

PROMOTING EMPATHY IN ADOLESCENTS

An Exploratory Study of the Story Exchange

Rebecca Frausel
The University of Chicago

Gabriel Velez
Marquette University

Tasneem Mandviwala
The University of Chicago

Jennifer Kubota
University of Delaware

We examine whether story exchanges (where students take turns presenting a partner's story in the first person) increases empathic feelings and self-other overlap among adolescents. Students, ages 13–16 years ($n = 175$), from a New York City public school completed measures (including self-report empathy and self-other overlap) before undergoing story exchanges in small groups, immediately after, and after a delay. Students who underwent this brief, low-cost, one-time intervention showed boosts in empathy immediately afterward. Lower baseline empathy students increased and maintained empathy gains, particularly if they believed empathy was malleable. All students perceived a greater degree of self-other overlap with their partner, both immediately after and at delay. Participation-based factors (such as story meaningfulness) did not predict empathy changes, suggesting the format, rather than the content, of story exchanges is most central. This preliminary examination of the story exchange shows potential for promoting empathy and feelings of closeness among adolescents in schools.

Keywords: empathy, self-other overlap, intervention, personal storytelling, narrative, perspective-taking, adolescence

Educators and researchers are increasingly recognizing that academic skills alone are not sufficient for student success in school, work, and beyond. Increasingly, educators are advocating teaching social and emotional skills, called socioemotional learning, alongside or embedded within the traditional academic curriculum (e.g., Denham, 2006; Raver, 2002; Raver &

Knitzer, 2002; Weissberg et al., 2015). Students also benefit from learning to connect with others via empathy, where the observed experience of another person is transformed into a response within the self (Batson, 1991; Davis, 1994; Eisenberg & Fabes, 1990). Empathy involves both the cognitive understanding of another's emotions, thoughts, and

• **Correspondence concerning this article should be addressed to:** Rebecca Frausel, rrf5129@psu.edu

feelings, as well as the affective responses in line with another's identified mental state (Cohen & Strayer, 1996; Eisenberg, 2000; Ickes, 1997). Enhanced empathy can potentially lead to smoother social interactions and more meaningful relationships. Furthermore, empathy has been linked to positive interpersonal outcomes, including prosocial and altruistic behavior (e.g., Eisenberg & Miller, 1987; Hoffman, 1984, 2000).

Taking the perspective of another, an important sociocognitive ability, has been implicated in the development of prosocial behaviors and empathy (Hoffman, 2000). Affective perspective-taking in particular—where an individual attempts to imagine and understand a target's internal state (Underwood & Moore, 1982)—is thought to engender more accurate empathic response by enabling children to consider another's feelings and intentions, as opposed to assuming their own feelings and intentions are shared by others. Among empathy interventions (for reviews, see Davis & Begovic, 2014; Teding van Berkhout & Malouff, 2016), one strategy to promote empathy involves perspective-taking. While typically conceived as an effortful, unidirectional process—where one suppresses their own egocentric perspective and actively entertains another's (Davis et al., 1996; Epley et al., 2004)—perspective-taking often takes place, with relative ease, while hearing and reading stories (Bamberg, 1991; O'Neill & Shultis, 2007). Thus, practicing perspective-taking through storytelling could effectively support and build empathic abilities.

The Story Exchange

This article details findings from a study of a classroom storytelling intervention, the “story exchange,” developed by the nonprofit Narrative 4, that supports youth in mindfully cultivating empathy, by embedding perspective-taking in the domain of personal storytelling. In story exchanges, students are paired together to privately share brief personal stories. Storytellers decide the content, though

Narrative 4 recommends experiences that were meaningful for the teller. After the partners share, students reconvene as a class, and students share their *partner's* story, in the *first* person. Narrative 4 states that this intervention enhances classroom connectedness and promotes “radical empathy” (Keylock, 2018). Though theoretically powerful, little empirical evidence supports these claims. We aim to fill this gap by studying the effects of story exchanges on adolescents' empathy, partner closeness, and school environment.

Conceptualizations of Empathy

The definition of “empathy” varies across the literature and has been widely contested. Empathy has been described as a cognitive process (e.g., Deutsch & Madle, 1975), as a sharing of emotional states with a target (e.g., Hoffman, 1984), and as the specific emotional response of “sympathy” (e.g., Batson, 1991). Researchers also distinguish between the cognitive (awareness of another person's internal states and emotions) and affective (the ability to experience and share another's emotions) components of empathy (e.g., Hoffman, 1984). Nevertheless, most agree that empathy involves the transformation of another's experiences into a response within the self (e.g., Batson, 1991; Bloom, 2016; Cuff et al., 2016; Davis, 1994; Eisenberg & Fabes, 1990).

In educational settings, empathic and cognitive empathy matters for intrapersonal and interpersonal outcomes, and potentially supports character development. Greater empathy is associated with reduced aggression (Miller & Eisenberg, 1988; Richardson et al., 1994) and anxiety (Kendall et al., 1978), potentially providing a foundation for more positive classroom interactions, feelings about school, and increased participation (Brackett et al., 2011; Cunha et al., 2005). Interpersonally, empathy relates more broadly to social intelligence (Kaukiainen, et al., 1999) and social/communication skills (Riggio et al., 1989). Finally, empathy also relates to prosocial and engaged civic outcomes such as cooperation

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and altruism (e.g., Batson et al., 1995; Cialdini et al., 1997).

Empathy in Adolescence

Adolescence is a period when these intrapersonal and interpersonal outcomes have particular relevance. Moreover, the range of 13–16 years of age was chosen for this study because adolescents are increasingly capable of reflecting upon their own emotions and internal states (Harris, 1989). Sociocognitive advances during this stage of development—including increases in self-awareness, emotion understanding and regulation, and theory of mind—provide adolescents with a greater capacity for cognitive empathy (Armsden & Greenberg, 1987; Eisenberg, 2000; Hart & Fegley, 1995). In addition, this period is marked by the increasing importance of peers, making narrative storytelling between peers perhaps more salient (Allen & Tan, 2016; Furman & Buhrmester, 1992). Therefore, adolescents have an increased capacity for empathy, making this developmental period an important time to intervene.

Enhancing Empathy

Although empathy is often defined as an automatic process (e.g., Gallese, 2003; Hatfield et al., 1993; Hoffman, 1984; Preston & De Waal, 2002; Smith, 1790/2002), other work suggests that empathy is in fact malleable (e.g., Bodenhorn & Starkey, 2005; Cuff et al., 2016; Schumann et al., 2014). For example, perspective-taking (e.g., Batson et al., 1995; Todd et al., 2011; Vescio et al., 2003), or repeated empathy training sessions (e.g., Feshbach & Cohen, 1988; Golan & Baron-Cohen, 2006; Hadwin et al., 1996; Riess et al., 2012), and flexible mindsets that target an individual's theories about empathy (Schumann et al., 2014) have all increased empathic responses. Because of these successful interventions,

researchers now posit that empathy is malleable and can be cultivated.

Many interventions focus on perspective-taking as a cognitive skill individuals can hone (Underwood & Moore, 1982; Weller & Lagattuta, 2013). Another approach involves learning about the experiences of another through personal storytelling. For example, in one study designed to enhance empathy for assault victims, participants listened to a woman describe her experiences of being raped (Berg et al., 1999). The assumption underlying this approach is that “information presented to observers will be more engaging when it has a more narrative-like quality, and the greater engagement will allow the viewer to better connect to the target on an emotional and cognitive level” (Davis & Begovic, 2014, pp. 123–124).

Evidence also suggests perspective-taking and storytelling are related. Prior research suggests that storytelling is positively related to empathic feelings (Bal & Veltkamp, 2013; Mar et al., 2006). Reading fictional literature is positively associated with theory of mind (acknowledging that another's mental state may be different than one's own; Kidd & Castano, 2013), another psychological phenomenon that involves perspective-taking. Although story exchanges involve true stories, these may become a form of narrative that students temporarily peek into, much like a reader might peek into a fictional character's life.

Furthermore, story exchanges afford the opportunity to practice what we call *bidirectional perspective-taking*. In addition to taking the perspective of another (when presenting their partner's story), students hear another take *their* perspective (when their partner presents their story). In this way, students learn that their own perspectives and experiences are valuable and worthy of attention. The perspective-taking is consequently bidirectional—allowing the *self* to inhabit the *other*, as well as the *other* to inhabit the *self*—and potentially more powerful.

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Research Questions

Our research goal was to perform an initial assessment of the intervention's impacts on adolescents' cognitive and affective empathy, partner closeness, and classroom environment. More specifically, our research questions were: (1) Does story exchange participation relate to changes in cognitive and/or affective empathy, self-partner closeness, and school environment? (2) What individual- and participation-based factors relate to more empathetically effective experiences?

We hypothesized that story exchange participation would heighten empathetic feelings relative to baseline. It is expected that increases in cognitive and affective empathy would be associated with a more positive school environment (see Figure 1), and students would report feeling closer to their partner. An individual-based factor that could moderate the effects is belief in the malleability of empathy, which have been documented to moderate the effectiveness of interventions (Schumann et al., 2014; Yeager & Dweck, 2012; Yeager et al., 2016;). Moreover, students with lower baseline empathy might have experienced greater gains, as personal storytelling might have a more stimulatory effect among individuals not already highly empathic.

Participation-based factors include the meaningfulness of stories shared and partner

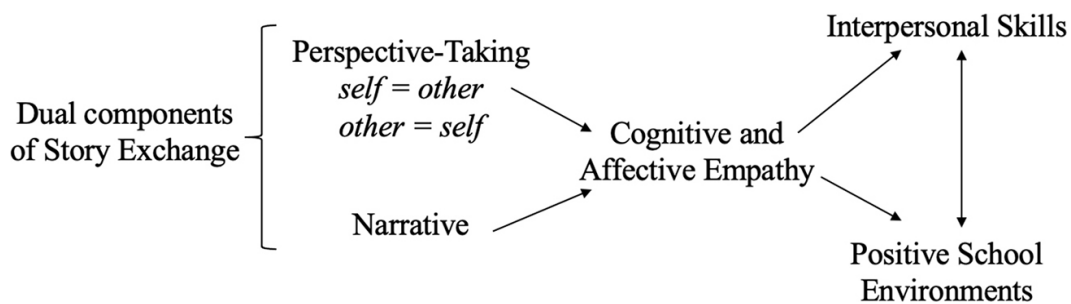
relationships. Students who shared or heard more meaningful stories might have experienced greater empathy gains. Students with higher baseline empathy might have shared more meaningful stories, which might have also led to differential effects by baseline empathy. Partner relationships could have impacted either story meaningfulness or empathy changes. Students might have shared more meaningful stories with someone they are close to already. However, students might benefit more if partnered with someone they feel less close to, since they are more challenged to expand their worldview.

METHODS

Participants

Participants were 175 students at a public high school in the South Bronx, New York ($M_{age} = 14.4$ years, $SD_{age} = 0.6$, Range 13.3–16.3). All students in eight Grade 9 classrooms across 2 years were invited to participate. During the years of study administration, 66% of students at the school identified as Hispanic White, 27% as Black, and the remaining 7% as non-Hispanic White. More than 60% of students were in families eligible for human resources administration assistance (including SNAP), and 42% of students were estimated to be in families with incomes below the federal

FIGURE 1
Theoretical Relationship of Narrative and Bidirectional Perspective-Taking to Empathy and School Environment



poverty level (New York City Department of Education, 2019).

This article considers the 175 students ($n_{\text{Year1}} = 92$, $n_{\text{Year2}} = 83$) who took part in story exchanges, completed the empathy measure at least twice, and returned consent forms. Initially we included study year as a fixed effect in the models, but after finding no significant main effects nor interactions, we collapsed between the two cohorts. Males were slightly underrepresented at the school (44%), and 34% of study participants identified as male, meaning some male students self-selected out of participation, which limits our ability to yield conclusions about gender differences.

Study Design

This study follows a one-group pretest/posttest design (Campbell & Stanley, 1963) comparing students' responses to questionnaires before and after the intervention. While this design can determine whether a change has occurred, it cannot identify what may have caused those changes. We discuss the limitations of this design in the discussion.

Procedure

Data were collected from students three times: 3-days before the intervention (pre-exchange); immediately after (immediate postexchange); and 10-days later (delayed postexchange). On the pre-exchange day, researchers and Narrative 4 staff assisted teachers with administering measures and described the intervention. Students were instructed to select a meaningful personal experience to share; while most students readily selected an experience, students with difficulty were assisted one on one by teachers, researchers, and Narrative 4 staff.¹ On the delayed postexchange day, homeroom teachers administered measures in packets.

Story exchanges were conducted on school grounds. All students assembled to meet Narrative 4 facilitators and witness a student pair

model part of an Exchange. Students were divided into fifteen facilitation groups, comprised of students from the same homeroom. Groups averaged 12 students ($SD = 3$, range 6–17). Students initially shared stories privately; partners could take notes to utilize during their retell. After about 15–30 minutes, students sat in a circle, with partners seated next to each other. An initial pair of students volunteered to start, then students took turns sharing their partner's story in the first person. In each facilitation group, story exchanges took about 1–2 hours to administer. After sharing was complete, students filled out immediate postexchange measures. Ten days later, teachers administered delayed postexchange measures during their homeroom class period.

Materials

Students completed quantitative measures at all three time points, as well as qualitative open-ended responses immediately after story exchanges; the latter are outside the scope of this paper. Three measures correspond to our three dependent variables (self-report empathy, partner closeness, and school environment) and so were administered multiple times to analyze change over time. Three measures correspond to our measures of individual- (empathy malleability) and participation-based (story meaningfulness and partner relationship) factors and were administered once.

While all students in the current analyses were present for the intervention, some students were absent on the other 2 days, and students did not complete all measures at a given time point. The number of students who completed each measure, and the exact timing of when the measures were administered, is reported in Table 1. Many students did not complete the delayed postexchange measures, limiting our ability to infer longer term effects.

Self-Report Empathy. Empathy was assessed at each time points using the Interpersonal Reactivity Index (Davis, 1980, 1983). This is a standardized questionnaire frequently used in empathy interventions (e.g., Castillo et

TABLE 1
Timing and Number of Students With Each Measure

	<i>Intervention Day</i>			
	<i>Pre-Exchange</i>	<i>Before Exchange</i>	<i>Immediate Postexchange</i>	<i>Delayed Postexchange</i>
Self-report empathy	$n = 171$		$n = 174$	$n = 126$
Partner closeness	$n_{\text{year1}} = 85$	$n_{\text{year2}} = 80$	$n = 172$	$n = 115$
School environment	$n = 166$			$n = 123$
Empathy malleability	$n = 167$			
Own/partner story meaningfulness			$n = 171$	
Partner relationship	$n_{\text{year1}} = 85$	$n_{\text{year2}} = 81$		

al., 2013; Hatcher et al., 1994). The Interpersonal Reactivity Index contains 28 questions on four subscales where students rank from 1 (*strongly disagree*) to 5 (*strongly agree*) how much each statement describes them.

The subscales represent different dimensions theorized to encompass cognitive and affective empathy: perspective-taking (PT; e.g., “I sometimes try to understand my friends better by imagining how things look from their perspective”) and fantasy (F; e.g., “When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me”) measure cognitive empathy, and empathic concern (EC; e.g., “I often have tender, concerned feelings for people less fortunate than me”) and personal distress (PD; e.g., “I tend to lose control during emergencies”) measure affective empathy² (Davis, 1980, 1983). Internal consistency of these four scales was assessed using Cronbach’s alpha and was generally good ($M = 0.69$, range 0.63–0.76; see Appendix A for more details).

Partner Closeness. To determine whether the intervention encouraged students to see themselves as closer or more similar to their partner, we administered the Inclusion of Other in the Self Scale (Aron et al., 1992) with the target as their partner. This scale depicts seven Venn diagrams representing varying degrees of self–other overlap. Images were converted to a numerical scale, where 1 indicates none and 7 indicates the highest degree

of overlap. Students completed this measure pre, immediate, and delayed postexchange.

School Environment. Students completed a 26-item school environment survey created for this study (see Appendix B) asking the extent to which they agree (from 1, *strongly disagree* to 5, *strongly agree*) with positively worded statements, including feelings of personal safety (e.g., “I feel safe at this school”) and relationships with others (e.g., “I feel included at this school”). Students completed this questionnaire only on the pre- and delayed postexchange days because we expected any changes to school environment would not be immediately evident. Internal consistency was excellent at both pre-exchange ($\alpha = .91$) and delayed postexchange ($\alpha = .94$).

Empathy Malleability. On the pre-exchange day, students indicated the extent to which they believe empathy is malleable by ranking from 1 (*strongly disagree*) to 5 (*strongly agree*) how much they agreed with the statement, “I feel that in general, people can change how empathetic a person they are.”

Story Meaningfulness. Students ranked from 1 (*not at all*) to 7 (*very*) how meaningful and/or significant their choice of story was to them, and how meaning and/or significant they thought their partner’s story was to their partner.

Partner Relationship. Students filled out a 5-item survey ($\alpha = 0.79$) asking about their

pre-exchange relationship with their partner, including years known and friends in common. Year 1 participants filled this survey out on the pre-Exchange day, while Year 2 participants filled this survey out on the story exchange day but before the intervention. Because students' responses to this survey's questions were highly correlated ($0.32 < \text{Pearson's } r < 0.74$, all $ps < 0.001$), we averaged responses to create a Partner Score, which ranged from 1 to 4.4 (with higher numbers indicating closer relationships).

RESULTS

The results section is divided into two main parts corresponding to our two research questions. In the first, we examine changes over time for each of our three dependent variables (self-report empathy, partner closeness, and school environment). In the second, we examine the individual- (empathy malleability belief) and participation-based (story meaningfulness and partner score) factors that have the potential to influence the intervention's effectiveness.

Changes in Empathy, Partner Closeness, and School Environment

Effects Over Time by Empathy Construct. First, we examine whether students' responses to the empathy measure dif-

fered at the three time points. We conducted a two-way repeated measures ANOVA on the 121 participants with complete empathy measure data with time (3 levels: pre, immediate post, delayed post) and construct (4 levels: PT, EC, F, PD) as within-subjects variables. We found significant effects of time, $F(2,240) = 10.60, p < .001, \eta_p^2 = .04$, construct, $F(3, 360) = 29.44, p < .001, \eta_p^2 = .20$, and a time by construct interaction, $F(6,720) = 4.498, p < .001, \eta_p^2 = .036$, suggesting the intervention's effects over time differed by empathy construct.³

To follow up, we ran four one-way repeated-measures ANOVAs, one for each construct, with time as a within-subjects variable. If there was a main effect of time, we conducted follow-up comparisons between each timepoint with Bonferroni adjustment (see Table 2). While perspective-taking, fantasy, and empathic concern showed main effects of time, personal distress did not vary as a result of the intervention, and this scale was substantially lower than the other scales. The PT, F, and EC constructs all showed positive gains immediately after the intervention; however, only the positive effects on student's fantasy (F) were maintained at delay. While PT returned to baseline levels, EC actually *declined* at delay compared to both pre-exchange and immediate postexchange.

Effects on Empathy by Baseline Empathy Level. We conducted a series of exploratory analyses to examine whether effects

TABLE 2
Descriptive Statistics, Results From Follow-Up ANOVAs, and Post Hoc Comparisons for Each Empathy Scale

Scale	Time			Time Main Effect (F) Statistic(C)	Effect Size (η_p^2)	Post Hoc Comparisons		
	Pre (1)	Imm. Post (2)	Del. Post (3)			(1) to (2)	(2) to (3)	(1) to (3)
	Mean (SD)	Mean (SD)	Mean (SD)					
PT	3.35 (0.64)	3.51 (0.66)	3.37 (0.58)	7.15***	0.06	0.16*	-0.14*	0.02
F	3.28 (0.78)	3.47 (0.84)	3.40 (0.75)	7.71***	0.06	0.19*	-0.07	0.12^
EC	3.66 (0.64)	3.77 (0.63)	3.55 (0.59)	12.04***	0.09	0.11*	-0.22*	-0.11^
PD	3.04 (0.75)	3.01 (0.78)	2.99 (0.68)	0.73	0.01	—	—	—

were different depending on students' baseline empathy, as we theorized lower baseline empathy students might be more impacted by story exchanges. Following the approach taken by Hatcher et al. (1994), we took the mean of students' PT, F, and EC scales to create an overall empathy score (OES). We excluded PD because it did not vary over time, and scores for this scale were substantially lower than the other scales. We split students' pre-exchange OES at the median, and students were placed in the higher ($n = 86$) or lower baseline ($n = 85$) empathy groups⁴ (4 students were missing the pre-exchange measure).

We ran a two-way mixed ANOVA on OES with time (3 levels) as a repeated measure and baseline empathy group (2 levels: low vs. high) as a between-subjects factor. This ANOVA, conducted on the 59 higher and 62 lower baseline empathy students with complete empathy measure data, revealed a significant time by baseline empathy group interaction, $F(2,238) = 13.77, p < .001, \eta_p^2 = .10$, suggesting students with different levels of baseline empathy were impacted by the story exchange differently.

To follow up, we ran two one-way repeated-measures ANOVAs, one for each

baseline empathy group, with time (3 levels) as a repeated measure (see Table 3). For higher baseline empathy students, there was a main effect of time, $F(2,122) = 14.11, p < .001, \eta_p^2 = .19$. Post hoc comparisons with Bonferroni adjustment revealed that higher baseline empathy students' OES followed the same pattern as EC described above; namely, relative to baseline, empathy increased, then declined. Analyses of the PT, EC, and F scales suggest that while positive gains in Fantasy may have been slightly more resilient, higher baseline empathy students generally *declined* in empathy at delay.

For lower baseline empathy students, our findings more clearly suggest story exchanges heightened overall empathy; specifically, that story exchanges provided an immediate "boost" that was maintained over 10 days. Analyses of the PT, F, and EC subscales revealed both aspects of cognitive empathy—PT and F—were higher at delay than baseline.

Effects on Partner Closeness. The analyses just described suggest particularly positive effects of the story exchange on cognitive empathy, especially Fantasy, and these effects were more pronounced for students with lower baseline empathy. Next, we examine whether story exchanges impact students' relationships

TABLE 3
Descriptive Statistics, Results From Follow-Up ANOVAs, and Post Hoc Comparisons for Each Empathy Scale for Students With Higher and Lower Baseline Empathy

		Time			Time Main Effect (F Statistic)	Effect Size (η_p^2)	Post Hoc Comparisons		
		Pre (1) Mean (SD)	Imm. Post (2) Mean (SD)	Del. Post (3) Mean (SD)			(1) to (2)	(2) to (3)	(1) to (3)
Lower baseline empathy ($n = 59$)	PT	2.94 (0.47)	3.16 (0.50)	3.12 (0.42)	7.45**	0.11	0.21**	-0.04	0.18**
	F	2.76 (0.58)	2.98 (0.69)	3.06 (0.70)	13.86***	0.19	0.22**	0.09	0.30***
	EC	3.26 (0.56)	3.49 (0.58)	3.29 (0.45)	7.54**	0.12	0.22**	-0.19**	0.03
	OES	2.99 (0.27)	3.21 (0.39)	3.16 (0.34)	16.29***	0.19	0.22***	-0.05	0.17***
Higher baseline empathy ($n = 62$)	PT	3.74 (0.54)	3.84 (0.61)	3.59 (0.62)	7.08**	0.10	0.10	-0.25**	-0.15^
	F	3.78 (0.61)	3.94 (0.69)	3.72 (0.65)	4.87^	0.07	0.16^	-0.21*	-0.06
	EC	4.03 (0.47)	4.04 (0.56)	3.80 (0.60)	9.48***	0.14	0.02	-0.23**	-0.25***
	OES	3.85 (0.34)	3.94 (0.43)	3.71 (0.45)	14.11***	0.22	0.09	-0.23***	-0.14**

Note: PT = perspective-taking; F = fantasy; EC = Empathic concern; OES = overall empathy score, or mean of PT, F, and EC scales.

TABLE 4
Descriptive Statistics, Results From Follow-Up ANOVAs, and Post Hoc Comparisons for Partner Closeness

	Time			Time Main Effect (<i>F</i> Statistic)	Effect Size (η_p^2)	Post Hoc Comparisons		
	Pre (1) Mean (SD)	Imm. Post (2) Mean (SD)	Del. Post (3) Mean (SD)			(1) to (2)	(2) to (3)	(1) to (3)
Lower baseline empathy (<i>n</i> = 50)	1.82 (1.08)	3.12 (1.38)	2.96 (1.51)	33.09***	0.40	1.30***	-0.16	1.14***
Higher baseline empathy (<i>n</i> = 54)	2.30 (1.61)	3.67 (1.79)	3.41 (1.74)	26.90***	0.34	1.37***	-0.26	1.11***
All students (<i>n</i> = 106) ^a	2.10 (1.41)	3.43 (1.63)	3.23 (1.62)	60.39***	0.36	1.33***	-0.21	1.12***

Note: ^aTwo students had complete partner closeness data but did not complete the empathy measure on the pre-exchange day, meaning they were not assigned to a baseline empathy group.

at the microlevel, using the partner closeness measure. In the following section, we examine peer relationships at the macrolevel, using the school environment questionnaire.

We conducted a one-way repeated measures ANOVA on partner closeness with the 106 students who completed this measure all three times, with time (3 levels) as a within-subjects variables.⁵ We found a significant main effect of time, $F(2,210) = 60.394$, $p < .001$, $\eta_p^2 = .365$. Follow-up comparisons with Bonferroni adjustment suggested that students felt closer to their partner (by about one level) both immediately ($p < .001$) and 10 days after ($p < .001$) story exchanges (see Table 4, bottom row).

We tested whether effects differed by baseline empathy, running the same ANOVA as above but including baseline empathy (low vs. high) as a between-subjects factor. We found a significant main effect of baseline empathy group ($F(1,104) = 4.374$, $p = .039$, $\eta_p^2 = .04$), such that higher baseline empathy students tended to feel closer to their partner overall, as well as a main effect of time, $F(2,208) = 54.06$, $p < .001$, $\eta_p^2 = .364$, but no interaction, $F(2,208) = 0.06$, $p = .94$, $\eta_p^2 = .001$. For stu-

dents in both baseline empathy groups, perceived closeness to their partner increased (see Table 4, top two rows).

Effects on School Environment. The above suggests story exchanges may encourage students to feel closer to their partner, regardless of baseline empathy. We next examine whether students responded differently to the school environment questionnaire after the story exchange, which would suggest broader impacts on student relationships at the macrolevel. At pre-exchange, only 8% of responses to the school environment questionnaire were disagree or strongly disagree; 27% were neutral; and 65% were agree or strongly agree. At delay, 6% of responses were disagree or strongly disagree; 59% were agree or strongly agree; 35% were neutral. A paired *t* test on the 116 students who completed the questionnaire both times found that students ranked their school environment as more *negative* after story exchanges, by about 27% of a standard deviation, $t(115) = 3.66$, $p < .001$ ($M_{\text{before}} = 3.51$, $SD_{\text{before}} = 0.48$; $M_{\text{after}} = 3.38$, $SD_{\text{after}} = 0.53$). Lower and higher baseline empathy students did not differ in changes to perceptions of the school environment, $t(113)$

= 1.30, $p = 0.20$, nor did males and females, $t(114) = 0.58, p = .56$.

Individual- and Participation-Based Factors

The analyses so far point to positive effects of the story exchange on students' cognitive empathy and perceived closeness to partner, but these effects did not carryover to students ranking their school environment as more positive. In this section, we examine whether individual- (empathy malleability belief) or participation-based factors (story meaningfulness and partner relationship) influence the effects of the intervention.

As these questions are exploratory, and the previous findings suggest the effects of the intervention may fade at delay, we focus our analyses on two indexes of students' responsiveness to the intervention: change in OES (overall empathy score; $M = 0.14, SD = 0.34$, range $-0.81-0.95$) and change in partner closeness ($M = 1.23, SD = 1.40$, range $-2-6$) from pre- to immediate post-exchange. We also compare effects between lower and higher baseline empathy students.

Individual's Empathy Malleability Belief. Most students agreed that people can generally change how empathetic a person they are. Only 8% of students responded strongly disagree or disagree, 38% of students selected Neutral, and the remaining 53% of students selected agree or strongly agree ($M = 3.61, SD = 0.90$).⁶ We conducted an exploratory analysis to investigate the extent to

which empathy malleability belief relates to baseline empathy group, finding that more lower baseline empathy students selected strongly disagree, disagree, or neutral, and more higher baseline empathy students selected agree or strongly agree, $\chi^2(2) = 14.51, p = 0.001$ (see Table 5).

To explore the effects of empathy malleability on the intervention's effectiveness, we conducted a two-way ANOVA on immediate OES gains, and a second two-way ANOVA on immediate partner closeness gains: in each ANOVA, we include empathy malleability belief (disagree/neutral vs. agree) and baseline empathy group (low vs. high) as between-subjects variables.

For immediate OES gains, there was a significant interaction between baseline empathy group and empathy malleability belief, $F(1, 161) = 6.21, p = 0.01, \eta_p^2 = .037$, such that *only* when lower-baseline empathy students believed empathy is malleable did they report higher overall empathy scores immediately after the exchange (see Figure 2, Panel A). However, for immediate partner closeness gains, neither empathy malleability belief ($p = 0.47$), baseline empathy ($p = 0.55$), nor their interaction ($p = 0.85$) were significant, suggesting all students—regardless of baseline empathy or empathy malleability belief—saw their partner as closer immediately after the intervention (see Figure 2, Panel B).

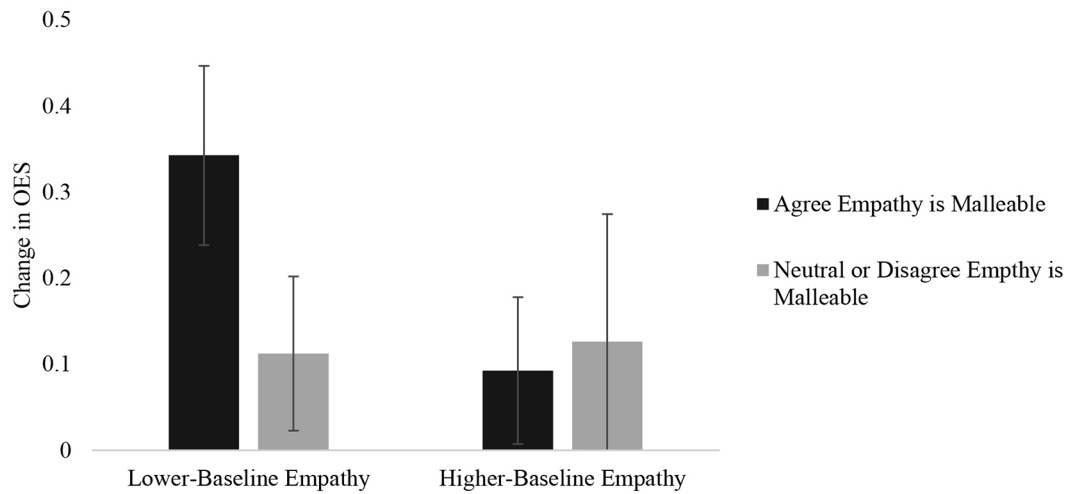
Participation-Based Factors. We next examined participation-based factors that could influence the effects of the intervention: story meaningfulness (both own and partner's

TABLE 5
Number of Students by Empathy Malleability Belief in Each Baseline Empathy Group

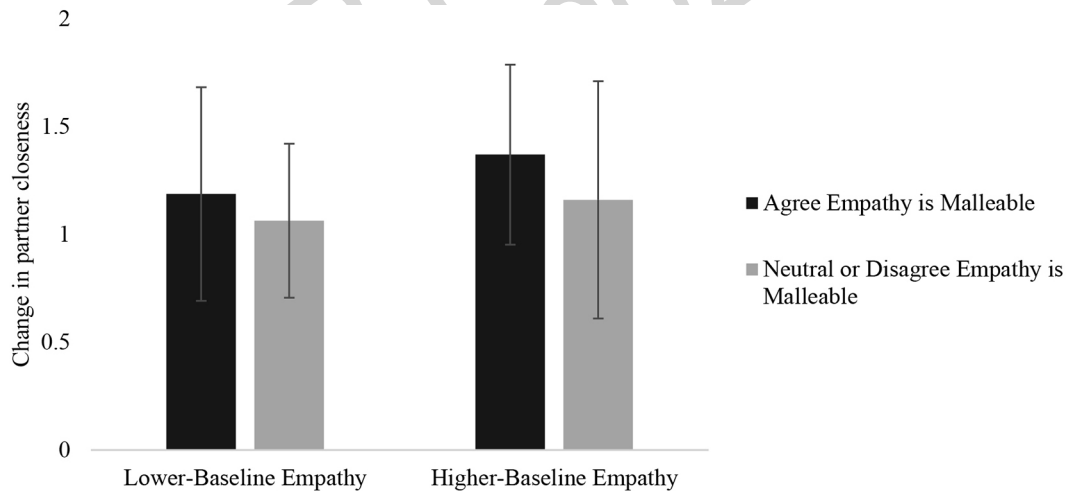
	<i>Lower Baseline Empathy</i>	<i>Higher Baseline Empathy</i>	<i>Total</i>
Disagree/strongly disagree	11	3	14
Neutral	40	24	64
Agree/strongly agree	33	56	89
Total	84	83	167

FIGURE 2
Overall Empathy Score (Panel A) and Partner Closeness (Panel B) Change
From Pre- to Immediate Postexchange for Higher and Lower Baseline Empathy Students
With Different Beliefs in the Malleability of Empathy

(a) Change in Overall Empathy Score from Pre- to Immediate Postexchange



(b) Change in Partner Closeness from Pre- to Immediate Postexchange



Note: Error bars ± 2 standard errors.

story) and partner score. Males and females did not differ in their responses to any of these measures (all p 's $> .11$).

A paired samples t test revealed students ranked their partner's story ($M_{\text{partner}} = 4.91$,

$SD_{\text{partner}} = 1.48$) as more meaningful than their own ($M_{\text{own}} = 4.55$, $SD_{\text{own}} = 1.48$), $t(170) = -2.76$, $p = 0.007$, though students generally reported telling and retelling fairly meaningful stories. Moreover, own and partner's story

TABLE 6
Pearson's Correlation Between Participation-Based Factors and Dependent Measures

	<i>Overall Empathy Score Immediate Gains</i>	<i>Partner Closeness Immediate Gains</i>
Own story meaningfulness	0.13 [^] <i>n</i> = 167	0.14 [^] <i>n</i> = 159
Partner's story meaningfulness	0.07 <i>n</i> = 166	0.16* <i>n</i> = 158
Partner Score	-0.11 <i>n</i> = 156	-0.41*** <i>n</i> = 162

meaningfulness rankings significantly correlated ($r = 0.39, p < .001$), suggesting students tend to share similarly meaningful stories.

We predicted students with higher-baseline empathy ($M = 4.66, SD = 1.73$) would tell more meaningful stories than lower-baseline empathy students ($M = 4.39, SD = 1.62$), but this hypothesis was not supported, $t(170) = -1.3, p = .20$. We also theorized that partner score might relate to story meaningfulness, as students might choose to share more meaningful stories with those they felt close to, but found no significant correlations (own story meaningfulness: $r = 0.10, p = .20$; partner's story meaningfulness: $r = -0.01, p = .86$).

Finally, we examined correlations between the participation-based factors and immediate OES and partner closeness gains. The findings are presented in Table 6 and show that story meaningfulness weakly predicted immediate gains (particularly partner's story meaningfulness on partner closeness). Additionally, there was a strong negative correlation between partner closeness gains and pre-exchange partner score, such that students who did *not* already know their partner very well experienced the greatest partner closeness gains immediately after the story exchange.

DISCUSSION

This study's goals were (1) to determine whether story exchanges impact students' feelings of cognitive and/or affective empathy, partner closeness, and school environment, and (2) to examine whether particular individ-

uals or those who participated in particular ways yielded the most gains.

We found that after small immediate gains in perspective-taking, fantasy, and empathic concern, students generally returned to baseline after a 10-day delay. However, students' feelings of personal distress did not change; this scale measures "self-oriented" feelings of unease in tense interpersonal situations, and may not be as responsive to this intervention as the "other-oriented" scales. However, students with lower-baseline empathy showed significant boosts in overall empathy immediately after the intervention (concentrated in the perspective-taking and fantasy subscales, suggesting a strengthening of cognitive empathy), which was maintained after 10 days. Gains were most pronounced for lower-baseline empathy students who believed empathy was malleable; however, effects did not vary by gender, possibly because some male students (likely those lower in empathy) self-selected out of participation.

Students with higher-baseline empathy, while increasing immediately following the intervention, reported lower empathy after 10 days, particularly for empathic concern. These students may have experienced an empathy "crash," where they realized potential limits of bridging gaps between individuals (also called "empathic overarousal"; see Gibbs, 2019; Seider, 2009). Alternately, students may have experienced an empathy "decline," similar to declines observed in medical students associated with distress (Neumann et al., 2011). Alternatively, higher baseline empathy

students may have been distressed by the content of the stories.

Story meaningfulness only weakly predicted empathy changes. Although interpreting null findings is challenging, these findings are somewhat encouraging, given that students may not always feel comfortable sharing something meaningful. The *format* of story exchanges, not their *content*, may be most central. Finally, partner relationships did not relate to story meaningfulness, though it did relate to changes in partner closeness, suggesting students may benefit *more* when they feel they do not know their partner well.

Despite the small gains in empathy, students did not rate their school environment as more positive. In fact, students rated their school environment as more negative. One interpretation is that students expected the school environment to improve and were disheartened when it did not. The survey may have suffered from ceiling effects, meaning effects of story exchanges were too subtle to detect, or students may have suffered from survey fatigue, since more students selected 'neutral' at delay. Finally, a one-time intervention such as the story exchange may not have broader effects on school environment.

Regardless of baseline empathy level, students perceived their partner as more similar to themselves after the story exchange, gains maintained after 10 days. While we have argued throughout this manuscript that empathy represents a powerful source for social good, others, including Bloom (2016), argue empathy has a "dark side," which is that we are biased to feel empathy toward those we perceive as similar to us. Story exchanges have the potential to increase perceived closeness between partners, potentially allowing students to overcome the tendency to focus empathic resources for those whom we perceive as similar.

Limitations

One of this study's limitations is the lack of a control group, which poses challenges to

internal validity (Kratochwill et al., 2010). As an initial effectiveness study, we sought to treat as many students as possible. However, we do not have control over elements that are changing at the same time as the intervention, such as external events, which limits our ability to draw causal inferences about the story exchange's impact on students' feelings of empathy. Additionally, students (and researchers) were 'unblinded' to the fact that this was an empathy intervention. Students' responses may have been influenced by demand characteristics or inflated in socially desirable ways. However, students were encouraged to respond in ways that reflected their current feelings. Finally, empathy has been measured using the Interpersonal Reactivity Index (Davis, 1980, 1983), an "imperfect" measure of empathy that some argue taps into other personality traits (such as caring about others) that are distinct from empathy (Bloom, 2016). Future research can assess whether other measures of empathy show similar effects.

Future Research

Despite these limitations, this study opens up rich areas of exploration, including further analysis of the qualitative responses collected from participants. Future research can analyze students' responses to determine what other factors are associated with empathy gains or declines. Future research can also expand the number of schools and assign students to different conditions to assess the causal impacts of different components of story exchanges. Since we do not have evidence that a one-time participation in a story exchange has effects that last beyond 10 days, future research can also explore whether repeated implementation at different intervals has alternate effects.

Implications

Just as intellectual intelligence is acknowledged to be malleable with work, much research suggests that "soft skills" such as empathy can be similarly improved through

cognitive engagement and effort (see Teding van Berkhout & Malouff, 2016). Early or repeated administrations of interventions such as the story exchange could potentially have lasting implications for how empathy is embraced and practiced. More practically, empathy is increasingly being recognized as an important interpersonal skill for students. Greater empathy can increase feelings of connectedness to classmates, potentially encouraging students to attend school more frequently or be more engaged. Greater empathy might also decrease in-class conflict, leading to greater learning. Although we cannot assess these outcomes in this research, future research should consider the numerous positive benefits to developing greater empathy.

While the story exchange's adaptability and ease of administration makes it useful for students in all grade levels, it might be particularly so for adolescent. Bullying, peer pressure, and in/out-group dynamics gain momentum during this period, with potential lifelong consequences (e.g., Erikson, 1959; Qin et al., 2008). Implementation of story exchanges in the often socially-charged period of adolescence could help ameliorate potential conflicts and ostracization by increasing understanding and social connections.

The intervention itself is brief, low-cost, and easily adaptable to different settings, both remote and in-person. story exchanges might represent a "kernel" of practice (Jones et al., 2017), or a low-cost and targeted strategy to enhance social and emotional learning. It is a one-time activity (though each repetition is unique), making it relatively easy for educators to integrate into their practice. The intervention can be used as an ice-breaker early in the year, postaltercation as a form of restorative justice, or to ameliorate tensions between students with different perspectives. Larger classrooms can be divided into smaller groups for the sharing portion to reduce administration time. Moreover, in the face of the global COVID-19 pandemic, Narrative 4 has transitioned many of their trainings and activities to remote settings, and offers guidelines for facil-

itators to conduct story exchanges with remote participants. Giving students the opportunity to connect with each other in this unusual manner—where they interact not just as classmates, but as friends—could help classrooms become places where students feel not just intellectually nourished, but emotionally safe. These feelings are particularly important to cultivate in remote settings or when students feel more disconnected from their school and classmates.

Conclusions

This initial examination of the story exchange suggests it has potential to enhance empathic feelings and feelings of closeness among adolescents. Story exchanges may be particularly powerful for students who feel more disconnected. However, additional research is needed to replicate these findings with other groups and to address the limitations of this study.

NOTES

1. Some prompts used include: 1) Tell a story of a moment/experience that changed your life. 2) Tell a story of an embarrassing moment from when you were younger. 3) Tell a story about a time when you realized how much community mattered. 4) Tell a story of a "first" in your life: first kiss, first travel outside your home country, first day at school, first time you remember crying, etc. The Narrative 4 website has many additional resources: narrative4.com
2. However, Hoffman (2000) related Personal Distress to 'self-focused perspective taking,' so this scale may also have elements of cognitive empathy.
3. To explore gender effects, we ran a second 3 (time) x 4 (construct) ANOVA, with gender as a between-subjects factor, finding a significant main effect of gender, $F(1,119) = 4.48$, $p = 0.04$, $\eta_p^2 = .04$, as well as an interaction between gender and construct, $F(3,357) = 4.43$, $p = 0.005$, $\eta_p^2 = .04$, such that females generally reported higher F, EC, and PD. However, as the interactions between gender and time (p

= 0.83) and gender, time, and construct ($p = 0.25$) were non-significant, this suggests the intervention's effectiveness did not vary by gender.

4. Empathy baseline group and gender were not related, $\chi^2(1) = 2.12, p = .15$.
5. To examine gender differences, we conducted a mixed ANOVA with time as a 3-level within-subjects variable and gender as a 2-level between-subjects variable, but we did not find main effects of gender ($p = 0.21$) or a gender by time interaction ($p = 0.57$), suggesting males and females responded to the partner closeness measure similarly.
6. Males ($M = 3.67, SD = 0.96$) and females ($M = 3.57, SD = 0.85$) did not differ in empathy malleability belief, $t(165) = .71, p = .46$.

AUTHOR NOTES

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APPENDIX A: RELIABILITY OF INTERPERSONAL REACTIVITY INDEX

Cronbach's Alpha of Subscales on the Interpersonal Reactivity Index at the Three Time Points.

<i>Scale</i>	<i>Pre-Exchange</i>	<i>Immediate Postexchange</i>	<i>Delayed Postexchange</i>	<i>Mean</i>
PT	.64	.65	.73	.67
F	.63	.73	.76	.71
EC	.68	.72	.73	.71
PD	.64	.67	.70	.67
<i>Mean</i>	.65	.69	.73	.69

APPENDIX B: SCHOOL ENVIRONMENT SURVEY

Code Name _____ Today's Date _____

School Environment Survey: Please mark the extent to which you agree or disagree with the following statements.

		<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
1	I like to come to my school each day.	1	2	3	4	5
2	I belong at my school.	1	2	3	4	5
3	I feel physically safe at my school.	1	2	3	4	5
4	I feel comfortable sharing my thoughts and ideas at school.	1	2	3	4	5
5	Bullying is not a problem at my school.	1	2	3	4	5
6	I am treated respectfully by teachers at my school.	1	2	3	4	5
7	I am treated respectfully by other students at my school.	1	2	3	4	5
8	I feel emotionally safe at my school.	1	2	3	4	5
9	I feel intellectually safe at my school.	1	2	3	4	5
10	I am treated respectfully by principals/assistant principals at my school.	1	2	3	4	5
11	There are adults at my school that will help me if I need help.	1	2	3	4	5
12	My trip to and from school is a safe/positive experience.	1	2	3	4	5
13	I learn from teachers at my school.	1	2	3	4	5
14	I treat others at my school fairly.	1	2	3	4	5
15	I feel included at my school.	1	2	3	4	5
16	My opinion is valued during classroom discussions at school.	1	2	3	4	5
17	Other students in my school are friendly.	1	2	3	4	5
18	I feel recognized at my school.	1	2	3	4	5
19	I feel valued at my school.	1	2	3	4	5
20	There is respect for diversity in my school.	1	2	3	4	5
	I feel treated fairly at school with respect to my:					
21	Race and ethnicity	1	2	3	4	5
22	Gender expression and identity	1	2	3	4	5
23	Sexual orientation	1	2	3	4	5
24	Religion	1	2	3	4	5
25	Personality	1	2	3	4	5
26	I can talk to at least one adult in my school.	1	2	3	4	5

