
17 universalism, benevolence) in the intervention group in comparison to the control group (N=56). This  
18 result reflects the reality during the pandemic, where prosociality was more easily expressed through  
19 behaviors consistent with conservation values instead of self-transcendence values, which emphasize  
20 (physical) proximity to others. The effectiveness of the intervention was further supported by a  
21 qualitative analysis of adolescents' writings while completing the tasks. Limitations of the study,  
22 future research developments, and practical implications for values education in secondary schools  
23 are discussed.

24 **Keywords:** personal values; value change; prosociality; adolescents; web-based intervention; school  
25 context.

26

## 27 **1. Introduction**

28 Shaping youth's values is among the main tasks of education. One of the most crucial missions  
29 of schools is indeed teaching children and adolescents a range of prosocial values, such as kindness  
30 and respect, with the aim to grow up future responsible citizens (Berson & Oreg, 2016). Indeed, in  
31 Italy, where the present study was carried out, the National guidelines for the school curriculum  
32 strongly emphasize that schools should guide students to internalize the rules of "common living" in  
33 addition to teaching curricular content (MIUR, 2012). This mission becomes even more significant  
34 in adolescence, which is a critical developmental period characterized by several changes (Graziani  
35 & Palmonari, 2014; Authors, 2019a; Authors, 2021). Since adolescence is the phase of personal and  
36 social identity formation, adolescents gradually develop complex structures of understanding the self  
37 and others, and they are finding their role as a part of social groups (McKeown et al., 2020; Taylor et  
38 al., 2022). In this developmental scenario, adolescents internalize what they consider important in  
39 their lives, namely their personal values (Authors, 2011; Authors, 2015). In the past years, several in-  
40 person interventions have been developed and applied in a school context to promote positive youth  
41 development (e.g., CEPIDEA program; Caprara et al., 2014).

42 However, in March 2020, the World Health Organization (WHO) characterized the outbreak  
43 of COVID-19 as a pandemic, and for a long time, schools needed to switch from in-person lessons to  
44 online teaching (AlAzzam et al., 2021). During this period, teachers kept delivering academic content,  
45 but significant challenges emerged, for example regarding the inclusion of students, especially those  
46 with special educational needs (Ianes & Bellacicco, 2020). Moreover, the educational mission of the  
47 school to teach prosocial values declined profoundly in this scenario, as there was a lack of  
48 interventions that could be applied online to positively shape students' values. The present research  
49 aimed to develop, apply, and evaluate such an intervention.

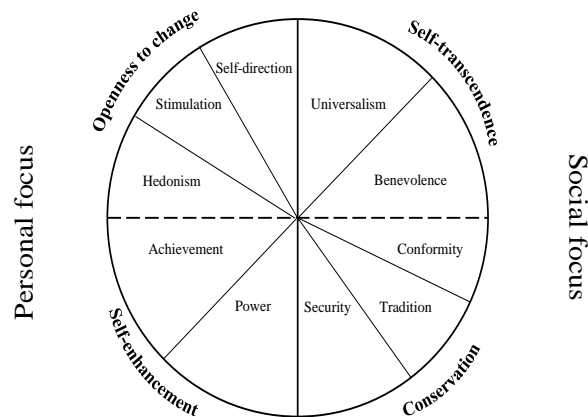
### 50 **1.1. Personal values**

51 According to the theory of basic human values (Schwartz, 1992), which is the most well-  
52 known theory with the strongest evidence base (e.g., Brosch & Sander, 2015; Roccas & Sagiv, 2017),

53 personal values are conceptualized as relatively stable, trans-situational, and abstract goals  
 54 characterized by different motivations (Author, 2009). Schwartz (1992, 2005, 2012) empirically  
 55 confirmed the existence of 10 basic human values (benevolence, universalism, tradition, conformity,  
 56 security, power, achievement, hedonism, stimulation, and self-direction). The theory posits that these  
 57 values are interrelated. Their relations can be organized into a circular structure based on their  
 58 underlying motivational goals and the congruence and conflict among them (Figure 1). Values that  
 59 are placed close to each other in the structure share common motivational goals (e.g., universalism  
 60 and benevolence); in contrast, values that are far apart pursue conflicting motivational goals (e.g.,  
 61 benevolence and power).

62 **Figure 1**

63 *Schwartz's (1992) circular structure of values*



64  
 65  
 66 Based on these relationships, the ten basic values can be placed within four higher-order  
 67 categories, which in turn can be aligned along two bipolar dimensions. The first dimension contrasts  
 68 the values of openness to change (hedonism, stimulation, and self-direction), which emphasize the  
 69 relevance of novelty, freedom, pleasure and enjoying life, the independence of thoughts and actions,  
 70 and the readiness for change with those of conservation (tradition, conformity, and security), which  
 71 instead emphasize self-restraint, preservation of societal and family's traditional practices, and

72 safeguard of stability. The second dimension contrasts the values of self-enhancement (power and  
73 achievement), which emphasize personal affirmation even at the expense of others, with the values  
74 of self-transcendence (benevolence and universalism) that underline the caring in interpersonal  
75 relationships and respect for all the people and the nature (Schwartz, 1992, 2005). Schwartz (2012)  
76 also introduced another values categorization based on the interests that values pursue. The values  
77 related to self-transcendence and conservation primarily regulate relationships with others, thereby  
78 emphasizing a *social focus*. Conversely, the values of self-enhancement and openness to change  
79 regulate the expression of personal interests, thereby stressing a *personal focus*.

80         Since values reflect how people experience the world, they work as a compass in human lives,  
81 shaping emotions (e.g., Nelissen et al., 2007; Tamir et al., 2016) and influencing motivations,  
82 attitudes, and behavior (e.g., Authors, 2019; Daniel et al., 2023; Roccas & Sagiv, 2017). Specifically,  
83 according to Tamir and colleagues' (2016) research, people who prioritize self-transcendence values  
84 tend to feel positive emotions such as love, affection, trust, empathy, and compassion more  
85 frequently. These emotions prompt intimate proximity with others and hence facilitate caregiving  
86 without worrying about such bonds (Bowlby, 1969; Shaver & Mikulincer, 2006; Sternberg, 1988). In  
87 contrast, self-enhancement values are usually linked to emotions such as pride, anger, hostility, and  
88 contempt. Such emotions are coherent with the motivations underlined by these values, allowing one  
89 to reach social dominance, an internal locus of control, high levels of self-control and self-esteem.  
90 Considering the other bipolar dimension (conservation vs. openness to change), conservation is likely  
91 to be associated with emotions that promote the preservation of safe and stable social and personal  
92 states, such as calmness, relief, and contentment. Moreover, since conservation motivations  
93 emphasize the importance of positive external rewards (e.g., behaving consistently with social  
94 norms), these emotions are more likely to be felt following a behavioral engagement with rewards  
95 (Roseman, 2001). Finally, openness to change is usually associated with emotions that promote  
96 novelty seeking and exploration, such as, excitement, curiosity, and enthusiasm. Moreover, evidence  
97 has pointed out that the attainment – or the violation – of one's values is also related to specific

98 emotional experiences, which , can have consequences for behavior (Nelissen et al., 2007). Indeed,  
99 previous research has highlighted that personal values play a significant role in influencing behavior  
100 (e.g., Danioni et al., 2020; Roccas & Sagiv, 2010; Authors, 2019b; Sagiv & Schwartz, 2022; Schwartz  
101 & Butenko, 2014). During adolescence, self-focused values were found to be significantly related to  
102 aggressive and transgressive behavior in educational contexts, such as school and sports clubs  
103 (Benish-Weisman, 2015; Gerbino et al., 2008; Authors, 2019) and to problematic behavior (e.g.,  
104 Authors, 2019b). For example, self-enhancement correlated positively, and self-transcendence and  
105 conservation correlated negatively with bullying as a type of aggressive behavior (Knafo, 2003,  
106 2008). Similarly, Authors (2019) found that among 172 team-sport athletes, self-enhancement was  
107 positively associated with antisocial behavior, whereas self-transcendence and conservation were  
108 associated with prosociality. Moreover, adolescents who assign higher importance to self-  
109 enhancement values are more at risk of developing problematic smartphone use (Authors, 2019b) and  
110 gambling behavior (Danioni et al., 2020). In addition, adolescents who give higher importance to  
111 openness to change values are more at risk of developing unhealthy behavior, such as smoking  
112 cigarettes and consuming cannabis and alcohol (Catellino et al., 2011; Authors, 2019b). Conversely,  
113 self-transcendence and conservation values were found to be substantial protective factors against  
114 these behaviors (Danioni et al., 2020; Morell-Gomis et al., 2018; Authors, 2019b).

115         Given the significant role of values in guiding behavior, the possibility of shaping people's  
116 value system has increasingly attracted the interest of scholars in the field of psychology. This is even  
117 more relevant for scholars interested in school psychology. Especially for adolescents, developing  
118 educational interventions that are able to promote social-focused values could lead to prosocial  
119 behaviors among classmates and discourage bullying behaviors, which represent a challenging issue  
120 for school practitioners (Knafo, 2003, 2008). Finally, such an intervention would be consistent with  
121 the challenging educational goal that schools should address, that is: educating future responsible  
122 citizens and shaping a more sustainable society. While the importance given to a value tends to be  
123 relatively stable across situations (i.e., values are trans-situational) and times (Daniel et al., 2011;

124 Hitlin & Piliavin, 2004; Authors, 2021; Schwartz, 1992), this does not mean that values are immutable  
125 and immune to external influences. Values can change<sup>1</sup>, spontaneously across the lifespan (e.g.,  
126 adolescence; Daniel & Benish-Weisman, 2019; Vecchione et al., 2019), across different life contexts  
127 (e.g., Daniel et al., 2011), and following life transitions (becoming a parent; Lönnqvist et al., 2018)  
128 Values can also be shaped in response to psychological interventions, mainly as the result of a  
129 cognitive re-evaluation (e.g., Maio, 2010; Authors, 2022).

130 Aiming to clarify the process behind the spontaneous and initiated value change, Bardi and  
131 Goodwin (2011) proposed an influential model based on the Elaboration Likelihood Model of  
132 Persuasion (Petty & Cacioppo, 1986), and consistent with Maio and Thomas's (2007) postulations  
133 related to self-persuasion. Bardi and Goodwin (2011) suggested that value change can occur through  
134 peripheral and central routes. The peripheral route involves the activation of primarily automatic  
135 processes, while the central route requires aware processing for conscious decisions to be made. They  
136 also identified five facilitators of value change: *priming*, where the change is caused by environmental  
137 features/cues (e.g., a song) that are associated in memory with specific values; *consistency*  
138 *maintenance*, where the change occurs to maintain consistency or preserve a sense of self-coherence;  
139 *identification*, where the change is due to identification with a significant person and/or a new group;  
140 *adaptation*, where the change is the consequence of adjusting to a new group, a new culture or a new  
141 lengthened situation; *persuasion and direct-persuasion*, where the change is due to societal influence  
142 or to intrapersonal influence. Priming works through the peripheral route (Bardi & Goodwin, 2011).  
143 Identification and adaptation work through both routes, whereas consistency maintenance and  
144 persuasion mainly work through the central-conscious route (Bardi & Goodwin, 2011). Based on this  
145 model, Arieli et al. (2014) developed a brief psychological intervention to enhance the importance of  
146 self-transcendence values in a group of 142 university students. The intervention relied on the  
147 facilitators of priming, consistency maintenance, and direct persuasion. The results confirmed the

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<sup>1</sup> The terms "value change" refers to a change in mean levels and/or rank order in the importance ascribed to one or more values (Bardi & Goodwin, 2011).

148 effectiveness of the intervention through an experimental design with pre-test, post-test, and follow-  
149 up. Students randomly assigned to the experimental group were asked to complete a total of four  
150 tasks: Firstly, they read a scientific testimony that highlighted the benefits of being social-focused  
151 and the percentage of people involved in other-focused activities in order to show that, on average,  
152 people are more benevolent than most other people often realize. Secondly, they completed a  
153 prosocial behavioral checklist composed of daily prosocial actions. Thirdly, they wrote about a  
154 personal prosocial experience. Lastly, they wrote an essay attempting to persuade a panel of reviewers  
155 of the importance of being benevolent. Results showed that for students assigned to the experimental  
156 group the importance attached to self-transcendence values increased significantly and that they were  
157 more prone to act prosocially than students in the control group. The effects of the intervention (i.e.,  
158 an increase in the importance of self-transcendence values) prevailed for four weeks.

159         Based on these promising results, the present study aimed to develop, implement, and evaluate  
160 a new intervention to strengthen the importance of social-focused values (i.e., both self-transcendence  
161 and conservation values) among adolescents in the school context. In doing so, starting from Arieli  
162 et al.'s intervention (2014), we decided to assess changes in the entire value systems. As Schwartz  
163 (2012) suggested, values are conceptually and empirically interrelated, meaning that an increment in  
164 the importance given to one value might cause a decrement in the opposite value. We were interested  
165 in developing an intervention that is easy to apply outside the laboratory setting, in natural contexts  
166 such as schools, or even online. Indeed, the experience of the pandemic has highlighted the need for  
167 interventions that can be managed remotely. Although the pandemic emergency has ended and will  
168 hopefully not be repeated, the need for online interventions is still present. Indeed, online training  
169 might represent a useful and cost-effective integration of face-to-face teaching (Authors, 2022;  
170 Walters et al., 2022).

171         Strengthening the importance of social-focused values was especially important during the  
172 COVID-19 pandemic, and it still is today in the post-pandemic phase for a number of reasons: Due  
173 to the spread of the COVID-19 pandemic, it has become necessary to discover new ways to “stay



174 together” and care for relationships (Authors, 2022; Carter et al., 2023). As such, during the  
175 pandemic, supporting social-focused values could be a factor that promoted adolescents’ wellbeing  
176 and commitment to new behavioral styles (e.g., wearing a mask or maintaining physical distance from  
177 others). Moreover, the spread of COVID-19 strongly emphasizes the importance of the mutual  
178 dependence of the members of a community, as each individual's behaviors (e.g., respecting norms  
179 or engaging in prosocial actions) had a spill-over effect on the whole community. Thus, intervening  
180 in support of social-focused values during adolescence means, indirectly, acting in favor of the  
181 wellbeing of the local communities and entire society both in the pandemic and post-pandemic  
182 phases.

### 183 **1.2. The present study**

184 The main aim of the present study was to develop a psychological intervention to enhance the  
185 importance adolescents give to social-focused values (i.e., self-transcendence and conservation  
186 values). We carried out the intervention online during the curricular school hours while adolescents  
187 were at home during the second lockdown caused by the spread of the COVID-19 virus (February  
188 2021).

189 In light of Bardi and Goodwin’s (2011) theorization and Arieli et al.’s (2014) work, we aimed  
190 to stimulate the routes of value change relying on the facilitators of priming, consistency maintenance,  
191 and direct persuasion. Of course, all the adolescents involved in the study (i.e., both the intervention  
192 group and the control group) were subject to a further facilitator, namely the adaptation to the  
193 COVID-19 pandemic (Daniel et al., 2021).

194 As part of the intervention, we first provided participants with information highlighting the  
195 benefits of being social-focused. Then, we asked them to mark a list of daily prosocial actions. Finally,  
196 two tasks consisted of structured reflection about their prosocial actions and advocacy of the  
197 importance of helping and respecting others and the community. Moreover, given the relevant link  
198 between personal values and emotions, we tried to draw adolescents' attention to their emotions when

199 they completed the task related to their prosocial actions to strengthen the social-focused values'  
200 salience.

201         Specifically, we aimed to assess the effectiveness of our intervention by analyzing the values  
202 mean levels (value priorities) across three times (pre-test, post-test, and four weeks follow-up), as  
203 well as the content of the two structured reflection activities. In particular, we focused on adolescents'  
204 written statements on prosocial behavior and related emotions, as well as on the arguments in support  
205 of pursuing social-focused values. Most previous studies aimed at shaping participants' personal  
206 values (e.g., Arieli et al., 2014; Authors, 2015) only described the tasks without analyzing  
207 participants' statements. However, we believe analyzing the tasks' content could be beneficial for  
208 two main reasons: 1) to verify that the intervention effectively aroused the target values; 2) because  
209 of value change can be, in part, conceptualized as a result of cognitive re-evaluation (Maio et al.,  
210 2010; Authors, 2022). Previous evidence has shown the impact of emotions and motivations in  
211 several different learning processes (Kim & Pekrun, 2013; Pekrun & Stephens, 2010). Thus,  
212 examining the arguments, the reasonings, and the emotions that arose from the tasks could deepen  
213 our understanding of the process behind the value change occurring.

214         We hypothesized that the intervention should increase the importance ascribed to self-  
215 transcendence values (H1) and, even more, to conservation values (H2). During COVID-19  
216 restrictions, prosociality could be easily expressed with behaviors consistent with conservation, such  
217 as respecting rules and norms like the use of face masks or keeping physical distance to ensure one's  
218 own and others' safety. We also expected that the increase of self-transcendence and conservation  
219 could reduce the importance given to the opposite self-focused value dimensions, which are self-  
220 enhancement values (H3) and openness to change values (H4).

## 221         **2. Method**

### 222         **2.1. Participants and procedure**

223 The current study was conducted in Italy and started in February 2021, during the COVID-19  
224 pandemic and the second lockdown. Adolescents were at home, attending school lessons remotely,  
225 and completed the intervention entirely remotely as well.

226 Participants were 140 adolescents (62.9% girls), aged 15 to 19 years ( $M = 16.53$ ,  $SD = 0.95$ ).  
227 Most participants were born in Italy (95.0%) and lived in Central Italy (92.8%). All adolescents  
228 attended high school, mostly Sciences High School (48.6%), Human Sciences High School (18.6%),  
229 or Foreign Language High School (16.9%). Most participants lived with both their parents (80.0%)  
230 and had at least one brother or sister (58.4%).

231 The study adopted a longitudinal web-based quasi-experimental design. A total of five city  
232 and public schools located in Rome (i.e., the capital of Italy) were involved in the project. Two classes  
233 from each school participated, and each class was randomly assigned to either the intervention  
234 condition (5 classes, 84 students; 72% girls  $M_{age} = 16.33$ ,  $SD = 0.76$ ) or the control condition (5  
235 classes, 56 students; 48% girls;  $M_{age} = 16.83$ ,  $SD = 1.11$ ).

236 In the intervention condition, participants completed the questionnaire (T1); one week later,  
237 they completed both the tasks related to the intervention and the questionnaire (T2); finally, after four  
238 weeks from T2, participants completed again the same questionnaire (T3). In the control condition,  
239 participants completed the questionnaire (T1); after five weeks from T1, participants completed the  
240 questionnaire again (T2). The same questionnaire was applied across the three times. The  
241 questionnaires and intervention were administered online during curricular hours, using the  
242 SurveyMonkey tool and Google Meet application.

243 The school councils approved the research. Students' participation was voluntary, and only  
244 those adolescents who had given their written informed consent (and those of their parents in the case  
245 of minors) participated in the study. The research protocol followed the Declaration of Helsinki of  
246 1964 and its latest version (2013). The study procedure followed the ethical guidelines of the Italian  
247 Association of Psychology (AIP) and was approved by the Ethical Committee of the University  
248 [masked for review]. Moreover, the main researcher of the study completed the National Institute for

249 Health training course “Protecting Human Research participants” (Certification number: masked for  
250 review).

## 251 **2.2. Intervention**

252 The intervention consisted of four tasks performed on the internet during school hours and  
253 aimed to stimulate the peripheral and central routes towards the increase of social-focused values.  
254 The tasks relied on the following facilitators: priming, consistency maintenance, and direct  
255 persuasion. The intervention lasted around 30 minutes and was held synchronously via the Google  
256 Meet application. After giving the instructions, the researcher provided the participants with the  
257 SurveyMonkey link through which they could complete the tasks. The researcher was connected for  
258 the whole time and available to answer questions.

259 **Task 1.** Aiming to stimulate the central route and providing participants with enough knowledge  
260 about the topic, the first task consisted of reading a popular science summary related to recent  
261 scientific evidence pointing out that people, especially adolescents, are more prosocial than most  
262 people realize. Specifically, the summary provided evidence that being social-focused, cooperative,  
263 compassionate, and helpful is strongly associated with happiness and physical and psychological  
264 wellbeing for both beneficiaries and benefactors. Moreover, the summary highlighted that  
265 adolescents nowadays are much more social-focused than those of previous generations. Finally, it  
266 pointed out that social-focused adolescents show higher levels of satisfaction with life than self-  
267 focused peers, and they are more prone to develop satisfying and long-lasting relationships.

268 **Task 2.** The second task aimed to stimulate the central and peripheral routes and relied on  
269 priming and consistency maintenance as facilitators. Participants completed a prosocial behavioral  
270 checklist about their experiences over the last year and a half. The checklist included 20 prosocial  
271 behaviors that adolescents can easily engage in daily (e.g., calling a person to wish him/her a happy

272 birthday, apologizing to someone, giving emotional support to someone in need, doing someone a  
273 favor, or giving advice to someone)<sup>2</sup>.

274 **Task 3.** The third task aimed to stimulate the central and peripheral routes and relied on  
275 priming and consistency maintenance as facilitators. Participants were asked to write about a moment  
276 in their lives in which they acted prosocially towards someone, trying to remember and describe the  
277 event and the emotion they felt during and after action as specifically as possible.

278 **Task 4.** The final task aimed to stimulate the central route and relied on the direct persuasion  
279 facilitator. Participants were asked to write a message to convince their peers of the importance of  
280 being prosocial.

### 281 **2.3. Measures**

282 **Personal Values.** We used the short version of the Portrait Values Questionnaire (PVQ)  
283 (Capanna et al., 2005; Schwartz, 2003) to measure the importance adolescents gave to the four higher-  
284 order value dimensions (i.e., self-transcendence, conservation, self-enhancement, and openness to  
285 change). The PVQ is composed of 21 verbal portraits of a person and his/her goals and aspirations,  
286 which indirectly reflect the importance of a value. Adolescents were asked to rate their similarity to  
287 each person, using a 6 points Likert scale (1 = not like me at all; 6 = very much like me). Examples  
288 of an item for each value dimension are: “He/she thinks it is important that every person in the world  
289 be treated equally. He/she believes everyone should have equal opportunities in life” (self-  
290 transcendence). “It’s very important to him/her to show his/her abilities. He/She wants people to  
291 admire what he/she does” (self-enhancement) “Thinking up new ideas and being creative is important  
292 to him/her. He/She likes to do things in his/her own original way” (openness to change). He/She  
293 believes that people should do what they are told. He/She thinks people should follow rules at all

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<sup>2</sup> Adolescents chose many items from the list and, as such, they should have inferred that they are more prosocial than they usually think. Specifically, the three items chosen most often were: helping someone in need (67.9%), giving emotional support to someone in need (65.7%), and thanking someone (64.3%).

294 times, even when no one is watching” (conservation). Cronbach’s alphas ranged from 0.60 (self-  
295 transcendence, T1) to 0.82 (self-enhancement, T2).

296 **Written statements.** The third and fourth tasks of our intervention required adolescents to be  
297 actively involved in completing them. They were asked to write about one prosocial action they  
298 performed along with the related emotions and the arguments in support of pursuing social-focused  
299 values, respectively. Thus, these written statements represent the qualitative data of our study.

## 300 **2.4. Data Analysis**

301 The PVQ scores were analyzed using the software SPSS-23. We performed a series of mixed  
302 repeated measure ANOVA for each value dimension (within factor: time, between factor: group;  
303 dependent variables: value dimension) to assess the changes in mean levels of personal values as a  
304 function of time and condition. Then, in case of a significant effect of time\*condition, we conducted  
305 a paired sample t-test to interpret the observed effects.

306 The qualitative data were analyzed using the software package Atlas-ti 8.4.26 and NVIVO 12.  
307 We content analyzed task 3 and task 4 by adopting a deductive approach (Elo & Kyngäs, 2008;  
308 Roberts et al., 2019) and creating a preliminary codebook, based on the theory of basic human values  
309 (Schwartz, 1992, 2005, 2012). For the third task, we analyzed values-expressive behaviors (four  
310 categories: self-transcendence, conservation, openness to change, self-enhancement) and value-  
311 related emotions according to Tamir’s et al. (2016) categorization (four categories; i.e., self-  
312 transcendence consistent emotions: affection, compassion, empathy, trust; conservation consistent  
313 emotions: contentment, relief, relaxation, calmness; openness to change consistent emotions: passion,  
314 enthusiasm, excitement, curiosity, interest; self-enhancement consistent emotions: anger, pride,  
315 contempt, hatred). For the fourth task, we analyzed adolescents' self-focused motivations (i.e., based  
316 on individual interests) vs. social-focused motivations (i.e., based on prosocial interests) in supporting

317 the pursuit of prosocial values. The content analysis was first conducted by two researchers  
318 independently and reviewed by a third researcher.

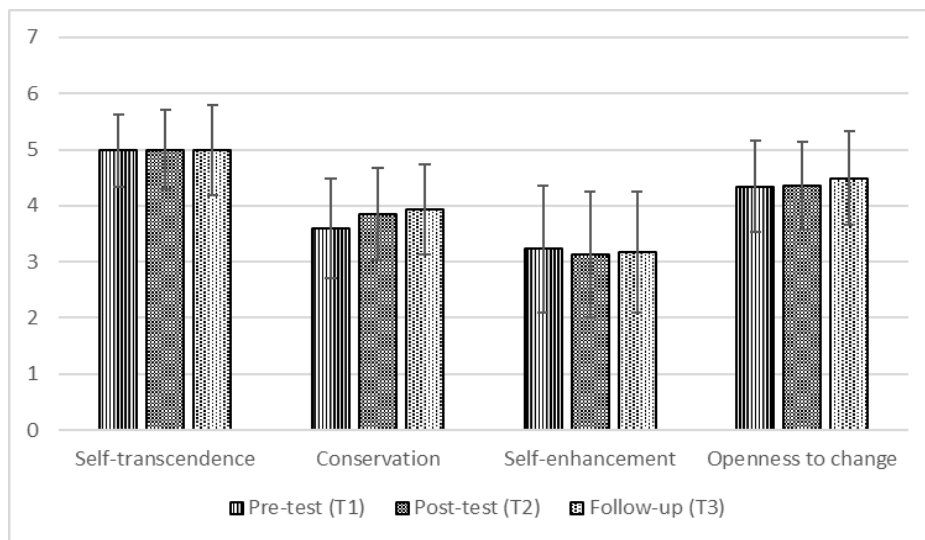
### 319 3. Results

#### 320 3.1. Changes in mean levels of personal values

321 Descriptive statistics of value dimensions across time are reported in Figure 2 for the  
322 intervention group and Figure 3 for the control group.

323 **Figure 2.**

324 *Means and standard deviations of personal values across time (intervention group, N = 84)*



325

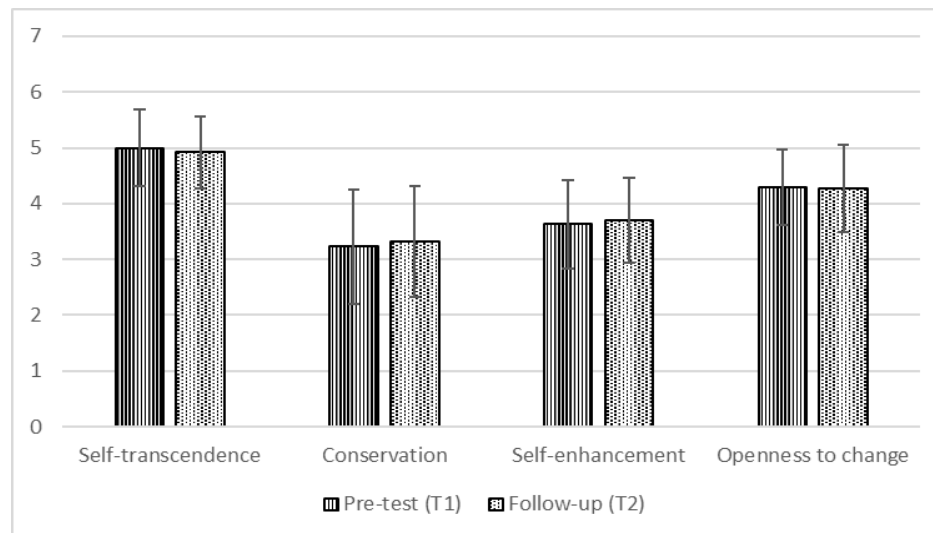
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**Figure 3.**

329 *Means and standard deviations of personal values across time (control group, N = 56)*



330

331 The mixed ANOVA showed no significant effect of time [ $F(1,138)=0.42, p=0.517$ ], condition  
 332 [ $F(1, 138)=0.05, p=0.825$ ], and time\*condition [ $F(1, 138)=0.85, p=0.362$ ] for self-transcendence  
 333 values. Non-significant effects were also found for both self-enhancement [time:  $F(1,138)=0.10,$   
 334  $p=0.754$ ; condition:  $F(1, 138)=0.19, p=0.661$ ; time\*condition:  $F(1,138)=1.10, p=0.295$ ] and openness  
 335 to change [time:  $F(1, 138)=1.131, p=0.289$ ; condition:  $F(1,138)=1.10, p=0.297$ ; time\*condition:  
 336  $F(1,138)=1.10, p=0.161$ ]. However, significant effects were found for conservation values;  
 337 specifically, there was a significant effect of time [ $F(1,138)=10.74, p=0.001, \eta^2 =0.07$ ],  
 338 time\*condition [ $F(1,138)=4.423, p=0.037, \eta^2 =0.03$ ], but not for condition only [ $F(1, 138)=0.574,$   
 339  $p=0.45$ ], Paired-simple *t*-test showed an increase in conservation values over time for the intervention  
 340 group [ $t(83)=-3.82, p=0.001$ ] but not for the control group [ $t(55)=-0.95, p=0.348$ ]. Since the  
 341 intervention condition included three data collections (pre-test, post-test, and follow-up), we  
 342 conducted a repeated measure ANOVA (within factor: time; dependent variable: conservation values)  
 343 only for the intervention group to assess the change in conservation mean levels among the three  
 344 times (pre-test, post-test, follow-up). This confirmed a significant effect of time [ $F(2,82)=7.32,$   
 345  $p=0.001$ ], with an enhancement of conservation from T1 to T2 ( $p = 0.017$ ) and from T1 to T3 ( $p =$   
 346  $0.001$ ), but not from T2 to T3 ( $p = 0.75$ ) (Figure 4).

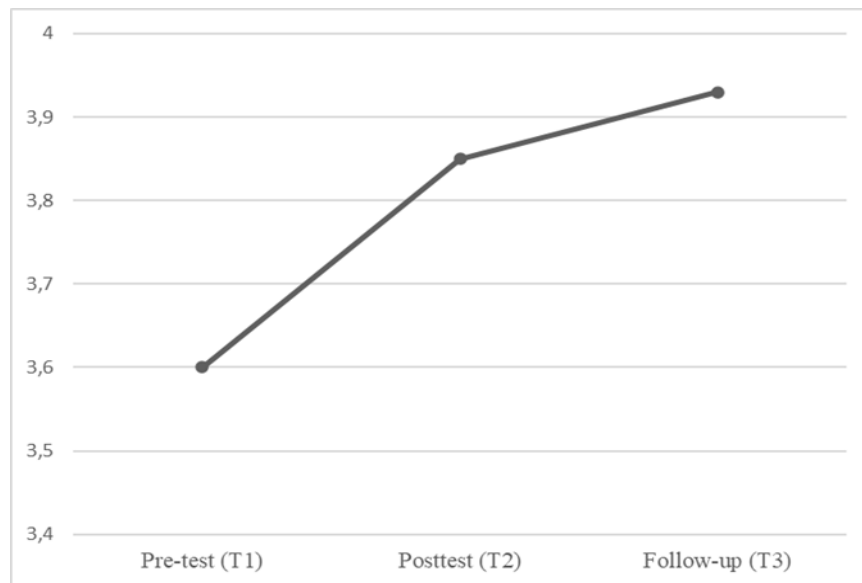
347

**Figure 4.**

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*Conservation values mean levels over time for the intervention group.*





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### 3.2. Qualitative results: value-expressive behaviors and related emotions and arguments

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#### to act prosocially

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#### 3.2.1. Value expressive behaviors and related emotions

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When participants were asked to describe a prosocial action they took and the emotions they

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felt (Task 3), each adolescent in the intervention group described one prosocial behavior they showed

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in the recent past (N=84). Our content analysis confirmed that most of these behaviors (N=69) were

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motivated by self-transcendence values, whereas the remaining behaviors were motivated by the

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neighboring values of conservation (N=15) and openness to change (N=1)<sup>3</sup>. Only thirteen adolescents

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referred to the emotions they experienced explicitly, which were coded as empathy, enthusiasm,

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contentment, and happiness respectively, thereby covering a broad range of feelings.

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While the specific prosocial behaviors described varied between adolescents, we discovered

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types of actions referred to by many participants, namely helping an elderly person to cross the street

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or to carry heavy goods, buying food or giving money to poor people, helping a classmate with school

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assignments, and spending time with a friend or relative who is going through a difficult time in their

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life. Twelve of these prosocial behaviors were strongly related to the COVID-19 pandemic (e.g., “In

<sup>3</sup> One action was double-coded as expressing both self-transcendence and openness to change values.

365 *January, we were still in the red zone [i.e., high COVID alert]. It was a friend's birthday, and we*  
366 *hadn't seen each other for a long time. A friend of mine and I decided to surprise the birthday girl by*  
367 *going to her house to wish her well”).*

368 ***Self-transcendence expressive behaviors.*** Most participants described actions that were  
369 closely related to self-transcendence values (N = 69).

370 Most of these actions highlighted the importance of benevolence. They included helping  
371 classmates with homework (e.g., *“Helping my classmates every day with homework or explaining to*  
372 *them some topics they did not understand”*), or supporting friends (e.g., *“During the first Covid-19*  
373 *lockdown, a friend of mine was depressed. Thus, to give her some supports, my other friends and I*  
374 *called her very often”*) and more vulnerable relatives (e.g., *“I keep company to my grandmother*  
375 *because she felt lonely”*). Other actions were more closely related to universalism values, with the  
376 other person being unknown people in trouble (e.g., *“Every day I would see the same guy at the*  
377 *entrance of the supermarket asking for donations. One day I decided to do something nice, I went*  
378 *into the COOP and bought a slice of pizza, a bottle of water, and something sweet”*) or helping the  
379 whole community (*“My friends and I created a site to help immigrants with their integration.*  
380 *Recently we created a medium-length report on gender violence, stereotypes, machismo, etc.”*).

381 Interestingly, adolescents tended to describe similar types of situations where a person was  
382 going through a difficult time, such as having friends who split up with their partner, seeing a stranger  
383 in need on the streets, or having a classmate who struggles with assignments in school. In the same  
384 vein, the actions taken to support this person in need were similar across adolescents' statements,  
385 including giving food (*“We delivered hot meals to homeless people.”*) or a present (*“We are a group*  
386 *of 11 friends, and for each birthday, we give presents to each other. We have given even more presents*  
387 *during the pandemic, trying to keep our spirits high in this situation, which is not easy for anyone)*,  
388 spending time together and talking (*“A friend of mine broke up with her boyfriend during the*  
389 *lockdown, I video call her every day to see how she was and to try and cheer him up.”*) and making

390 somebody smile and cheering them up (“*I made a friend in a bad mood smile.*”). Adolescents  
391 explained how they perceived other people’s feelings of being scared, anxious, or sad, e.g.: “*When*  
392 *my friend felt anxious about her brother working at the hospital alongside people with COVID, my*  
393 *friends and I tried to comfort her, and we met to let her know that whatever happens, we would always*  
394 *be.*”

395 Some adolescence also explained how they perceived other people lacking confidence and  
396 they tried to encourage them, e.g.: “*I made it clear to my best friend (who has a tendency to*  
397 *underestimate herself) that I love her for who she is and that I am proud of her.*”

398 ***Conservation expressive behaviors.*** Some participants described actions that expressed  
399 conservation values (N = 15). While one of these statements referred to respecting the rules, the  
400 majority of statements expressed respect, obedience, and gratitude toward an authority, such as a  
401 teacher (e.g., “*My classmates and I thanked a teacher for her service during this difficult period*”), a  
402 parent (e.g., “*My brother and I always clean up our rooms when my parents are at work*”), or elderly  
403 people (e.g., “*I recently helped an elderly man to cross a risky street*”). As adolescents were helping  
404 and supporting others, these behaviors also spoke to self-transcendence values.

405 ***Openness to change expressive behaviors.*** Only one action was coded as expressing openness  
406 to change values. This was double-coded to express universalism values as well. Specifically, a  
407 participant organized an international camp on gender equality, stating that “*it was open to all people,*  
408 *and it was a wonderful time of sharing, growth and learning together*”.

409 ***Self-enhancement expressive behavior.*** No behavior described by adolescents was coded as  
410 expressing self-enhancement values.

411 ***Emotions.*** Only thirteen participants described emotions that they felt while acting  
412 prosocially. Five of these described emotions that were consistent with conservation values, namely  
413 contentment (e.g., “[...] *It made me feel satisfied*”); three of these described emotions that were

414 consistent with self-transcendence values, i.e., empathy (e.g., “[...] *It was very touching to see the*  
415 *woman’s reaction*”); two of these described emotions that were consistent with openness-to change  
416 values, i.e., enthusiasm (i.e., “[...] *I felt enthusiastic to help a person in need, I think there are no*  
417 *better sensations*” or “*I was excited to see so many people wanting a positive change*”). Finally, three  
418 participants described that they felt happy – an emotion that is not related to a specific value in Tamir  
419 et al.’s (2016) categorization.

### 420 **3.2.2 Arguments to act prosocially**

421 When adolescents were asked to convince their peers of the importance of being prosocial,  
422 the qualitative analysis revealed that some of adolescents’ arguments had a social and others had a  
423 personal focus, as explored in depth below.

424 Fifty-three arguments expressed by adolescents to convince their peers of the importance of  
425 being prosocial were coded as social focus motivations, meaning that the arguments highlighted  
426 helping and supporting others as well as following social obligations, rules, and traditions. While  
427 some adolescents considered helping persons in need a duty (e.g., “*I consider it my duty to provide*  
428 *emotional support to people who need it and who I care about very much.*”) or social responsibility  
429 (e.g., “*Helping others is extremely important, not everyone has the same opportunities and therefore*  
430 *it is the responsibility of those who are luckier to help them*”), others pointed out that being prosocial  
431 is the only way to make the world a better place (e.g., “*Let’s help each other to build a better world*  
432 *together*”).

433 Adolescents included arguments around the emotions of happiness and joy to convince others  
434 to act prosocially, stating that “*it will make the day for that person*”, and explaining that “*happiness*  
435 *is known to be contagious*”. Love was another emotion emphasized in adolescents’ arguments along  
436 with its power to unite humans, as one adolescent stated: “*At the base of generosity, kindness and*  
437 *altruism there is LOVE, and LOVE is a feeling that unites and embraces everyone (or at least it*

438 *should). Giving LOVE should be the starting point for a life in search of oneself and the well-being*  
439 *of others.”.*

440 Emotions also played a key role in the lines of arguments analyzed, where the emotions  
441 mentioned expressed a focus on oneself (see Tamir et al., 2016). Adolescents argued how acting  
442 prosocially can make a person feel proud and useful and increase self-esteem through experiencing  
443 one can have a positive impact on another person’s life, e.g.: *“Performing a good action implies a*  
444 *reward: feeling rewarded and proud of being a good person. Doing good will help you first, trust*  
445 *me!”*

#### 446 **4. Discussion**

447 The present study is the first one that addresses the issue of value change in an online  
448 secondary school context, developing an intervention composed of several tasks and applied outside  
449 of the laboratory setting. The main aim of this study was to enhance the importance adolescents give  
450 to social-focused values (i.e., self-transcendence and conservation) since previous evidence had  
451 pointed out that these values represent a protective factor against transgressive and unhealthy  
452 behaviors (e.g., bullying, Knafo, 2003, 2008; or smoking cigarettes or cannabis, Catellino et al., 2011;  
453 Authors, 2019b) and promote prosocial behaviors inside and outside of the school (e.g., Authors,  
454 2019). Furthermore, strengthening social-focused values was even more meaningful in a historical  
455 period like the COVID-19 pandemic and is still significant now, in a post-pandemic era. Indeed, the  
456 COVID-19 pandemic has shown how an individuals' actions can affect the entire community, further  
457 highlighting the need for a global education of human beings that also fosters engagement for  
458 solidarity and fair lifestyles (Council of Europe, 2020).

459 Our results partially confirmed the initial hypotheses about the changes in self-transcendence  
460 and conservation in adolescents participating in the intervention. Indeed, contrary to Arieli et al.’s  
461 (2014) findings, we did not find an increase in the importance of self-transcendence values (H1), but  
462 only in conservation values (H2). Generally, adolescents strongly emphasize the importance of self-  
463 transcendence and openness to change values (Author, 2009), because the motivations expressed by

464 these values are consistent with the typical needs and tasks of this developmental period, such as the  
465 harmony of significant interpersonal relationships and novelty seeking (Bonino et al., 2007; Mercer  
466 et al., 2017). Adolescents need to preserve interpersonal relationships, especially with their peers, and  
467 they look for novelties and challenges to test their limits to develop their identity (Graziani &  
468 Palmonari, 2014; Mercer et al., 2017). In this vein, adolescents involved in the present study showed  
469 high levels of self-transcendence and openness to change values at the baseline. Therefore, it would  
470 have been unlikely that a brief intervention could enhance priorities already perceived as so important.  
471 In discussing these findings, we should take the COVID-19 pandemic situation into account. It is  
472 likely that the COVID-19 pandemic has encouraged people to develop a different conceptualization  
473 of “prosociality”. Indeed, most of the prosocial actions that were possible before the spread of the  
474 virus were considered careless actions during the pandemic (e.g., hugging a person to comfort them).  
475 During the pandemic, prosociality was more easily expressed through behaviors consistent with  
476 conservation instead of self-transcendence values, which emphasize proximity (even physically) with  
477 others (Shaver & Mikulincer, 2006). Our intervention encouraged adolescents to think about the  
478 prosociality dimension actively; thus, it is possible that during this active thought process, values  
479 considered more “adaptive” in the pandemic period were more easily activated (Schuster et al., 2019).

480 Contrary to H3 and H4, the intervention did not contribute to any significant changes either  
481 in self-enhancement or in openness to change. However, there was a small, statistically non-  
482 significant decrease in the importance given to self-enhancement values following the intervention.  
483 Probably, our intervention duration was too short to influence the whole value system, even if the  
484 effect found for conservation values lasted for one month. Future studies should address whether a  
485 repeated intervention over time might produce stronger effects on the whole circular structure of  
486 values, shedding light on the possibility to produce long term changes.

487 Regarding the content of the responses to the tasks, our results pointed out that our tasks have  
488 aroused the target values as well as the related emotions and motivations. Participants mainly  
489 described actions consistent with self-transcendence and conservation values, and they noted

490 emotions coherent with the motivations expressed by these values (Tamir et al., 2016). The most  
491 prevalent actions were related to helping behaviors. Adolescents mainly described helping behaviors  
492 towards friends, classmates, relatives, or unknown persons in need; as such, the action target was  
493 mainly related to benevolence and universalism values (Schwartz, 2012). However, adolescents also  
494 described helping behaviors consistent with the motivations expressed by conservation values.  
495 Specifically, some wrote about actions aimed at thanking and/or showing respect to elderly people or  
496 representatives of authority (i.e., a teacher). Showing respect for elders or authorities are behaviors  
497 aimed to benefit the whole community, and for this reason are part of the prosociality dimension  
498 (Schwartz, 2007) – a phenomenon that has been labeled the “ethic of community” (Shweder et al.,  
499 1997), namely a range of attitudes and behaviors (e.g., commitment, devotion, service, and  
500 collaboration) that are deemed to benefit the whole in-group community (Furman, 2004). Finally,  
501 one participant described an openness to change expressive behavior. Although these values are  
502 weakly linked with prosociality (e.g., Catellino et al., 2011; Authors, 2019), Ocejda et al. (2019) have  
503 pointed out in a recent study that adolescents who prioritize both self-transcendence and openness to  
504 change values are more prone to be engaged in prosocial initiatives that involve a higher orientation  
505 towards the improvement of our world (e.g., demonstrations or political activism). Furthermore,  
506 adolescents described emotions in line with these value dimensions (i.e., self-transcendence,  
507 conservation, and openness to change), providing further evidence to support the association pointed  
508 out by Tamir et al. (2016) between values and specific emotions.

509 Finally, we found a less homogeneous situation regarding the motivations behind the prosocial  
510 actions (personal vs. social focus). When adolescents were asked to convince their peers of the  
511 importance of being prosocial, most of the motivations expressed by adolescents were a mix of social  
512 and personal-focused motives. On the one hand, adolescents pointed out that being prosocial is  
513 essential to preserve the welfare of the whole community. On the other hand, they highlighted the  
514 personal advantages resulting from being prosocial. Notably, adolescents’ prosocial behaviors are  
515 often characterized by the evaluation of costs, rewards, and losses (Chaikovska et al., 2020). This

516 moral tendency, called the “ethic of autonomy”, is peculiar to people in “Western” contexts people  
517 in general, which strongly emphasize the autonomy of thought and actions, even in the moral  
518 dimension (Shweder et al., 1997). Indeed, “Western” people tend to judge an action as good or wrong  
519 by considering if that action directly hurts (or benefits) another person or infringes (or supports) upon  
520 his/her rights or freedoms as an individual (Rozin et al., 1999).

521         Despite the promising results, three main limitations of this study must be acknowledged.  
522 First, we involved a relatively small number of adolescents, all of them living in Central Italy.  
523 Secondly, although we randomly assigned the classes to the intervention or the control group, the  
524 intervention group was composed mainly of girls. Although the two groups reported similar mean  
525 levels of value dimensions at baseline, several previous studies highlighted that girls are in general  
526 more responsive than boys to the intergenerational transmission of values, especially within the  
527 family (e.g., Boehnke, 2001; Knafo & Schwartz, 2004). Second, we did not control for the Hawthorne  
528 effect. To control this type of confounding variable, another control group could be included, in which  
529 adolescents participate in a similar intervention, but without any content related to values and  
530 prosociality. However, since this effect might occur when participants are observed by experimenters  
531 (Sedgwick & Greenwood, 2015), it is plausible that since this was a web-based intervention, during  
532 which the researcher was not physically present, this type of confounding has been relatively  
533 controlled for. Third, the increased importance of conservation values could be related to a process  
534 that led adolescents to conform to a perceived social norm and, thus, as an effect of social desirability.  
535 This is because the intervention explicitly highlighted the importance of social-focused values. For  
536 this reason, the adolescents might have perceived that others (i.e., the experimenter or teachers,  
537 school) expected them to give high importance to these values. However, it is worth noting that the  
538 intervention mainly focused on self-transcendence values, which are largely susceptible to social  
539 desirability, but adolescents did not report any changes in this dimension.

#### 540         **4.1. Conclusions and practical implications**



541 Our findings showed the possibility of actively working on personal values, challenging their  
542 relative stability over time (and, maybe, over situations). Thus, applying these kinds of interventions  
543 could bring a consistent positive change in attitudes and behaviors. The application of these  
544 interventions in school contexts could contribute to preventing transgressive and antisocial behavior  
545 while promoting prosocial behavior (Caprara et al., 2012; Kasser, 2014). This becomes even more  
546 relevant if we consider the educational mission of schools, which is not only related to the  
547 transmission of contents but must also face the challenge of raising future citizens and shaping the  
548 society of the future. In this scenario, it is worth noting that in 2019, the Italian High School  
549 Guidelines established extra-curricular pathways that only concern highschools and are mandatory  
550 for all students starting from the 3rd year. These pathways should promote individual skills (e.g.,  
551 adaptability) and social skills (e.g., solidarity, respect, and justice), in line with the aims highlighted  
552 by the Council of Europe. Furthermore, the Italian Ministry of Education emphasizes the importance  
553 of further investing in digital innovative training for educational purposes to make them more  
554 effective for students (Ministry of Education and Merit, 2022). Therefore, although our intervention  
555 represents a pilot, it is consistent with the mission of schools, and future studies should work in this  
556 direction to establish more standardized and effective web-based interventions, with the ultimate goal  
557 of including them as part of the educational practice to contribute to a stronger awareness of values  
558 and their impact.

559

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