

## Too Lonely to Help: Early Adolescents' Social Connections and Willingness to Help During COVID-19 Lockdown

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We examined early adolescents' social connections, their emotional state, and their willingness to act prosocially during COVID-19 pandemic lockdown. In two studies—comparing fourth to sixth graders during lockdown with a similar sample in pre-pandemic times, and longitudinally examining the same sample of participants, twice—we found that overall, early adolescents' emotional state during lockdown was significantly worse than in normal times (before the pandemic). This decline was explained by the participants' ratings of their loneliness, which was linked to their social (virtual) connections during lockdown. Importantly, participants with fewer social connections (in the virtual world as well as in face-to-face interactions) were less willing to help a lonely peer—even though they experienced similar pangs of loneliness.

Key words: early adolescents' loneliness – social connections – virtual communication – COVID-19 – willingness to help

When so many are lonely as seem to be lonely, it would be inexcusably selfish to be lonely alone. (Tennessee Williams, *Camino Real*).

The COVID-19 pandemic has radically affected people's lives, in most countries. Governments have introduced substantial restrictions to people's movement—including restricting people's attendance at work and schools, and their ability to see friends and family. Such lockdown measures have had large impacts on people's health, financial status, and well-being, and have become a major concern of recent research. Children and adolescents appear to be a particularly vulnerable population, especially in view of the repeated lockdowns, in which schools were closed or reopened irregularly, and forced to conduct most of the learning at a distance. These conditions have had significant negative ramifications for adolescents in various respects: they were physically less active; spent much more time in front of a screen; suffered irregular sleep patterns, and ate less favorable diets, resulting in weight gain (Jiao et al., 2020; Jiloha, 2020; Wang, Zhang, Zhao, Zhang, & Jiang, 2020);

their academic progress was impaired by months of distance learning, which is not suitable for all children (Petretto, Masala, & Masala, 2020), and even exacerbates socioeconomic gaps (Golberstein, Wen, & Miller, 2020); and they suffered adverse emotional consequences, due to the continually stressful situation (Brooks et al., 2020; Jiao et al., 2020; Jiloha, 2020; Wang et al., 2020).

The present study focuses on the social connections of early adolescents as a key indicator of their emotional state, especially during this challenging time. Social connections may serve as a source of support and resilience—both in routine life (e.g., Dumont & Provost, 1999) and in times of crisis and stress (e.g., Ozbay et al., 2007). This has been particularly true during the COVID-19 pandemic, in which social distance has become a key protective factor in dealing with the virus in everyday life, and has cutoff adolescents from their friends and social routine for long periods. We examined how this isolation has affected the emotional state of early adolescents, taking into account their social connections in pre-pandemic times when they attended school in person, and their virtual connections during lockdown. We also examined the association between these social connections and early adolescents' willingness to help (WTH) another child who is presented to them as lonely, with no social connections during lockdown.

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We next discuss the link between adolescents' social connections and the main variables in our study—namely, emotional state, and prosocial behavior.

### **Early Adolescents' Social Connections and their Emotional State**

A growing body of research suggests that the need to belong is a fundamental and universal human need, and that feelings of belonging and connectedness to others are strongly related to psychological and physical health (e.g., Baumeister & Leary, 1995). When the fundamental need for social connection is not met, one is likely to experience painful pangs of loneliness (e.g., Bukowski, Hoza, & Boivin, 1993). Although the need to belong is a universal fundamental need at every age, it is particularly acute in late childhood and early adolescence—a developmental stage when children become increasingly engaged in the wider social circles of their environment. Specifically, at these ages, factors such as peer relations, group affiliation, social status, and popularity, become key features of the children's social interactions—with significant implications for their emotional, cognitive, and social development (Buhs, Ladd, & Herald, 2006; Dubow, & Cappas, 1988; Hogue & Steinberg, 1995; Kiesner, 2002). Therefore, the effect of being isolated, which was forced on most people during the COVID-19 lockdowns, has had a critical effect on the emotional state of early adolescents (10–12 years old), and is likely to heighten their feelings of loneliness. Past research on the effect of time spent with friends on adolescents' feelings in normal times found that early adolescents spend much less time alone than late adolescents do (Larson & Richards, 1991). They report a less frequent desire to be alone, exhibited more negative attitude toward being alone (Marcoen, Goossens, & Caes, 1987), and did not feel better after being alone (Larson, 1997). Based on these findings, the period of early adolescence appears to have been especially vulnerable to harm by the forced isolation imposed by COVID-19 lockdowns and is likely to have an even stronger impact on early adolescents who have fewer social connections than their peers in normal times—since this disadvantage is likely to hold true in the virtual world, as well (Reich, Subrahmanyam, & Espinoza, 2012).

Although virtual communications can lower social barriers, they may also heighten loneliness, because it reifies the social distance that lonely people feel in face-to-face situations (Burke, Marlow, &

Lento, 2010). Hence, individuals with fewer actual connections with others, or who feel lonely in face-to-face interactions, are expected to have fewer connections, and feel lonely in the online world, as well (Kraut et al., 2002).

Besides this association between social connections and feeling of loneliness, having fewer social interactions is considered a general risk factor, which has been linked to a wide range of physical and mental symptoms (Cacioppo & Hawkley, 2003; Foster et al., 2017), and an overall decrease in well-being (Corsano, Majorano, & Champretavy, 2006; Lucier-Greer et al., 2016). Conversely, having more social interactions serves as a resilience factor that improves one's mental and physical well-being (Eisenberger & Cole, 2012; Kim & Lee, 2011).

Accordingly, the present research examined the association between early adolescents' social connections and their emotional state during the pandemic. Another potential resilience factor that we examined in this study, was the willingness of early adolescents to help another lonely child (WTH). Although helping others may serve as a source of strength in times of crisis and stress (Frazier et al., 2013; Raposa, Laws, & Ansell, 2016), to do so one must have the emotional resources and ability to spare attention to others (e.g., Darley & Batson, 1973)—and this ability may be limited among those who are experiencing greater distress (e.g., Thompson, Cowan, & Rosenhan, 1980), such as individuals with fewer social interactions.

### **Early Adolescents' Social Connections and their WTH Others**

Research suggests that prosocial behavior may serve as a resilience factor and is associated with coping and adaptive functioning when dealing with stress events (Frazier et al., 2013; Larson, & Moses, 2017). Moreover, in times of lockdown, the WTH a lonely other may reflect individuals' efforts to overcome their own situation, and to create an opportunity for future social connections. Indeed, research suggests that engaging in prosocial behavior may be an important factor in overcoming loneliness—insofar as lonely children and adolescents who behave in a more prosocial manner became less lonely over time, compared with those who are perceived to be less prosocial by peers (Griese, & Buhs, 2014). Specifically, during early adolescence, children tend to experience greater satisfaction from acting prosocially than younger children do (Kogut, 2012; Sabato & Kogut, 2019), so such behaviors may improve their emotional state in times of stress.

Interestingly, although prosocial behavior generally springs from positive experiences (Vollhardt, 2009), there is empirical evidence for greater motivation to help others among individuals who have suffered, especially those who have fallen victim to a similar fate, or events (a phenomenon known as *altruism born of suffering*, Staub, 2005; Vollhardt, 2009). Specifically, feelings of loneliness may motivate oneself to reconnect with others, and to actively satisfy one's need to belong (e.g., Maner, DeWall, Baumeister, & Schaller, 2007). However, loneliness has also been found to be linked to a diminished sensitivity to social situations that may potentially help one to achieve that very aspiration (e.g., Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007; Vanhalst et al., 2015). One such situation, which has the potential to foster closeness and to forge connections with others, is the opportunity to act for other people's benefit (prosocial behavior).

In light of this debate, the present research was focused on people's social connections and the role these may play in early adolescents' decision to help another lonely child (or not). Specifically, we asked whether having more social connections predicts adolescents' WTH others who are experiencing the same need. The literature on early adolescents' social connections suggests a solid association between social acceptance within one's peer group and prosocial behavior—such that less accepted, lonelier individuals are perceived by their friends and teachers to be less helpful and less engaged in prosocial interactions, than their popular peers (e.g., Berg, Lansu, & Cillessen, 2015; Rodkin, Ryan, Jamison, & Wilson, 2013). However, the participants' prosocial behaviors in these studies were gauged by the observations of their peers and teachers of their public behavior in face-to-face situations. In such instances, adolescents with fewer social connections may be sensitive to the presence of others, feel that they are being watched, or perhaps too shy to act. Moreover, these evaluations were based on a variety of behaviors and needs (such as being generally kind or helpful to others—Rodkin et al., 2013) that were not directly related to the participants' own specific need for social connection. Accordingly, in the present research, we asked early adolescents if they would be willing to be in touch with a child whom they don't know, who is not a part of their usual social circle (in which they may have fewer or more social interactions). Moreover, we described the child in question as lonely—thus presenting his or her need as similar to that of the prospective

helper (due to lockdown). This similarity in need is likely to be greater if the prospective helper has comparatively fewer social connections themselves.

### A Personal Experience of the Target's Plight

COVID-19 has imposed an accelerated transition from in-person to virtual communications and has created a unique environment that may encourage lonely adolescents to act and help others in a way that does not involve face-to-face interactions and allows them to maintain greater anonymity. In the present research, we sought to examine the correlation between early adolescents' social connections, and their prosocial behavior in times of increased loneliness. Specifically, we examined this association in a context where the recipient's need corresponds to that of the participant (i.e., the need for social connection)—that is, whether or not an individual who has fewer [or more] social connections is more WTH another child who is described as lonely.

Experiencing a plight similar to that of another person may enhance perspective-taking and empathy, and boost altruistic behavior (e.g., Batson et al., 1997). However, having to deal with one's own concerns, losses, and needs limits the amount of attention and energy one can spare for others, thereby diminishing one's ability to help (Darley & Batson, 1973; Thompson et al., 1980). Finally, Harel and Kogut (2015) found that people who have experienced a given need are more likely to help others who are experiencing a similar need—but only after they themselves have been at least partially relieved from that need, not while they are still bearing the brunt of it.

This research (Harel & Kogut, 2015) raises questions about the motivations of adolescents to help when they themselves are in the throes of distress during lockdown. Research suggests that both other-oriented (a true care for other people's welfare, Batson, Fultz, & Schoenrade, 1987; Wentzel, Filisetti, & Looney, 2007), and self-oriented motivations (e.g., enhancing happiness, Aknin, Dunn, & Norton, 2012; creating positive social image and reputation, Exley, 2018) may give rise to helping behaviors.

In the case of contacting a lonely child during lockdown, the motivation may involve purely other-oriented motivation to ease that child's loneliness, as well as the more self-oriented strategic desire (which is also adaptive and positive) to relieve one's own loneliness, and to gain a new friend. Adolescents with more social connections are more likely to be motivated by other-oriented considerations than those with fewer connections—

since socially accepted (popular) individuals tend to have greater empathy for others (Berger, Batanova, & Cance, 2015). As for self-oriented motivation, children with more social connections are expected to have broader social experience, so they may employ more strategic considerations (Crone, 2013), as well as altruistic ones. Conversely, children with fewer social connections may be more self-focused, and consequently more motivated by self-oriented reasons in their helping decision.

In light of all the above, we posited the following hypotheses:

- *H1*: The overall emotional state of early adolescents (as evident in their general mood, and subjective well-being) will be worse during lockdown than in the pre-pandemic period.
- *H2*: The decline in early adolescents' overall emotional state will be explained by their feelings of loneliness.
- *H3*: Early adolescents who have fewer social connections in face-to-face interactions (i.e., friends in class) will replicate this pattern in the virtual environment, as well, and report fewer virtual connections with friends during the lockdown period.
- *H4*: Having fewer virtual connections will be associated with the emotional state of early adolescents in the form of greater feelings of loneliness, negative mood, and lower life satisfaction (two main components of Subjective Well-Being—Diener, Lucas, & Oishi, 2002).
- *H5*: Early adolescents with fewer social connections (in the virtual world and in face-to-face interactions) will exhibit less WTH another lonely child. However, since the opportunity to act anonymously, at a distance, has been found to increase prosociality among less socially accepted individuals (Huang, Liu, & Liu., 2016), we consider this to be a two-tailed hypothesis.
- *H6*: Early adolescents with more social connections (face-to-face and virtual connections) will be more motivated to help, due to other-oriented considerations, than those who have fewer connections. Regarding self-oriented motivation, our hypothesis is two-tailed, as explained above. Hence, we will examine the indirect effect of each motivation in explaining the link between social connection and WTH.

### The Present Research

We present two studies that were conducted during the first lockdown period in Israel (seven

weeks in April and May 2020), when all schools were closed due to the pandemic. Study 1 involved a convenience sample of early adolescents (aged 10–12), whose parents had received a link to a questionnaire on social media during the lockdown period, and asked to forward that link to their child's personal cellphone. The second study was a longitudinal study, in which early adolescents whose subjective well-being and social connections in the pre-pandemic period were already known to us from another, ongoing study, and could serve as a benchmark in the present one, responded to a second questionnaire during lockdown, which was forwarded to them by their teacher, with their parents' consent. Specifically, all children in our sample have their own private cellphone, as well as a personal computer, according to their parents (in Study 1, the parents were asked to allow their adolescent to complete the questionnaire while using their own private phone, and only if they have one) and teachers (in Study 2, we asked the teachers whether there are children in class who do not have a private phone and a personal computer, and were assured that all students have both). This information is important, as it reduces the risk that online accessibility may interfere in the adolescents' ability to remotely help another child during lockdown. Both studies received the approval of the Israeli Ministry of Education's Board of Ethics, 2019–2021.

### STUDY 1

The study was conducted in April (2–30), 2020, when all schools in Israel were closed due to the pandemic.

#### Method

**Participants.** One hundred and twelve fourth-, fifth-, or sixth graders at several public schools in Israel (aged 10–12 years, 56% females) voluntarily took part in the study, after being recruited via a link sent to their respective parents. Seven other children entered the survey, but did not complete enough questions to be included in the analysis. Sample size was predetermined by power analysis ( $\alpha = .05$ ) by means of the G\*Power software application (Faul, Erdfelder, Lang, & Buchner, 2007), which indicated that a sample of 120 participants was sufficient to detect a small-to-medium effect size ( $f^2 = .10$ ), with an assumed power of .85, in a regression analysis with two main effects and an interaction. Given that schools were closed at the

time, we were entirely dependent on the parents' cooperation. Since we prefer to run a study while participants are subject to the same conditions (in this instance—total lockdown and social distance), we had a relatively short window of opportunity to collect data before schools partially reopened, which could skew the results. We therefore settled for the smallest possible sample that is statistically justifiable.

**Procedure.** At the outset, participants were told that we were conducting a survey on how children think, and feel. They were also promised complete anonymity (i.e., that no personal information would be collected). Next, they completed the questionnaire (which included ratings of subjective well-being, feelings of loneliness, their online social connections, and their WTH a lonely child). At the end of the questionnaire, the children were told that there is no child who needs help in their area at that time and were thanked for their participation.

**Measures.** *Social connections measure.* After answering demographic questions (gender; age; number of siblings; and the number of people in their household during lockdown), participants were presented with the statement: "In recent days, because of COVID-19, we have been staying at home, and have not been able to meet our friends face-to-face," and asked to indicate, on a scale of 1–5 (1 = No one, and 5 = Many), the number of friends and peers that they had kept in contact with during that period—either by phone, or by WhatsApp, or through other social media (such as Facebook or Instagram). The mean score of the two items ( $\alpha = .65$ ) was computed as a "Virtual Connections" index.

*Willingness to help.* Participants were presented with a request to help a lonely child whom they do not already know. They each read that this child (of the same gender as themselves) was from another school and has no friends during lockdown, so that no one is calling them, texting them, or playing with them online. Next, they were told that we were seeking children of their age who would be willing to keep in touch with that child during the lockdown period—and if so, they may be given that child's phone number. Participants were then asked to rate their WTH that child on a five-point scale (*Certainly not; Most likely not; Maybe; Most likely; Certainly*). They were then asked to indicate whether or not they would be willing to keep in touch with that child, through WhatsApp or other social media (*Yes or No*), and to talk to

him [her] on the phone (*Yes or No*). Although this request may be perceived hypothetical, studies show that individuals' reports of their WTH tend to be broadly similar to their actual behavior—although slightly greater (e.g., Kogut & Ritov, 2005, 2007; Rubaltelli, & Agnoli, 2012).

*Motivations to help.* Following the help decision, participants were asked to think again about the lonely child and to rate their agreement with the following two statements (each on a five-point scale): "I am ready to help, because that child may later become my friend," [self-oriented motivation] and "I am willing to help that child, because that will make him [her] happy." [other-oriented motivation].

*Mood ratings.* The children were asked to rate their mood in the previous week on a 1–5 Facial Affective Scale (FAS, McGrath et al., 1996)—a mood measure that has been extensively used in previous research and has been shown to be a reliable and valid measure of mood in children (e.g., Schanberg, Gil, Anthony, Yow, & Rochon, 2005; Valrie, Gil, Redding-Lallinger, & Daeschner, 2008).

*Positive or negative feelings.* Participants rated their general bad or good feeling during lockdown. This item was taken from Diener et al., and's (2009) Scale for Positive and Negative Experience (SPANE); followed by two specific items of the hardship ("How hard has it been for you during this period?") and loneliness ("How lonely have you been feeling lately?")—each rated on a five-point scale.

## Results

**Mood ratings.** Descriptive statistics of the study's variables are presented in Table 1.

We first examined whether participants' ratings of their general mood in the previous week ( $M = 3.51$ ,  $SD = 1.06$ ,  $Mode=3$ ) were lower than the general mood rating we usually observe in similar samples, in "normal" (pre-pandemic) times (H1). For example, in a study conducted a year before the COVID-19 pandemic, as a part of an ongoing research program (among fifth graders,  $N = 82$ , aged 10–11 years, 49% females—part of this sample was used in Study 2, in a longitudinal method), and at a similar point of time in the school year, mood ratings were significantly higher ( $M = 4.06$ ,  $SD = 0.89$ ,  $Mode=5$ ; as found in an independent samples  $t$  test,  $t(192) = -3.83$ ,  $p < .001$ ,  $d = .56$ , 95% CI  $[-0.8267, -0.2733]$ ).

Table 1 shows the correlations between participants' virtual connections and other emotional

TABLE 1  
Descriptive statistics and Correlations between Number of Virtual Connections and Emotional State (Mood, Loneliness, Hardship), Study 1

		Virtual connections	Mood	Hardship
Mood	Pearson Correlation	.250**		
	Sig. (two-tailed)	.008		
Hardship	Pearson Correlation	-.028	-.363**	
	Sig. (two-tailed)	.774	.000	
Loneliness	Pearson Correlation	-.246**	-.474**	.463**
	Sig. (two-tailed)	.009	.000	.000
Mean		6.64	3.51	2.80
SD		1.89	1.06	0.88

\*\* Correlation is significant at the 0.01 level (two-tailed).

measures in the study. Next, we examined whether the number of virtual connections the participants reported having during these days significantly predicted their mood in the previous week (H4). A simple regression analysis of mood ratings yielded significant results:  $F(1, 110) = 7.34, p = .008, r^2 = .06$ —such that having more social (virtual) connections predicted better moods ( $t = 2.71, \beta = .25, p = .008$ ). Notably, adding to the regression the number of family members in the adolescent's household during lockdown had no significant effect ( $t = 1.03, \beta = .10, p = .31$ )—but the number of virtual connections remained significant ( $t = 2.74, \beta = .26, p = .007$ ). Similarly, the number of social (virtual) connections significantly predicted feelings of loneliness  $F(1, 109) = 7.05, p = .009, r^2 = .06$ —such that having more connections predicted lower levels of loneliness ( $t = -2.65, \beta = -.25, p = .009$ ); see Table 2.

**Willingness to help.** Next, we examined the early adolescents' WTH a lonely child whom they

TABLE 2  
Linear Regression Analyses for Variables Predicting Mood Ratings and WTH, Study 1

	B	SE	$\beta$	t	P
<i>Mood ratings</i>					
1. Virtual Connections	.132	.05	.24	2.56	.012
2. Virtual Connections	.15	.05	.26	2.74	.007
People at home	.08	.08	.10	1.03	.31
<i>Willingness to Help</i>					
1. Virtual Connections	.11	.05	.18	2.01	.047

do not already know by contacting him or her by phone, or by text. Mean ratings of WTH were 3.73.  $SD = 1.10$ . A simple regression analysis of WTH, with the number of virtual connections as the predictor, yielded significant results:  $F(1, 119) = 4.04, p = .047, r^2 = .03$ —such that more connections predicted greater WTH ( $t = 2.01, \beta = .18, p = .045$ ), as predicted (H5). To examine the indirect effect of *self-oriented motivation* to help (i.e., helping on the off-chance that the child may become one's friend) and of *other-oriented motivation* (the wish simply to make the other child happy) in the association between the number of social (virtual) connections and WTH (H6), we conducted a mediation analysis—using the PROCESS macro for SPSS (model 4 with 95% bias-corrected bootstrap confidence intervals, based on 5000 iterations; Hayes, 2017), with the number of social (virtual) connections as the predictor, WTH as the dependent variable, and both motivations as possible indirect effects (Figure 1). Results indicated that both motivations serve as significant indirect effects ( $b = .04, SE = .02, 95\% \text{ CI } [0.06, 0.10]$  for self-oriented motivation, and  $b = .04, SE = .03, 95\% \text{ CI } [0.01, 0.11]$  for other-oriented motivation. This suggests that the link between social (virtual) connections and WTH may be explained by the indirect effects of both other-oriented and by self-oriented motivations to help another child.

The results of Study 1 provide a unique demonstration of the association between social connections and prosocial behavior (that had previously been examined only in face-to-face situations) in an online context—where both social connections and the helping behavior are virtual (H5). With regard to the adolescents' emotional state, the results suggest that their general mood was less positive during lockdown than their mood in similar samples, in normal times (H1), and that general mood was significantly associated with the number of social (virtual) connections that they had during this period (H4). However, in this study, the participants were assessed only during the lockdown period, and we had no information about their emotional state in normal times. Similarly, although we had information about the participants' virtual connections, we did not know about their actual social connections in normal times. Therefore, in Study 2, we sought to address these limitations by examining a sample of early adolescents about whom we had data that had been collected a year before, for another (ongoing) project. That information included the participants' general mood and their subjective well-being at the time (SWB—i.e., *life*

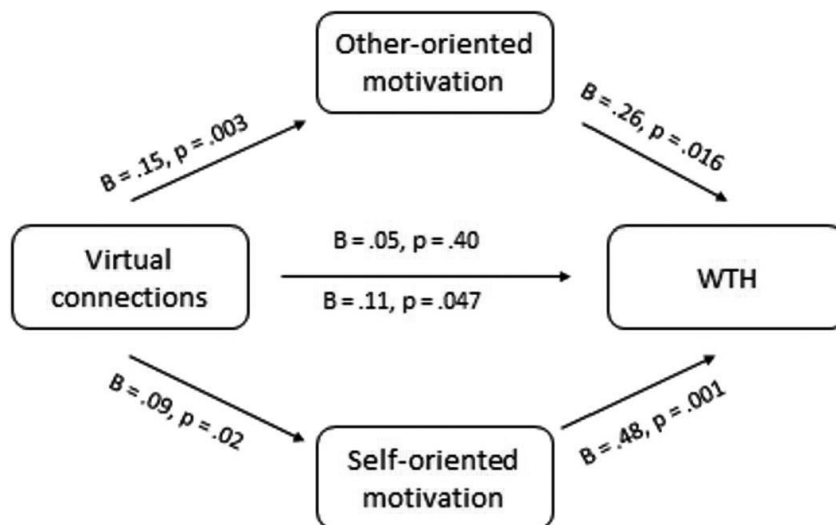


FIGURE 1 Indirect effect of self- and other-oriented motivations in the association between social (virtual) connections and WTH (Study 1). WTH, willingness to help.

*satisfaction*—a more stable variable, Diener, Emmons, Larsen, & Griffin, 1985), as well as the number of social connections they reported having in their class. In this new study, the same participants received an online questionnaire during lockdown and answered the same questions about their life satisfaction again. In addition, they answered the questions featured in Study 1—including about the number of virtual connections they had during lockdown, and their WTH a lonely child by staying in touch with him or her.

## STUDY 2

This study examined sixth graders attending an average socioeconomic school in southern Israel. It consisted of two phases: the first conducted a year before the COVID-19 pandemic in Israel, as part of an ongoing research program, in which they completed a questionnaire about their subjective well-being and their popularity in class (the full sample was used in Study 1, as a benchmark of early adolescents' mood in "normal," pre-pandemic times). The three measures collected at that time that are relevant to the present study were the Self-reported Well-Being Questionnaire (i.e., life satisfaction—the cognitive element of Subjective Well-Being—Diener et al., 2009); the participants' ratings of their mood in the previous week (the emotional element of Subjective Well-Being—Diener et al., 2009); and a questionnaire about their social connections in class (based on Shwed, Kalish, & Shavit, 2018—see Method section). About a year later, on May 5,

2020, while the entire country was under lockdown and the schools were closed, the same participants were given an online questionnaire, via a link forwarded to them by their teacher (with their parents' consent), which included the same SWB questionnaire (life satisfaction and mood) that they had completed the year before (hereafter, "Time 1"). In addition, as in Study 1, it included the questions about their social (virtual) connections during lockdown, and about their WTH a lonely child whom they did not know.

## Method

**Participants.** Forty-seven sixth graders (aged 11–12 years—68% females) completed both the first questionnaire and the online questionnaire (hereafter, "Time 2")—representing 57% of the 82 children who had taken part at Time 1. While the Time 1 data had been collected at school, at Time 2, the questionnaire was sent to the participants' respective parents, by smartphone, which required the cooperation of the parents and children during lockdown—and this led to a relatively high drop-out rate. To rule out the possibility of essential differences between adolescents who took part in the second part of the study (47 participants) and those who did not respond to it (35 participants), we examined whether these two groups significantly differ with respect to the relevant variables measured at Time 1—namely, life satisfaction, mood in the previous week, and the number of social connections the adolescent reported having at school.

Results of independent  $t$  tests of these three indicators revealed no significant differences between the two groups [ $t(80) = 0.77$ ,  $p = .45$ , for SWB;  $t(80) = 0.03$ ,  $p = .97$ , for Mood; and  $t(80) = 0.89$ ,  $p = .37$ , for the number of social connections]. Note that despite the relatively small sample, a post hoc power analysis ( $\alpha = .05$ ) with the G\*Power software application revealed that a sample of 47 participants (46  $df$ ) is sufficient to detect an effect size of  $d = 0.5$ , with a power of 92%, in a dependent sample  $t$  test (critical  $t = 2.01$ ).

**Procedure.** Participants were given an online questionnaire, via a link forwarded to them by their teacher (with their parents' consent), after being assured that the link is completely private, and that only the researchers would have access to their responses (which would remain anonymous). The questionnaire included the same SWB questionnaire (life satisfaction and mood) that they had completed the year before (hereafter, "Time 1"). In addition, as in Study 1, it included the questions about their social (virtual) connections during lockdown, and about their WTH a lonely child whom they do not know. The order of the questions was changed—such that participants first completed the emotional questions (about their life satisfaction, mood, and loneliness), and then about their WTH (unlike Study 1, where the order was reversed)—to ensure that the order of questions was not a factor in the association between the two structures.

**Measures at Time 1.** *Social connections measure.* This measure was conducted at the start of the procedure in Time 1, in a classroom setting. A trained experimenter introduced herself to the class as a university student who had come to learn how school children think. She noted that participation was voluntary, and that they could decide not to take part, should they wish—however, all students agreed to do so. The experimenter then clearly wrote the names of all the students in the class on the board, each with their allotted serial number for the experiment (in accordance with the class student list). The participants then received a short questionnaire and were asked to write their number (as it appeared on the list) at the top of the questionnaire. Next, they were asked to indicate, for each of their classmates, whether or not they typically play with that classmate during school breaks (referring to that classmate by his or her serial number, to preserve their anonymity). To this end, they were asked to complete a 3-column table: The first column listing the serial numbers of the

students in the class; the second titled *Yes*; and the third one titled *No*. For each row (representing a specific child), they were asked to tick the *Yes* or *No* checkbox in the appropriate column in response to the question at the top of the page: "Do you usually play with this child during school breaks?" The experimenter assured the students that their privacy and anonymity would be maintained, and that the final lists would not include the students' names, or be revealed to anyone at their school. This tool is based on Shwed et al. (2018), who successfully used it to examine early adolescents' (in fourth through sixth grade) social status among their class peers. It included the participant's self-reported number of peers they play with in school, and the number of friends who indicated interacting with each child.

*Subjective well-being.* Participants' subjective well-being was assessed by three items from Huebner's *Students' Life Satisfaction Scale* (SLSS, Huebner, 1991a)—a validated tool for elementary school children, based on Diener's Life-Satisfaction measure among adults (Diener et al., 1985), that measures children's self-reported overall life satisfaction, irrespective of specific domains (such as family, friends, and school). Studies that have used this measure with adolescent and pre-adolescent samples have found that it reflects the cognitive component of well-being, which is distinct from the affective indices of well-being, empirically as well as conceptually (Huebner, 1991b). In other words, adolescents may report low life satisfaction in conjunction with frequent positive affect (e.g., Huebner & Dew, 1996). The items on this scale were as follows: "I have what I want in life"; "My life is better than that of most kids"; "I would like to change a lot of things in my life" (a reversed item). Responses to all three questions were given on a 5-degree scale, ranging from 1 (*Not at all*) to 5 (*Very much*). Participants completed this questionnaire in private, a week after completing the popularity measure.

**Measures at Time 2.** *Subjective well-being.* Part I of the questionnaire consisted of the three life-satisfaction questions (as in Time 1). Part 2 included the questions on participants' emotional state and their WTH as described in Study 1.

## Results

*Subjective well-being.* Descriptive statistics of the study's variables in Time 1 and in Time 2 are presented in Table 3. Participants' ratings of their



mood in the previous week at Time 2 ( $M = 3.60$ ,  $SD = 1.03$ ) were significantly lower than their ratings at Time 1 ( $M = 4.10$ ,  $SD = .90$ ), as indicated in a paired-samples  $t$  test,  $t(46) = 3.03$ ,  $p = .004$ ,  $d = .44$ , 95% CI [0.15, 0.77]. Similarly, their life satisfaction (an average of the three items) at Time 2 ( $M = 3.12$ ,  $SD = .79$ ) was significantly lower than at Time 1 ( $M = 3.54$ ,  $SD = .89$ ),  $t(46) = 3.16$ ,  $p = .003$ ,  $d = .46$ , 95% CI: [0.15, 0.68]. These findings further support H1, by demonstrating this decrease in a within-subject design. We next examined whether the decline in life satisfaction that occurred between Time 1 (pre-pandemic) and Time 2 (during lockdown) may be predicted by feelings of loneliness (H2). First, we conducted a simple regression analysis of life satisfaction at Time 2, with Loneliness as the predictor. Results suggest that feelings of loneliness significantly predicted life satisfaction at Time 2:  $F(1,46) = 6.00$ ,  $p < .018$ ,  $r^2 = .07$ —such that greater loneliness was related to lower life satisfaction ( $t = -2.45$ ,  $\beta = -.34$ ,  $p = .018$ ). Moreover, a second simple regression analysis of the gap between life satisfaction at Time 1 and at Time 2 (a variable computed as the gap between them) by ratings of loneliness, yielded marginally significant results:  $F(1,46) = 3.18$ ,  $p = .08$ ,  $r^2 = .12$ —suggesting that the diminished life satisfaction tended to be greater among adolescents who felt more ( $t = 1.78$ ,  $\beta = .26$ ), see Table 4.

Table 3 shows the correlation between participants' social (virtual connections) and the other emotional measures in the study. As in Study 1, we first examined whether the number of social (virtual) connections the participants reported having during lockdown significantly predicted their mood in the previous week (H4). Results of a simple regression analysis revealed that here, too, mood ratings in the past week were significantly predicted by the number of social (virtual) connections the early adolescents reported having at that time  $F(1,46) = 7.48$ ,  $p = .009$ ,  $r^2 = .14$ —such that more connections predicted a better mood ( $t = 2.74$ ,  $\beta = .38$ ,  $p = .009$ ). Adding to the regression the number of family members in the adolescent's household during lockdown had a marginally significant effect ( $t = 1.82$ ,  $\beta = .25$ ,  $p = .075$ ), while the number of social (virtual) connections remained significant ( $t = 2.32$ ,  $\beta = .32$ ,  $p = .024$ ).

**Social connections at school.** For each participant, we counted the number of class peers that he or she reported playing with during school breaks at Time 1, as an indicator of their social

connections in class ( $M = 10.33$ ,  $SD = 3.15$ ). Since the number of students in each class varied between the three different classes (of the same grade) that took part in the study (between 24 and 31 children in each class), and given that some classes may be more socially cohesive than others (resulting with more children playing with each child as a function of the class), we computed a standardized (Z-score) measure of social status within each class (based on the Mean and  $SD$  of each class separately)—taking into account class size, and average number of social connections in each one. The number of social connections the participants reported having at Time 1 significantly correlated with the number of virtual communications they reported having during lockdown ( $r = .37$ ,  $p = .011$ )—indicating that their social virtual connections are linked to their in-person social patterns (supporting H3).

**Willingness to help.** Mean ratings of WTH were 4.30,  $SD = 1.00$ . As in Study 1, and in line with H4, the results of a simple regression analysis revealed that the number of virtual connections significantly predicted WTH:  $F(1,46) = 6.98$ ,  $p = .011$ ,  $r^2 = .13$ —such that having more connections predicted greater WTH ( $t = 2.64$ ,  $\beta = .37$ ,  $p = .011$ ). Likewise, also in line with H4, a different regression analysis on WTH with the number of social connections the participants reported having the previous year (at school) as the predictor, also yielded significant results:  $F(1, 46) = 9.79$ ,  $p = .003$ ,  $r^2 = .18$ —such that having more friends at school predicted greater WTH ( $t = 3.13$ ,  $\beta = .42$ ,  $p = .003$ ), see Table 2.

As in Study 1, we examined the indirect effects of *self-oriented motivation* and of *other-oriented motivation* in the association between the number of virtual connections and WTH (H6), using the same model described in Study 1. As demonstrated in Figure 2, results indicate significant indirect effect of other-oriented motivation ( $b = 1.07$ ,  $SE = .05$ , 95% CI [0.02, 0.21] in the link between virtual connections and WTH, while self-oriented motivation was not significant ( $b = .04$ ,  $SE = .05$ , 95% CI [-0.03, 0.17]). This suggests that in this sample the association between having more virtual connections and greater WTH another child was explained only by the indirect effect of other-oriented motivation to make the other child happy.

In summary, the results of Study 2 demonstrate a significant decline in early adolescents' subjective well-being (general mood and life satisfaction) during the lockdown period compared with the

TABLE 3  
Descriptive statistics and Correlations between Number of Virtual Connections and Emotional State (Well-being, Mood, Loneliness, Hardship), Study 2

		<i>Virtual connections</i>	<i>SWB T2</i>	<i>Loneliness</i>	<i>Hardship</i>
SWB T2	Pearson Correlation	.117			
	Sig. (two-tailed)	.435			
Loneliness	Pearson Correlation	-.107	-.343*		
	Sig. (two-tailed)	.475	.018		
Hardship	Pearson Correlation	-.168	-.315*	.553**	
	Sig. (two-tailed)	.259	.031	.000	
Mood	Pearson Correlation	.378**	.449**	-.218	-.391**
	Sig. (two-tailed)	.009	.002	.140	.007
Mean		7.49	3.12	2.91	3.04
SD		1.85	0.79	1.21	0.98

\*\* Correlation is significant at the 0.01 level (two-tailed).

TABLE 4  
Linear Regression Analyses for Variables Predicting Mood Ratings, WTH and Life Satisfaction, Study 2

	B	SE	$\beta$	t	P
<i>Mood ratings</i>					
1. Virtual Connections	.21	.07	.38	2.74	.001
2. Virtual Connections	.18	.08	.32	2.32	.024
People at home	.25	.14	.25	1.82	.075
<i>Willingness to Help</i>					
1. Virtual Connections	.20	.07	.37	2.64	.011
2. Friends at school	.40	.13	.42	3.13	.003
<i>Life satisfaction</i>					
1. Loneliness	-.22	.09	-.34	-2.45	.018

corresponding period the previous year, in a within-subject design. This decline was explained by feelings of loneliness: early adolescents with fewer social connections at school tended to have fewer virtual connections during lockdown—which in turn was associated with poorer mood, and lower ratings of life satisfaction. Finally, once again we found that early adolescents with fewer virtual connections were less willing than early adolescents with more connections to help another lonely child by keeping in touch with him or her—even though they experienced similar pangs of loneliness.

## DISCUSSION

The school setting provides early adolescents not only with a space for cognitive development and learning, but is also an important setting of social support, which has been found to be crucial to

fostering positive academic and emotional outcomes (Gravin, Sulkowski, & Lazarus, 2016). This setting was severely disrupted during the COVID-19 pandemic, due to long periods of lockdowns and the rapid transition to distance learning. Our study focused on the major effects of social distancing on early adolescents' social virtual connections, their emotional state, and their willingness to act prosocially under such circumstances.

In two studies—comparing fourth- through sixth graders during lockdown with similar samples in pre-pandemic times, and longitudinally examining the same sample of participants, twice—we found that overall, early adolescents' emotional state (subjective well-being and mood) during lockdown was significantly worse than in normal times (before the pandemic). This decline was explained by the participants' ratings of their loneliness. Moreover, their loneliness was linked to their virtual connections during lockdown, which significantly correlated with the number of friends they reported having in class in face-to-face interactions (in normal times—Study 2). Our results are consistent with those of recent studies among adults which emphasize the role of social connections as a key factor in predicting mental and physical health during COVID-19 (Nitschke et al., 2021; Stuart, O'Donnell, O'Donnell, Scott, & Barber, 2021).

Loneliness may be a familiar experience that is recognized and associated with children's social acceptance among their peers as early as preschool and is usually experienced by children with fewer social connections (Cassidy, & Asher, 1992). However, it can also be experienced by popular children (Asher, Hymel, & Renshaw, 1984) and may generally characterize most children when cutoff

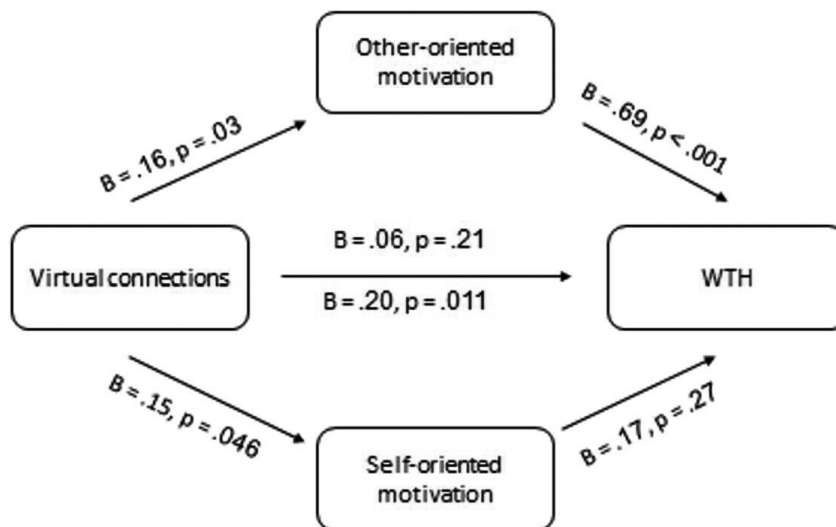


FIGURE 2 Indirect effect of self- and other-oriented motivations in the association between social virtual connections and WTH (Study 2). WTH, willingness to help.

from their schools during lockdown. Our results reveal that early adolescents who have fewer friends in normal times, also tended to have fewer friends (than their more popular peers) during lockdown and distance learning—since having fewer friends also predicted having fewer virtual connections during the pandemic.

These results are in line with research that distinguishes between situational and temporary loneliness, and more chronic forms of loneliness. Chronically lonely children (but not those who experience a temporary loneliness) tend to view their social world more pessimistically and interpret social interactions more negatively (Boivin, & Hymel, 1997). They tend to adopt an uncontrollable attributional style that makes them believe that their social status among their peers can never change (Graham, & Juvonen, 1998; Vanhalst et al., 2015). The lonely adolescents in our research (Study 2) appear to be chronically lonely, as they reported having fewer social connections at school in the year before the pandemic, and fewer virtual connections during lockdown. Indeed, the decrease in life satisfaction and mood during lockdown was significantly more acute for early adolescents with few social connections than for their more popular peers. Thus, early adolescents with fewer social connections tend to be more vulnerable and to have fewer resources to cope with such challenging situations.

We found that number of participants' face-to-face interactions tended to be reflected in their virtual relationships as well. This finding is in line

with previous research, which found that adolescents' virtual connections are usually based on their face-to-face relationships, and rarely include strangers (Reich et al., 2012). Similarly, in our study, the association between early adolescents' social connections and their prosociality that had been found in face-to-face interactions in previous research (e.g., Berg et al., 2015; Rodkin et al., 2013), appears to have been replicated in the virtual world. Early adolescents who reported having fewer social connections in class (Study 2), and those with fewer virtual connections during lockdown (Studies 1 & 2), were less willing to help a lonely child by keeping in touch with him or her electronically. Although past research offers convincing evidence of a solid association between peer acceptance and adolescents' prosociality that was based on the evaluations by others (peers and teachers) of the children's general tendencies of kindness, helpfulness, and cooperation. In the present study, we examined the early adolescent's own behavioral intentions (willingness to contact another lonely child). Although this particular behavior (calling or texting a child whom they do not already know) requires some social skills, it is ostensibly relatively easy for individuals with fewer social connections to engage in, since it is instigated and directed by adults (the experimenter); may be done in private; and does not involve actual, face-to-face interaction. Such conditions have been found to increase prosociality among less accepted individuals (Huang et al., 2016). Moreover, one might expect that adolescents

with fewer social connections would sympathize with other lonely peers, and hence be more willing to help them. Moreover, contacting the other child might help relieve their own loneliness. Our results, however, suggest that, in fact, early adolescents with fewer social connections were less willing to help an unfamiliar child—even if he or she is as lonely as themselves. This finding is in line with previous research that found that online behaviors tend to be an extension of a one's offline behavioral tendencies (e.g., Kraut et al., 2002). Specifically, less accepted adolescents, who tend to adopt avoidance-coping strategies, are likely to avoid, and thereby miss out on, opportunities to connect with others in the online world, as well (Seepersad, 2004)—as reflected by their lesser WTH another lonely child.

Studies among adults suggest that the effect of social acceptance (or rejection) on prosocial behavior is mediated by feelings of empathy for others—such that rejection temporarily disrupts one's emotional responses, which in turn impairs one's capacity for empathic understanding of others, and diminishes one's inclination to help others or cooperate with them (Twenge et al., 2007). Indeed, early adolescents with more social connections in our research appeared to be more aware of the other child's mental state: in both studies, their WTH was explained by the indirect effect of their wish to make the other child happy.

Interestingly, in Study 1, participants with more social connections were also more willing to help for self-oriented reasons (i.e., on the off-chance that the unfamiliar child may in due course become their friend). This possibly may indicate that more-accepted early adolescents possess heightened social sensitivities, which allows them to see potential for expanding their social circle at a time when fewer social connections are available. However, future research is needed to examine this interpretation.

### Study's Limitations

The reported studies were conducted during a period of lockdown. While this provided authentic responses under actual distress and loneliness, the difficulty of recruiting participants under these conditions, and the need to collect the data before the lockdown ended, resulted in relatively small samples—especially in Study 2, where the initial pool of potential subjects was limited to start with. Although in both studies we provide power analyses that suggested that our samples are sufficient

to detect a small-to-medium effect size, it is important to acknowledge this limitation, which may have resulted in other significant correlations being overlooked.

Second, this research focused on the social connections of early adolescents (both in face-to-face interactions, and in the virtual world) as a key variable that is linked to their emotional state and behavioral inclinations. It is important to note, however, that research on children's social development suggests that loneliness is also a function of the *quality* of social connections, beyond their quantity (e.g., Parker, & Asher, 1993). Future research should therefore take into account both of these aspects of social connections, and how they correlate with children's prosociality.

In addition, our measure for social connections focused on the participant's self-reports, rather than on more objective measures of children's connections. This decision was based on past research, which found that *perceived* social connectedness or support is more strongly associated with stress than objective measures of social connectedness (e.g., Uchino & Cacioppo & Kiecolt-Glaser, 1996). However, future research might examine both subjective and objective measures of social connections, and their association with stress and with WTH. Finally, our measure of the adolescents' loneliness was based on a single self-reported item. Future research should use a more comprehensive tool.

The present research was conducted during the first COVID-19 lockdown in Israel and focused on early adolescents, who may be at higher risk during the period of distance learning. The results offer important educational conclusions for future similar circumstances, and for normal times. Specifically, the results offer important educational conclusions both for future similar circumstances and for normal times. Specifically, in a post-pandemic reality, our findings encourage parents and adults to pay special attention to the regenerated social interactions ties formed by their children and adolescents, as they return to a normal routine. Our results suggest that the fewer face-to-face social interactions that some early adolescents have in in-person interactions may be replicated in the virtual world, during a pandemic, thereby heightening their greater feelings of distress and loneliness. Thus, in a post-pandemic world, they may be at greater risk of continued limited social interactions and the greater distress that they experienced during lockdown. In such circumstances, it may be extremely important for the adults involved

(parents and teachers) to directly enroll these children in social activities, and provide them with planned and directed social support, such as instigating connections with classmates—for example, by inviting them to call, or send meaningful text messages, to lonely peers who may be at risk. Our study suggests that early adolescents with more social connections may be willing to help their less accepted peers by keeping in touch with them (electronically) in times of need. We encourage future research to directly examine the effect of such interventions on adolescents' well-being and sense of loneliness.

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