

**Promoting Empathy, Connection, and Pro-Sociality Through Storytelling in American High Schools: A Collaboration Between Academic and Practitioners**

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**Disclosure:** The authors acknowledge that the first author was compensated by Narrative 4 for her time in helping conduct the research (e.g., participating in study design meetings, analysis, and report write-up). The payment was for hours worked and not contingent on specific outcomes from this research. The authors declare no further competing interests.

**Acknowledgements:** We would like to thank Min Feldman for her help with the literature review and table formatting for this manuscript and Kate Laskey for her help co-developing all Narrative 4 learning resources for this project. We would also like to thank Rebecca Frausel for providing feedback on survey materials and this report.

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### Abstract

For a variety of reasons connected to the rise of the Internet and our current political environment, societies around the world are facing an existential crisis—a lack of empathy. Today, people are increasingly struggling to be empathetic to others in their communities and in society more broadly. In the current research we (a team of academic researchers and practitioners) attempt to tackle this problem of decreasing empathy by testing and evaluating a school-based intervention program developed by Narrative 4 in American high school classrooms ( $N=380$ , 10th and 11th graders) using an experimental approach (i.e., comparing Narrative 4 programming to a control condition). This 10-session program focused on building empathy, perspective taking, and active listening skills (among other skills) through narrative storytelling exercises. Results indicated the program was successful in promoting students' reported empathy, perspective taking, curiosity to diverse ideas, and active listening skills as compared to the control condition. Additionally, this greater empathy led participants to report more pro-sociality (e.g., greater willingness to be civically engaged, more respect for others in their classroom and community more broadly) and less affective polarization towards those who disagree with them on politics. At the end of the program, participants also reported positive experiences with the program. Taken together, this research highlights the merits of Narrative 4 programming for promoting empathy and pro-sociality among high school students, the merits of academic and practitioner partnerships, and a promising narrative-based intervention for promoting empathy in society.

## **Promoting Empathy, Connection, and Pro-Sociality Through Storytelling in American High Schools: A Collaboration Between Academic and Practitioners**

Across the world, we are facing a crisis of empathy. As polarization, misinformation and digital technologies like social media and AI are taking on ever increasing roles in our lives (Huh et al., 2025; Kubin & von Sikorski, 2021; Van Bavel et al., 2024), human empathy, connection, and understanding are in crisis (Konrath et al., 2011). Today, people are spending less time with friends and family (Kannan & Veazie, 2023), and reporting increasing loneliness (Buecker et al., 2021), and anxiety (Goodwin et al., 2020). This disconnection, stress, and our increasingly fast-paced lifestyles are all associated with a lack of empathy for those around us (Music, 2014)--likely because empathy is cognitively taxing, leading people to avoid it (Cameron et al., 2019).

A lack of empathy is bad for society—making people feel less connected to those around them (Derksen et al., 2017), seeing them as less than human (Fiske, 2009) and some argue it can even lead to greater oppression and social injustice within society (Taylor, 2023). However, when empathy is harnessed, interpersonal relationships and pro-sociality<sup>1</sup> are improved (Gulin, 2020), leading to greater civic engagement (Luengo Kanacri et al., 2016) and volunteering (Davis et al., 1999). Yet, because people are seemingly becoming less empathetic over time, this likely means people are becoming less pro-social—likely leading to many negative consequences for society (e.g., less willingness by citizens to collaborate, be engaged in their community, etc.). Based on this, practitioners and scientists are increasingly searching for solutions to foster more empathy that in turn may lead to more pro-sociality and civic engagement.

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<sup>1</sup> We define pro-sociality as attitudes, intentions, and behaviors that benefit others. Examples include (intentions to) help others, cooperate with others, and be civically engaged. In the current research, we quantify pro-social outcomes as support for civic engagement, support for civic diversity, respect for others, and warmth towards others (i.e., affective depolarization).

There are two spheres of people that seem to be the primary groups attempting to understand and cultivate empathy in society. The first are academic researchers from across the social sciences. These teams are advancing understandings of empathy—answering questions like who is more likely to be empathetic (Mehrabian et al., 1988), and what the consequences of empathy are (Longmire et al., 2018; Sirin et al., 2017). Academics are also developing interventions that promote empathy (e.g., finding ways to increase empathy between political, religious, or ethnic groups) using rigorous experimental methods (Todd et al., 2014; Weisz et al., 2021). However, academics face challenges in connecting their research to the real world. Academics will often test the efficacy of interventions in highly controlled settings (e.g., in laboratories or through online studies) that allow for successful manipulations of the key variables of interest. However, these studies rarely consider less controlled everyday settings that are influenced by many other untested factors and influences (e.g., the influence of interventions within diverse and complex social settings such as at work or in schools). This limitation reduces scientists' capacity to ensure interventions are effective in the real world.

Practitioners are also developing interventions with the goal of promoting empathy and pro-sociality. These interventions often focus on addressing ongoing real-world conflicts (e.g., Beckerman et al., 2025). However, while practitioners are well-positioned to directly address and assess societal problems (and interventions) within the complex social settings these issues emerge, they are unable to assess the statistical efficacy of the interventions they utilize. This reality means practitioners are often limited in their ability to ensure the programs they develop are as effective as possible.

The current research is a collaboration between a team of academic scholars who are experts in social psychology, experimental methods, and intervention development and practitioners from Narrative 4. Narrative 4 is a global non-profit with a mission to equip people with the skills needed to change their communities through storytelling. Narrative 4's goal is

to help people develop connection, community, and action. Narrative 4 programming is developed to be pro-active and pre-emptive in helping participants learn skills such as curiosity, deep listening, perspective taking, imagination, and empathy. The goal of this team of academics and practitioners is not only to develop and assess the efficacy of an empathy inducing intervention but to also address many of the challenges of connecting academic intervention research to practice.

Using insights from both Narrative 4 practitioners and researchers on the power of storytelling in building empathy, understanding, and healing divisions (Beckerman et al., 2025; Kubin et al., 2021), we evaluate the efficacy of *Narrative 4* programming in multiple American high schools using rigorous scientific methods. However, before we discuss the current research, we must first consider what empathy is, its consequences, and potential strategies for increasing empathy in society.

### **Understanding Empathy and Its' Consequences**

Empathy is often thought of as the ability to understand and connect with the perspectives and emotions of others (see Eisenberg et al., 2010). Empathy can be considered both at the dispositional level (e.g., some people tend to be more empathetic than others), and at the situational level (e.g., some contexts evoke more empathy from people than others; Heyers et al., 2025; Konrath et al., 2018). In this work, we focus on empathy more so at the situational level, examining whether we can develop interventions that invoke greater empathy across communities. To create a more empathetic society, we must look closely at the psychology that underpins empathy, its present condition in our social world, and its importance to human flourishing.

People struggle to be empathetic in every situation that warrants it, because empathy is emotionally exhausting and cognitively taxing (Cameron et al., 2015; 2019). When given a choice between assessing a situation of suffering through an empathetic lens (vs some other

perspective such as an objective lens), people regularly choose against being empathetic (Cameron et al., 2019). Further, people are less likely to show empathy to large groups (vs. individuals) as the empathetic demands these groups may need feel overwhelming—leading people to engage in emotion regulation that prevents them from experiencing empathy (Cameron & Payne, 2011). This leads to a paradox where people experience less empathy and pro-social attitudes towards groups who suffer as compared to individuals who suffer (Cameron & Payne, 2011; Small et al., 2013). While human psychology may suggest we are not always open to being empathetic, is society as a whole also becoming less empathetic over time?

### ***Are we becoming less empathetic overtime?***

Evidence suggests people are becoming increasingly unempathetic of others around them (Konrath et al., 2014)—we suggest a key reason for this is the rise of the digital era. As interpersonal connections increasingly occur online (e.g., via social media) rather than in real life, it has become easier to view others as unthinking and unfeeling bots on ones' social media page, rather than real people who have hopes, face suffering, and experience feelings in similar ways to how we do (Chen & Dang, 2023; Ligman et al., 2024). This is exemplified by online bullying, which had been linked to the dehumanization of victims of bullying (see Runions et al., 2015). As people spend greater and greater proportions of their lives online (Pew Research Center, 2021) and see others online as less and less like people (Oviatt, 2021), it is no surprise we have a crisis of societal empathy.

However, it is not just a detachment of perceived humanness of others in the digital age, but also what information we are regularly exposed to that explains diminishing levels of empathy. Social media (and the Internet more broadly) exposes people to vast amounts of highly intense and negative online content (e.g., of outrage, war, and misinformation; Carpenter et al., 2020; Vosoughi et al., 2018). Being constantly exposed to such intense and negative

content about suffering experienced around the world can desensitize people leading them to feel less empathy towards others (Fanti et al., 2009)--an idea known as empathy fatigue (Stebnicki, 2007).

Being constantly exposed to outrage-inducing content online not only desensitizes people to violence and suffering (thereby reducing empathy) but also can be emotionally overwhelming to process. Prior to the rise of the Internet (and the 24-hour news cycle), people typically only learned about others (and their hardships) through actively searching for this information in nightly news programs, the radio, newspapers, or through their interactions in real life. However, today we are often passive consumers (Oeldorf-Hirsch, 2018), being inundated with content about current events and news--often focused on the suffering of others (e.g., natural disasters, violent attacks, etc.). Such constant input of the suffering of many, often overwhelms peoples' emotional capability to be empathetic (Cameron et al., 2019)--leading them to disengage and feel less sympathy and understanding for others in society.

### ***The Power of Empathy for a Flourishing Society***

While empathy is on the decline--it is an essential component of a flourishing society. Empathy is a key human trait that promotes connection, collaboration, and pro-sociality (Zaki, 2018). It is what makes us willing to be a shoulder to cry on for our friend who was just broken up with, or to donate to those who are victims of natural disasters. Empathy benefits society by motivating prosocial behavior (Batson et al., 1988; 2011), improving relationship quality (Davis, 2017; Portt et al., 2020), promoting cooperative behaviors (Rumble et al., 2009), and possibly even deterring antisocial behaviors like deceit in negotiation (Cohen, 2010).

Taken together, psychology research suggests being empathetic is challenging because it is emotionally taxing, but that we are in a time today where empathy is especially diminishing due to the rise of social media and other digital technology. We are facing empathy fatigue not only with strangers on the Internet (Barlińska et al., 2012) but also with people in our daily

lives (Konrath et al., 2023). As society becomes more divided and polarized (Pew Research Center, 2017), people are struggling to show empathy towards others with different backgrounds and beliefs (Pape, 2025). Therefore, we argue, it is imperative to find ways to promote empathy in order to help society build connection and community.

### **Promoting Empathy and Other Pro-Social Outcomes Through Storytelling**

Emerging evidence suggests storytelling (or the sharing of personal first-hand experiences) with others may be a highly effective way to build empathy (Beckerman et al., 2025; Kubin et al., 2023). Evidence suggests sharing experiences (especially those that are connected to the suffering and harm one has experienced; Kubin et al., 2021), or experiences that feel especially self-disclosing (Kubin, Versteegen, et al., 2025) can be beneficial for all kinds of pro-social outcomes. These narratives increase ones' willingness to respect and interact with those they disagree with (Kubin et al., 2021), reduce affective polarization (Voelkel et al., 2024), and build empathy and understanding (Hargreaves et al., 2018).

In-line with these academic findings, many practitioner organizations engage in such story-based programs in their work. For example, the core practice of Narrative 4 is a story exchange, where people (often with different backgrounds and beliefs) are paired together after some introductory deep listening activities. Partners share a true story with one another, with the guidelines that it must have a beginning, middle, and end, and not be a soapbox speech but rather an episode from one's life. Then, the partner pairs join a re-telling circle of up to 12 people, in which each participant re-tells their partner's story in the first person, as if it were their own. For example, if Jim tells Sam a story, Sam tells the story to the group by saying "I am Jim and this is my story...". Finally, the story exchange facilitator poses reflection questions to the group designed to create a thoughtful discussion of the various experiences contained in the story exchange - from hearing one's own story told by another voice, to the act of telling the story the participant received from their partner. It is theorized—in-line with other research

(Frausel et al., 2022)--that the story exchange allows people to genuinely feel listened to and connected to one another—potentially helping in building empathy and perspective taking between groups. However, to date this inclination has yet to be statistically confirmed.

Taken together, based on both the empirical research by scholars connected to the power of storytelling for promoting understanding and empathy between people (e.g., Cummings et al., 2021; Gray & Kubin, 2024), and the seeming success of practitioner led intervention programs, it seems storytelling may be a powerful tool for fostering empathy. But how should such narrative storytelling interventions be implemented?

### **The Promise of Educational Programming for Fostering Empathy**

While narratives may be promising in terms of the *content* of the intervention, it is also important to consider the *context* where we implement such interventions. Many attempts to foster empathy focus on developing interventions for adults in the midst of conflict both in the United States (Voelkel et al., 2024) and beyond (Hutter et al., 2025; Kubin et al., 2023; Tausch et al., 2024), with the goal of improving intergroup relations by fostering empathy between people (Vanman, 2016). This strategy can be challenging as academics and practitioners are attempting to address empathy in populations where beliefs are often well-established and deeply held (Skitka, 2010). By adulthood (and in times of polarization) beliefs often become deeply entrenched and difficult to change (Del Vicario et al., 2017; Skitka, 2010), making it that much more challenging to foster empathy between groups with diverse backgrounds.

Scholars have long highlighted the merits of intervention programs during childhood to promote empathy and pro-sociality (Malti et al., 2016; Weisz et al., 2022) tackle divisive conflicts (e.g., in Northern Ireland; Reimer et al., 2022) and other societal challenges (e.g., media literacy programs to combat the rise of misinformation; Cox, 2024). Implementing interventions during adolescence not only overcomes hurdles connected to deeply entrenched beliefs and behaviors in adulthood (Kosterman et al., 2019) but may also be highly impactful

long-term as experiences in childhood imprint meaningfully on people throughout their lives (Merrick et al., 2017). Based on this, we suggest that developing interventions for adolescents that foster empathy and pro-sociality are a promising avenue for intervention development. But effective interventions are not just those developed for young people but also those that are data-driven and tested in the real world (i.e., interventions developed in partnership between academics and practitioners)—an idea we turn to next.

### **Opportunities and Challenges of Collaboration Between Academics and Practitioners**

As highlighted above, both academics and practitioners triangulate around common themes of developing effective solutions to foster empathy in society. For example, practitioner groups such as *One America Movement*, a practitioner organization focused on building understanding and reducing polarization between and within religious communities across the United States has developed a toolkit to help foster empathy between divided communities (Beckerman et al., 2025). On the other hand, scholars across the social sciences have developed their own interventions often in highly controlled settings—testing the efficacy of interventions using statistical methods. These interventions vary greatly but all focus on improving empathy. Interventions that successfully induce empathy include virtual reality training programs (Trevena et al., 2024), school-based educational programs (Malti et al., 2016), and videos about people facing hardship (e.g., diagnosed with cancer; Castelán Cargile, 2016).

While both spheres (practitioners and academics) are currently conducting necessary efforts to cultivate empathy in society, both areas of work also have their drawbacks. While academics critically test their interventions following high standards of scientific rigor, such interventions often lack robust testing in real world settings (reducing generalizability) and fail to actually reach the people that need them most in on-the-ground contexts. Many such interventions face the “ivory tower” phenomenon (Cote & Allahar, 2007), where intervention research continues to circulate throughout academia without being shared with those outside

of the system—siloining knowledge in academic circles and greatly reducing the likelihood such interventions will ever reach the real world problems they were developed to combat in the first place. On the other hand, practitioners are able to address real world problems and connect interventions to practice through their programs and initiatives but struggle to scientifically assess to what extent their programs are effective and how to adapt such programs to be as effective as possible in encouraging empathy.

But if the challenges faced by academia can be addressed by practitioners (and vice versa) in terms of statistical testing of intervention efficacy and implementing interventions in the real world, why do academics and practitioners rarely collaborate? One key obstacle lies in the limited connection between these two spheres. There are few shared spaces that facilitate interaction or the exploration of potential partnerships. Moreover, academics in particular often lack incentives to translate their research into practice. The prevailing emphasis within academia tends to prioritize publication in scholarly journals over the practical application of research findings.

Further, and perhaps most importantly, while academics and practitioners may have the same overarching goal of trying to effectively foster empathy and (as a by-product) more pro-sociality, they still often have differing (and in some cases competing) proximate goals. For example, practitioners are often focused on developing interventions that can be implemented with as many people as possible, thereby reducing their desire to test interventions by comparing an experimental and control condition—something academics have a desire to do in order to develop a high-quality experiment to test intervention efficacy that will meet the expectations for academic publication. Taken together, these challenges explain why academics and practitioners rarely collaborate even though such a bridging of fields would greatly benefit both science and practice.

## **Current Research**

The current research bridges this gap between academics and practitioners to test an intervention with the goal of promoting empathy in young people as a way to foster young peoples' endorsement of civil engagement, pro-sociality, and reduced division. The collaboration consisted of social psychologists who are experts in experimentally testing the statistical efficacy of interventions and practitioners at Narrative 4—a non-profit international organization with expertise in building bridges between both young people (via their school-based programs) and larger communities (via their community initiatives). Using a real-world context (American high schools) and rigorous scientific methods (i.e., the use of established measures and a comparison of Narrative 4 programming to a control group)—we assess one effective way to foster empathy and its downstream positive effects—through the power of storytelling. This work also acts as a case study to show how scholars and practitioners can bridge the gaps between their fields of expertise to develop high impact data-driven interventions to address some of society's most complex problems.

## **Methods**

Narrative 4 programming consists of a 10-session school training program (see Table 1), where students learn about one another through storytelling to build empathy, connection, pro-sociality, and to reduce conflict both within the classroom and towards the greater community. This programming teaches students every step of the storytelling process. From developing their storytelling skills through learning what makes an impactful story to how they can successfully communicate their stories with others. Further, students learn skills that help them become more receptive to others' stories. For example, by learning how to engage in active listening, perspective taking, and developing skills to help them manage their own emotions and gain greater self-awareness. The culmination of these lessons is the story

exchange, where students use the skills they learned throughout the program to both share their life stories more effectively and be more receptive when hearing others' stories.

The story exchange works as follows: participants learn about the procedure in broad strokes, from the pair-share to the re-telling circle (described in detail above). They observe modeling, either live between facilitators or via a video recorded example. Participants are then paired up and sent to tell stories to each other, then return to a circle of approximately 5 pairs of participants, in which each person retells their partner's story in the first person. The facilitator guides the retelling into a debrief, posing questions to help participants think about their own perspectives, gauge how they may be informed by the experience, and form connections with peers in the circle through the stories. For this research study, the prompt in the story exchange was as follows:

"Think about your life. There are many experiences (both good and bad) that we have throughout our lives. Think about a significant experience in your life that shaped you. Tell that story including as many details as possible, being sure to include how it reveals something important about you. The story can awaken any emotion (joy, pain, embarrassment, love, etc.)."

To evaluate the efficacy of Narrative 4 programming for empathy and other pro-social outcomes, we conducted a longitudinal study that tested the efficacy of the program (vs control) in 5 schools across diverse school districts in Kentucky USA during the 2024-2025 school year. These schools varied in their demographic breakdown in terms of race, school location, and SES (as assessed via % who qualify for free lunch) demographics. See Table 2.

**Table 1.***Narrative 4 10-session Program.*

<b>Session</b>	<b>Activity</b>
1	<b>Intro to Narrative 4.</b> Participants learn about Narrative 4's vision and principles. They work together to create a set of community guidelines and set social emotional goals.
2	<b>Self-Awareness and Management.</b> Participants reflect on their self-awareness and develop strategies to manage common emotions.
3	<b>Partner Interview.</b> Participants develop interview questions, listen deeply and learn new information to share about their interview partner.
4	<b>Mini Story Exchange.</b> Participants use deep listening skills to engage in a modified story exchange, working in pairs and small groups.
5	<b>Exploring Stories.</b> Participants explore narrative writing and stories to recognize the effects of storytelling on their social emotional skills.
6	<b>Sharing Impactful Stories.</b> Participants choose a story that resonates with them to bring to their peers, share and reflect upon.
7	<b>Preparing Stories.</b> Participants review story exchange prompts and take steps to prepare a story for the story exchange.
8	<b>Deep Listening Reflection.</b> Participants reflect on their needs as a listener and practice their deep listening skills to prepare for the story exchange.
9	<b>The Story Exchange.</b> Participants use the skills practiced and gained throughout the previous activities to engage in a story exchange.
10	<b>Story Exchange into Positive Action.</b> Participants investigate how their work with the story exchange can lead to positive action within their communities.

*Note:* Due to school scheduling, the exact frequency (e.g., weekly vs multiple times per week) of sessions varied between classrooms. However, all classrooms followed the session order presented above. Analyses account for these potential differences in frequency by controlling for the effect of classroom.

**Table 2.***Demographic breakdown of schools.*

<b>School</b>	<b># of Participants / # of Students in School</b>	<b>% Qualifying for Free Lunch</b>	<b>% White Students</b>	<b>Rural/ Urban</b>	<b>Class Topic</b>
1	80/1,990	43.92%	48.89%	Urban	AP U.S. History/AP Psychology
2	25/530	67.73%	97.17%	Rural	English
3	72/608	68.42%	91.28%	Rural	English
4	99/1,019	59.08%	91.85%	Town/ remote	AP English
5	104/412	76.70%	97.57%	Rural	English

Schools (and teachers ( $N=7$ ) within those schools) agreed to implement Narrative 4 programming. Classrooms ( $N=19$ ) either were assigned the control condition (Participant  $N=152$ ) —and did not complete any Narrative 4 programming or were assigned to the experimental condition (Participant  $N=228$ ) and completed the Narrative 4 programming. Teachers were asked to select a control group from their classes that would be statistically similar to the students in their experimental groups—something later testing showed to be the case (see results section). They were instructed not to attempt to influence the composition of test or study groups, and so all teachers assigned entire class sections to either the intervention or the control group.

Prior to the study, all teachers were trained in story exchange facilitation by Narrative 4 personnel using the standard practice for new facilitators. Narrative 4 facilitator training consists of two sessions, a full story exchange and then a 3-hour training and planning session wherein participants explore the nuances of all parts of the exchange, learn how different variables (e.g., the subject matter of story prompts, the ages and relationships of the participants, their lived experiences, and facilitator interventions) affect the experience, and plan how they will execute story exchanges in the context of their own classrooms. Teachers participating in this study were given identical training to what all Narrative 4 facilitators receive but also were given additional instruction regarding how to deploy the lessons and survey materials included in this study.

For further details on study procedure and timeline, see below. Students in both conditions who provided both parental consent and their own assent to participate completed this study. Participation in this study was completely voluntary. Ethical approval was provided by the University of North Carolina at Chapel Hill IRB: #24-0615.

### ***Study Timeline***

Prior to Narrative 4 programming, all participants completed a pre-program survey. After this, the 10-session program began for those in the experimental condition. At the end of this program (Session 10), all participants (including those in the control condition) completed the post-test<sup>2</sup>.

### ***Student Demographics***

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<sup>2</sup> Two weeks after the post-test, all participants were also supposed to complete a follow-up post-test however for varying reasons many participants (44.21%) never completed this post-test and of those who did, many completed it days earlier than they should have (23.11%) or days (or even weeks) later than they should have (23.58%). Only 29.74% of respondents completed the follow-up survey within two days (before or after) of the two-week mark following their post-test survey. Based on this we decided to not use this follow-up survey for analyses.

In total, across all 5 schools, 380 students participated in this study (Mean(SD) Age=15.76(.75), 44.74% reported being female, 29.74% reported being conservative). Full breakdowns of demographics can be found in Table 3.

**Table 3.**

*Demographics of Sample*

	<b>Demographic Percentages</b>
<b>Ideology</b>	Very Liberal (4.21%) Liberal (8.68%) Somewhat Liberal (9.47%) Neither Liberal Nor Conservative (32.37%) Somewhat Conservative (11.84%) Conservative (10.53%) Very Conservative (7.37%)
	*59 participants (15.53%) did not respond to this question (either due to not wanting to respond or due to absence).
<b>Gender</b>	Male (36.58%) Female (44.74%) Other (2.11%) Prefer Not to Say (0.53%)
	*61 participants (16.05%) did not respond to this question (either due to not wanting to respond or due to absence).

**Measures<sup>3</sup>**

To assess longitudinal effects, all participants were asked the following measures both pre- and post-program. The measures selected were well-established instruments commonly used in psychological research, thereby enhancing the robustness of our methodology. All measures consisted of multiple items and participants responded to these items using a Likert-scale from *Strongly Disagree* (1) to *Strongly Agree* (5).

***Empathy***

Empathy was our central variable of interest as we theorized empathy should also promote other beneficial outcomes (e.g., pro-social outcomes such as endorsing civic

<sup>3</sup> Participants were also asked about their sense of belonging and their ability to be authentic across surveys. These are not part of our key analyses but information about these measures can be found in the Supplemental Materials.

engagement and reduced affective polarization). We assessed empathy both towards classmates and towards people different from themselves. The latter measure of empathy was used as our key mediational variable in Section 2 of analyses.

*Empathy Towards Classmates.* 3-item measure adapted from Swart et al., (2011). Example item: “If I heard that someone in my class was upset, I would also feel upset”. Pre-Program  $\alpha=.80$ , Post-Program  $\alpha=.85$ .

*Empathy Towards People With Diverse Opinions* 3-item measure adapted from Swart et al., (2011). This measure was identical to the empathy towards classmates measure but was adapted to focus on others in the community. Example item: “If I heard that someone who was different from me was upset, I would also feel upset” Pre-Program  $\alpha=.83$ , Post-Program  $\alpha=.88$ .

### ***Pro-Social Outcomes***

We also assessed a variety of pro-social outcomes. These measures focused on concepts related to support for civic engagement and diversity as well as pro-social attitudes towards those with different backgrounds or belief systems (e.g., respect for them). The final pro-social measure was affective polarization (i.e., how much coldness participants feel towards those they disagree with)--with lower levels of affective polarization being deemed more pro-social. Details about these measures can be found below.

**Support for Civic Engagement.** This measure focused on the extent to which participants reported wanting to engage in civic behaviors over the next year. Specifically, participants responded to 8-items assessing their intention to be civically engaged. Example item “I plan to become involved in programs that help my community”. Pre-Program  $\alpha=.93$ , Post-Program  $\alpha=.96$ .

**Support for Civic Diversity.** This 7-item measure adapted from Barkley et al., (2021) focused on the extent to which participants valued interacting with diverse perspectives and

ideas. Example item “Learning about people from different cultures or communities is a very important part of my life”. Pre-Program  $\alpha=.86$ , Post-Program  $\alpha=.92$ .

**Respect Towards Classmates Who Disagree.** 3-item measure adapted from (Kubin et al., 2021). After imagining someone in class who disagreed with them, participants responded to items such as “I would be considerate of what they had to say”. Pre-Program  $\alpha=.89$ , Post-Program  $\alpha=.87$ .

**Respect Towards Others Who Disagree.** Same 3-item measure used for the respect towards classmates measure. However, this time participants imagined a person who was different from themselves and disagreed with them on an important issue (e.g., politics or religion). Example item: “I would be considerate of what they had to say”. Pre-Program  $\alpha=.88$ , Post-Program  $\alpha=.90$ .

**Affective Polarization.** This measure was adapted from previous research (Iyengar et al., 2012). Participants thought about someone they disagreed with on politics and then reported how they felt about them. Unlike the other measures, affective polarization measure used a 100-point feeling thermometer from 0 (very cold) to 100 (very warm), higher scores represent *less* affective polarization (i.e., more warmth).

### ***Other Outcome Variables***

We also asked participants a variety of other measures to examine whether those who partook in Narrative 4 programming also gained skills that would improve storytelling sharing (and receiving). Specifically, participants were also asked:

**Perspective Taking Towards Classmates.** 6-item measure adapted from Davis (1980). Example item: “In class, I try to look at everybody’s side of disagreement before I make a decision”. Pre-Program  $\alpha=.71$ , Post-Program  $\alpha=.79$ .

**Perspective Taking Towards Others in Community.** 6-item measure adapted from Davis, (1980). This measure was identical to the perspective taking towards classmates

measure but was adapted to focus on others in the community. Example item: “When thinking about debates in society, I try to look at everybody’s side of a disagreement before I make a decision”. Pre-Program  $\alpha=.73$ , Post-Program  $\alpha=.75$ .

**Active Listening.** 11-item measure adapted from (Bodie, 2011) to assess whether students feel they actively listen to others in class. Example item: “I listen for more than just what people say on the surface”. Pre-Program  $\alpha=.85$ , Post-Program  $\alpha=.95$ .

**Curiosity in the Classroom.** 5-item measure adapted from Litman (2008) assessing participants' curiosity in the classroom. Example item: “When I am in class, I enjoy learning about subjects that are unfamiliar to me”. Pre-Program  $\alpha=.88$ , Post-Program  $\alpha=.92$ .

**Curiosity About Differing Beliefs.** The same 5-item curiosity measure adapted from Litman (2008), but this time focused on participants’ general curiosity about people and ideas that differ from themselves and their own beliefs. Example item: “I enjoy learning about people who are different from me”. Pre-Program  $\alpha=.88$ , Post-Program  $\alpha=.91$ .

**Classroom Climate.** 3-item measure focused on how participants perceive the climate of their classroom. We used several items from the Yale School Climate Walkthrough Survey (Hoffmann et al., 2022). Example item: “I feel listened to and respected in class”. Pre-Program  $\alpha=.79$ , Post-Program  $\alpha=.87$ .

### ***Program Evaluation Measures***

Additionally, those who partook in Narrative 4 programming were asked additional questions about their evaluations of the program. Participants first reported their agreement with several statements connected to their experience with Narrative 4 overall. Participants reported how their experiences with Narrative 4 have... “enhanced the quality of learning in my class(es)”, “improved relationships within my class(es)”, “taught me to be more accepting of others”, “helped me resolve differences or disagreements in class”.

Participants also reported their overall experience with the story exchange activity (Session 9 of programming). Specifically, participants considered their experiences with the story exchange and reported their level of agreement with the following statements “I feel that sharing personal stories in this way improves my ability to connect with others”, “I appreciate diversity more now that I have participated in a Narrative 4 story exchange”, “This story exchange experience makes me want to work to promote positive change in my community”, “I feel that hearing my partner tell my story helped me care more about myself”.

## **Results**

To analyze differences by conditions, we first examined the means and standard deviations for both conditions at pre-test and post-test (presented in Table 4). Results indicated there were no significant differences between the control and Narrative 4 (N4) programming groups on any outcome variables during the pre-test, suggesting these groups were statistically similar prior to Narrative 4 programming.

In our first key analyses (Section 1), we assessed the efficacy of Narrative 4 Programming by testing the effect of condition on post-programming scores using a series of ANOVA analyses for each key outcome variable. Additionally, we conducted follow-up ANCOVA analyses (presented in the supplemental materials) that controlled for the effect of pre-test scores (e.g., pre-test scores on empathy), and demographic covariates (i.e., students’ school, grade, and classroom)—finding across analyses little to no effect of the demographic covariates and effects remaining significant when controlling for pre-test scores (except for the affective polarization measure). Results with covariates are discussed further in the discussion section of this report and can be found in the Supplemental Materials. All analyses utilized Full Information Maximum Likelihood (FIML) via the lavaan function (Rosseel et al., 2024) in R to address missing data in the dataset.

**Table 4.***Means and standard deviations by condition at pre-test and post-test.*

<b>Outcome variable</b>	<b>Pre-test control</b>	<b>Pre-test N4</b>	<b>Post-test control</b>	<b>Post-test N4</b>
Empathy (classroom)	3.22(.77)	3.28(.96)	3.42(.79)	3.92(.84)
Empathy (diverse opinions)	3.55(.88)	3.58(.93)	3.52(.83)	3.93(.86)
Civic Engagement	3.71(.82)	3.76(.89)	3.84(.79)	4.05(.89)
Civic Diversity	3.65(.77)	3.68(.73)	3.64(.67)	4.00(.81)
Perspective Taking (classroom)	3.33(.68)	3.41(.66)	3.49(.60)	3.79(.71)
Perspective Taking (diverse opinions)	3.39(.67)	3.50(.68)	3.48(.54)	3.83(.71)
Curiosity (classroom)	3.70(.77)	3.77(.84)	3.71(.69)	4.00(.84)
Curiosity (diverse opinions)	3.80(.76)	3.87(.77)	3.76(.68)	4.04(.79)
Respect (classroom)	4.02(.76)	4.09(.82)	3.95(.77)	4.24(.75)
Respect (toward people who disagree)	4.01(.84)	4.04(.85)	3.94(.82)	4.26(.78)
Active listening	3.70(.58)	3.76(.65)	3.73(.64)	4.04(.78)
Classroom Climate	4.75(1.59)	4.88(1.55)	5.07(1.39)	5.63(1.37)
Affective Polarization	48.82(26.13)	55.13(28.94)	52.08(26.18)	61.24(28.18)

We next examine the role of empathy in explaining how Narrative 4 programming can promote pro-sociality (e.g., civic engagement and respect for diverse groups of people) and reduce affective polarization (Section 2). To do this, we conducted a series of PROCESS mediational analyses (Hayes & Rockwood, 2020). In the final section (Section 3), we also assessed students' evaluations of the Narrative 4 programming through examining distributions of responses to a variety of program evaluation questions.

### *Section 1: Assessing Efficacy of Narrative 4 Programming*

**Empathy.** Overall, Narrative 4 programming (vs control) led participants to report significantly more empathy both towards others in their classroom  $B=.50$ ,  $SE=.10$ ,  $p<.001$ , and towards others' who were different from them  $B=.40$ ,  $SE=.10$ ,  $p<.001$ . Effects were robust when controlling for covariates. Effects were robust also when controlling for participants' school, grade and classroom and pre-test empathy scores. See Table S1 and Figure 1.

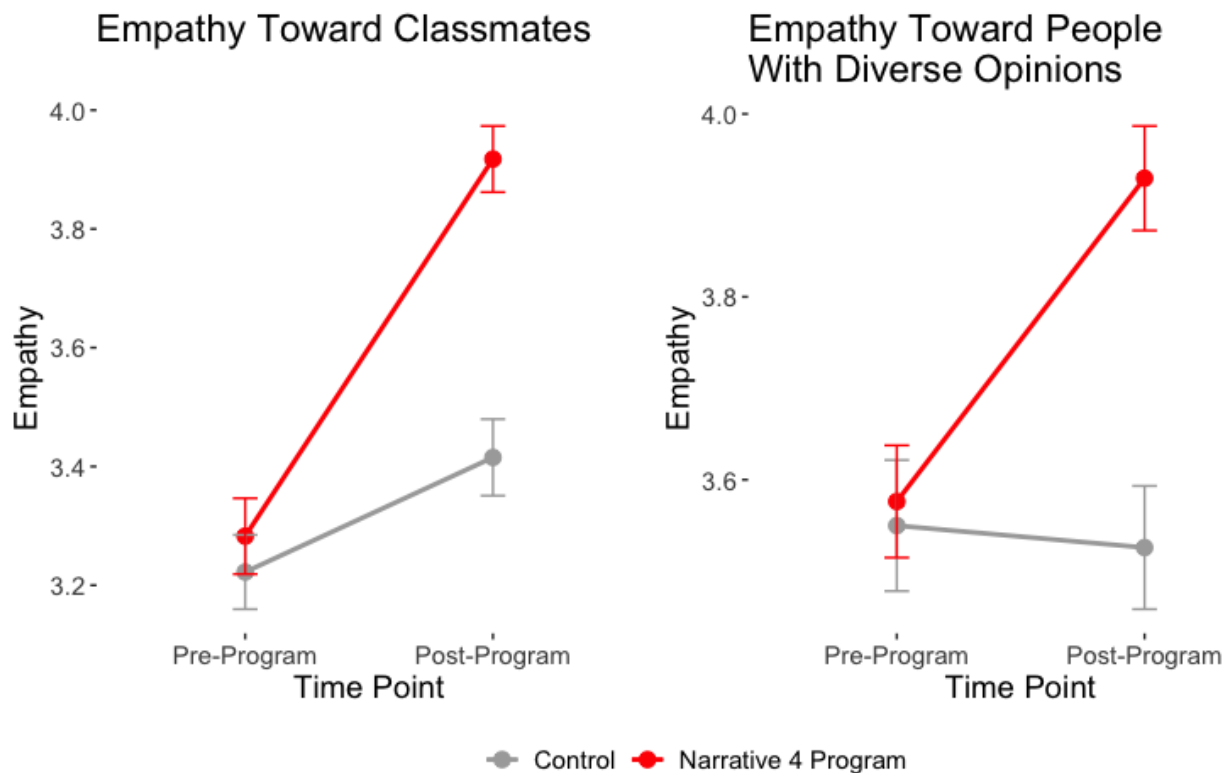


Figure 1. Effect of condition on empathy over time.

**Civic Outcomes.** There was a significant effect of Narrative 4 programming (vs. control) on participant willingness to be civically engaged (i.e., civic engagement) in their communities,  $B=.21$ ,  $SE=.10$ ,  $p=.04$ . Additionally, Narrative 4 program participants were significantly more supportive of the importance of having people with diverse experiences, beliefs, and backgrounds in their community (i.e., civic diversity),  $B=.36$ ,  $SE=.09$ ,  $p<.001$ . Effects were robust also when controlling for participants' school, grade and classroom and pre-test civic scores. See Table S2 and Figure 2.

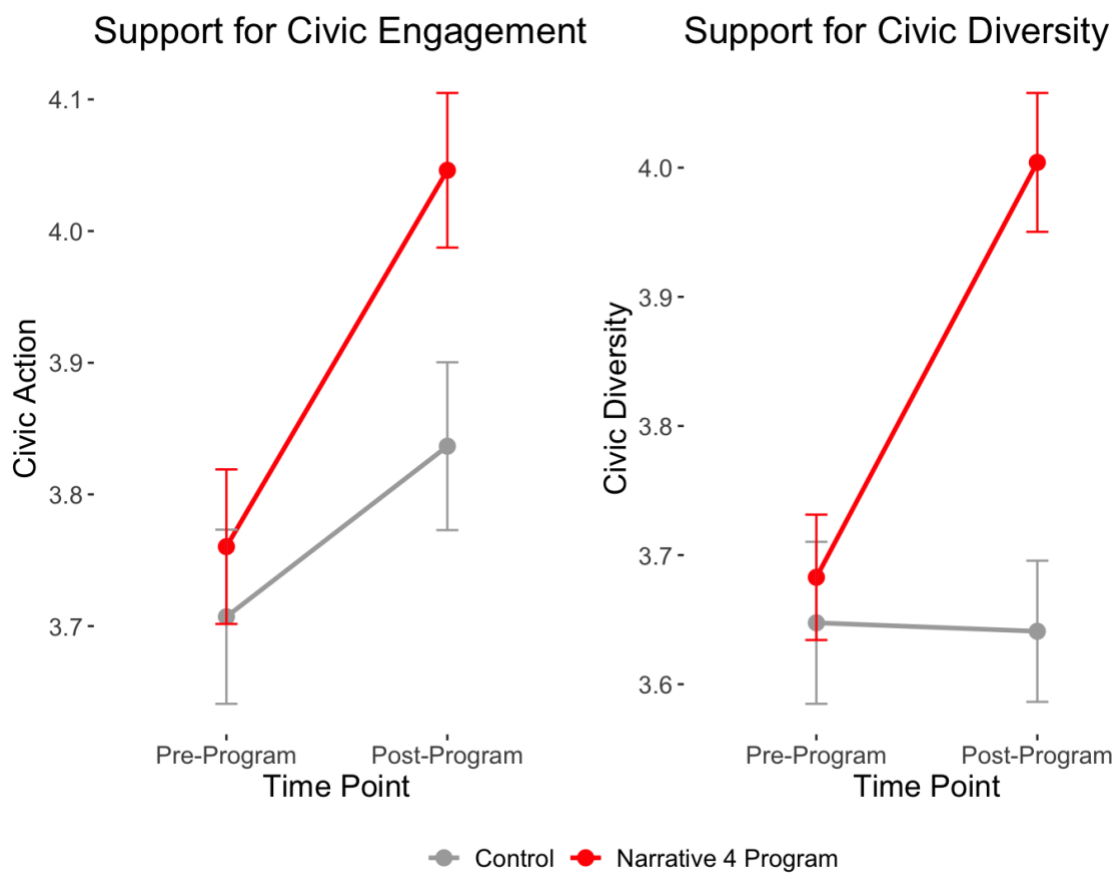


Figure 2. Effect of condition on civic engagement and support for civic diversity over time.

**Perspective Taking.** Results indicated Narrative 4 programming (vs. control) led participants to report significantly more perspective taking both towards their classmates,  $B=.31$ ,  $SE=.08$ ,  $p<.001$ , and towards others in the larger community,  $B=.35$ ,  $SE=.08$ ,  $p<.001$ . Effects were robust also when controlling for participants' school, grade and classroom and pre-test perspective taking scores. See Table S3 and Figure 3.

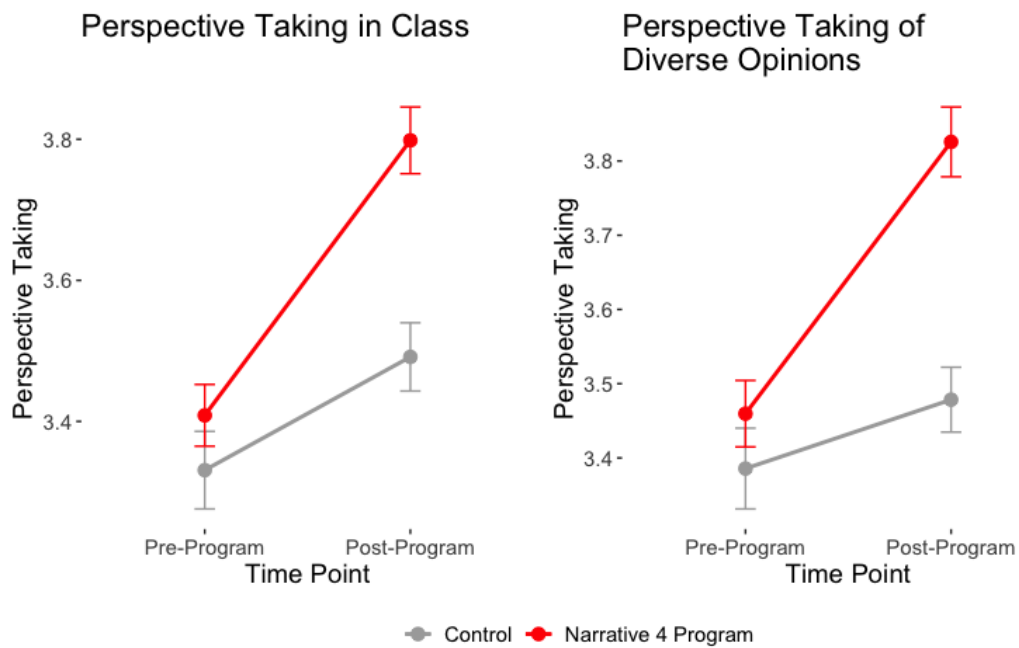


Figure 3. Effect of condition on perspective taking over time.

**Curiosity.** Overall, Narrative 4 programming (vs. control) led participants to report significantly more curiosity both in the classroom,  $B=.29$ ,  $SE=.09$ ,  $p=.002$ , and towards people with differing opinions and backgrounds from their own,  $B=.28$ ,  $SE=.09$ ,  $p=.002$ . Effects were robust also when controlling for participants' school, grade and classroom and pre-test curiosity scores. See Table S4 and Figure 4.

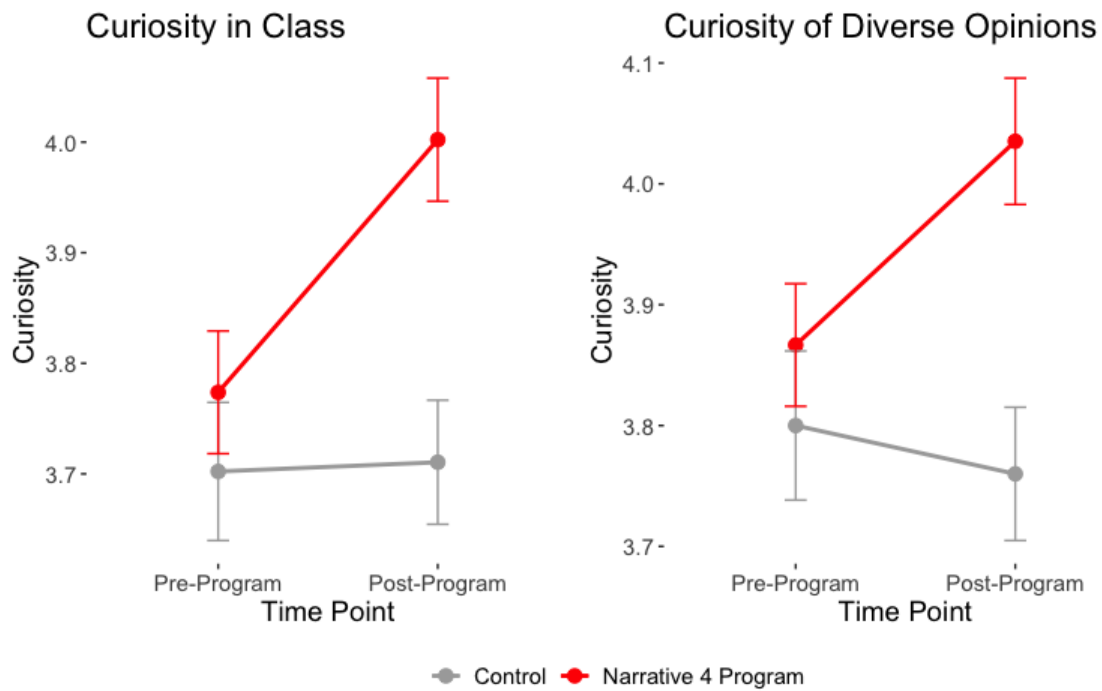


Figure 4. Effect of condition on curiosity over time.

**Respect.** Results suggested Narrative 4 programming (vs. control) led participants to report significantly more respect towards those who disagree with them both in the classroom,  $B=.29$ ,  $SE=.09$ ,  $p=.001$ , and in the wider community,  $B=.32$ ,  $SE=.10$ ,  $p=.001$ . Narrative 4 programming (vs. control) led participants to report significantly improved classroom climate,  $B=.55$ ,  $SE=.16$ ,  $p=.001$ . Effects were robust also when controlling for participants' school, grade and classroom and pre-test respect scores. See Table S5 and Figure 5.

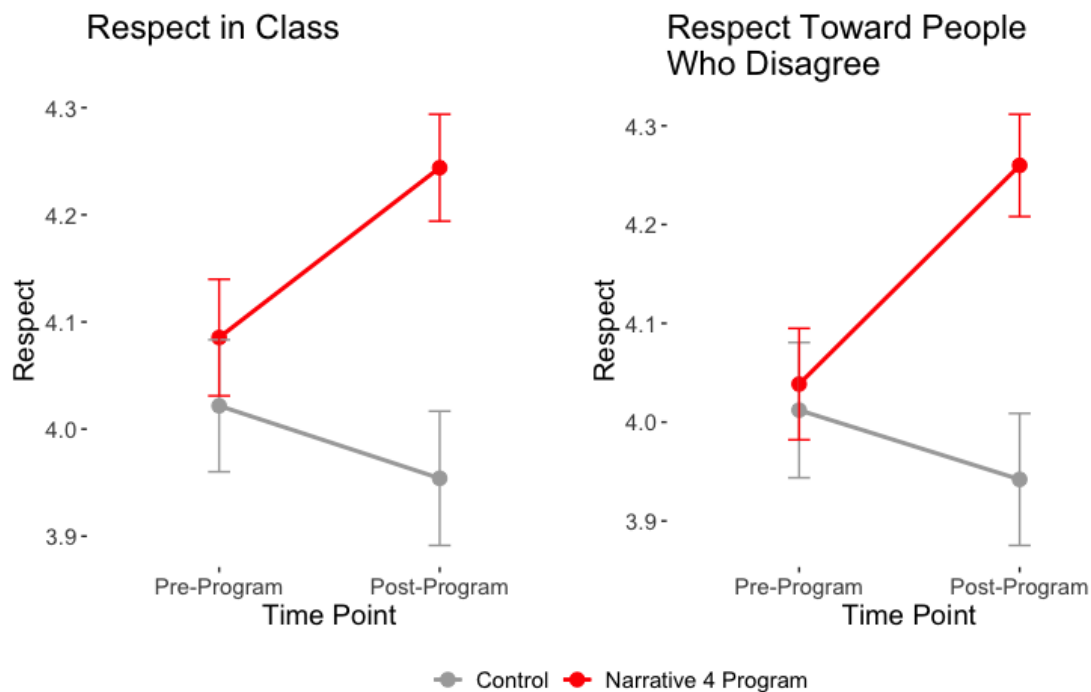


Figure 5. Effect of condition on respect over time.

**Active Listening.** Overall, Narrative 4 programming (vs. control) led participants to report they engage more so in active listening,  $B=.32$ ,  $SE=.09$ ,  $p<.001$ . Effects were robust also when controlling for participants' school, grade and classroom and their pre-test active listening scores. See Tables S6 and Figure 6.

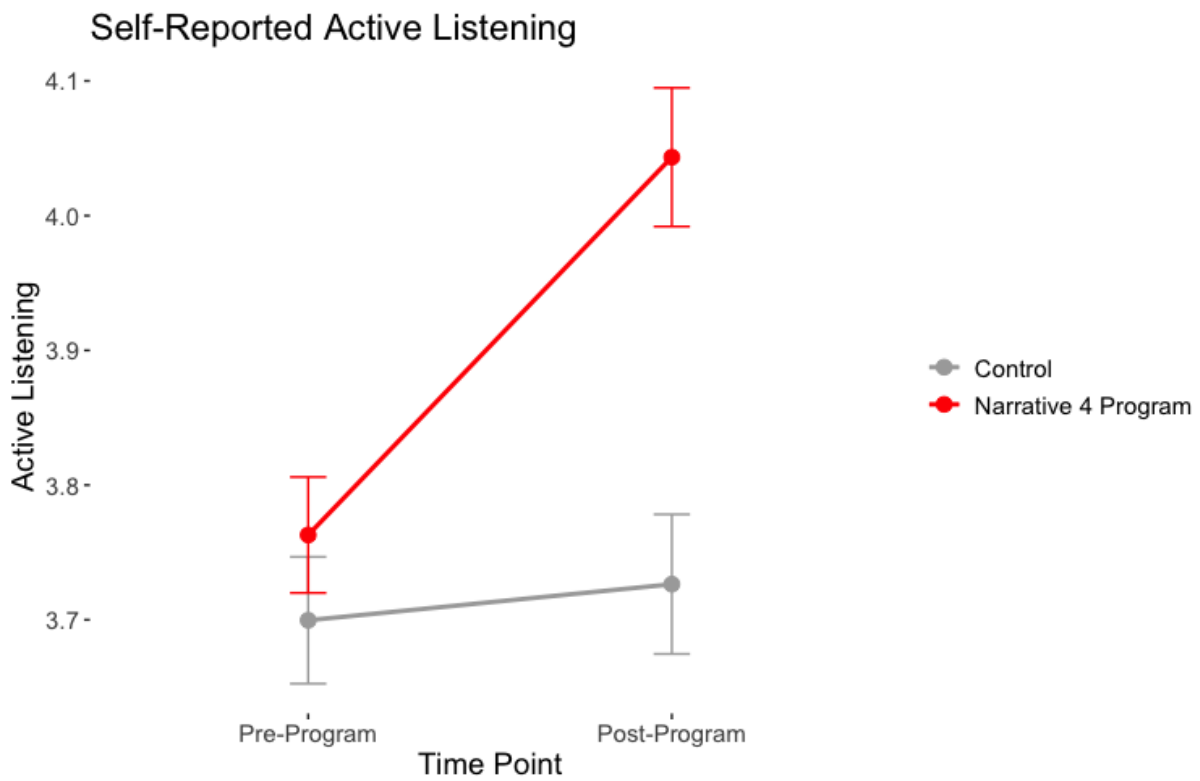


Figure 6. Effect of condition on active listening over time.

**Classroom Climate.** Narrative 4 programming (vs. control) led participants to report significantly improved classroom climate,  $B=.55$ ,  $SE=.16$ ,  $p=.001$ . Effects were robust also when controlling for participants' school, grade and classroom and their pre-test classroom climate scores. See Table S7 and Figure 7.

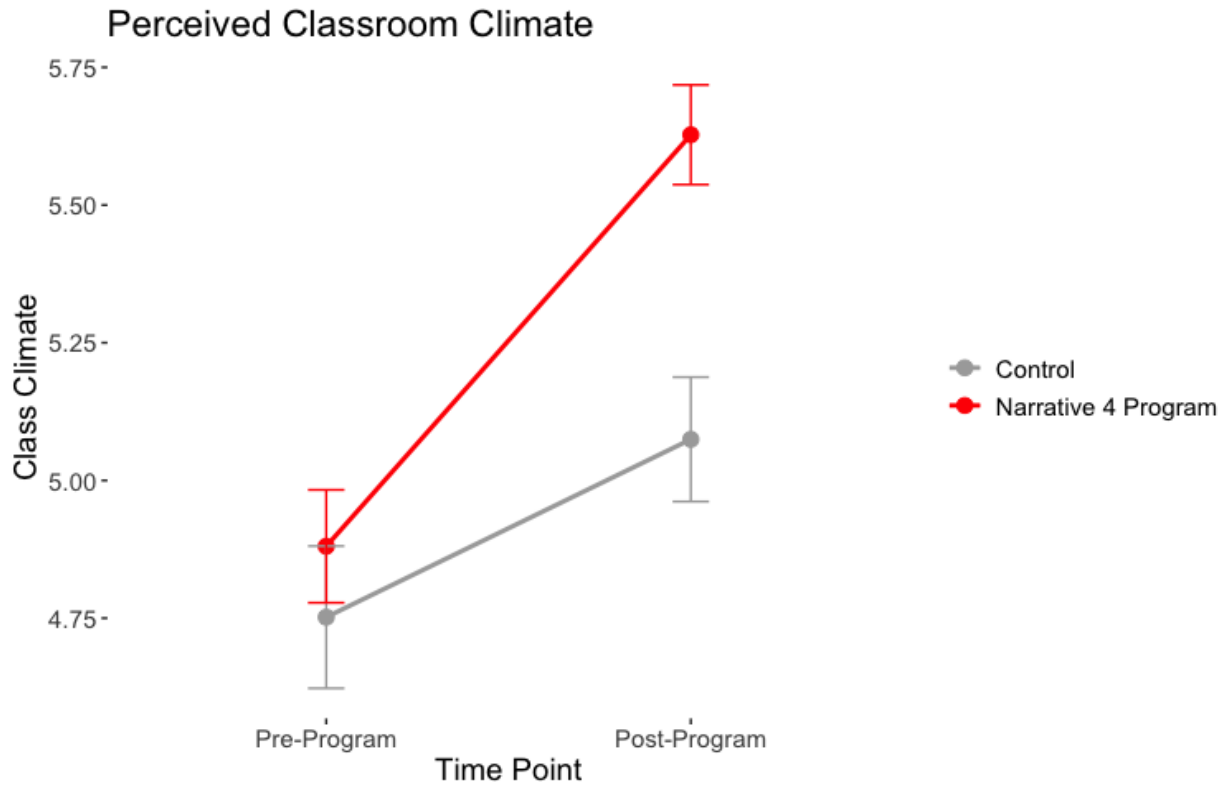


Figure 7. Effect of condition on perceived classroom climate over time.

**Affective Polarization.** Narrative 4 programming (vs. control) led participants to report significantly reduced affective polarization (i.e., greater warmth toward those who disagree on political issues),  $B=9.16$ ,  $SE=3.72$ ,  $p=.01$ . However, effects were not robust when controlling for pre-existing affective polarization and participants' school, grade and classroom,  $B=4.93$ ,  $SE=3.32$ ,  $p=.13$ . See Table S8 and Figure 8

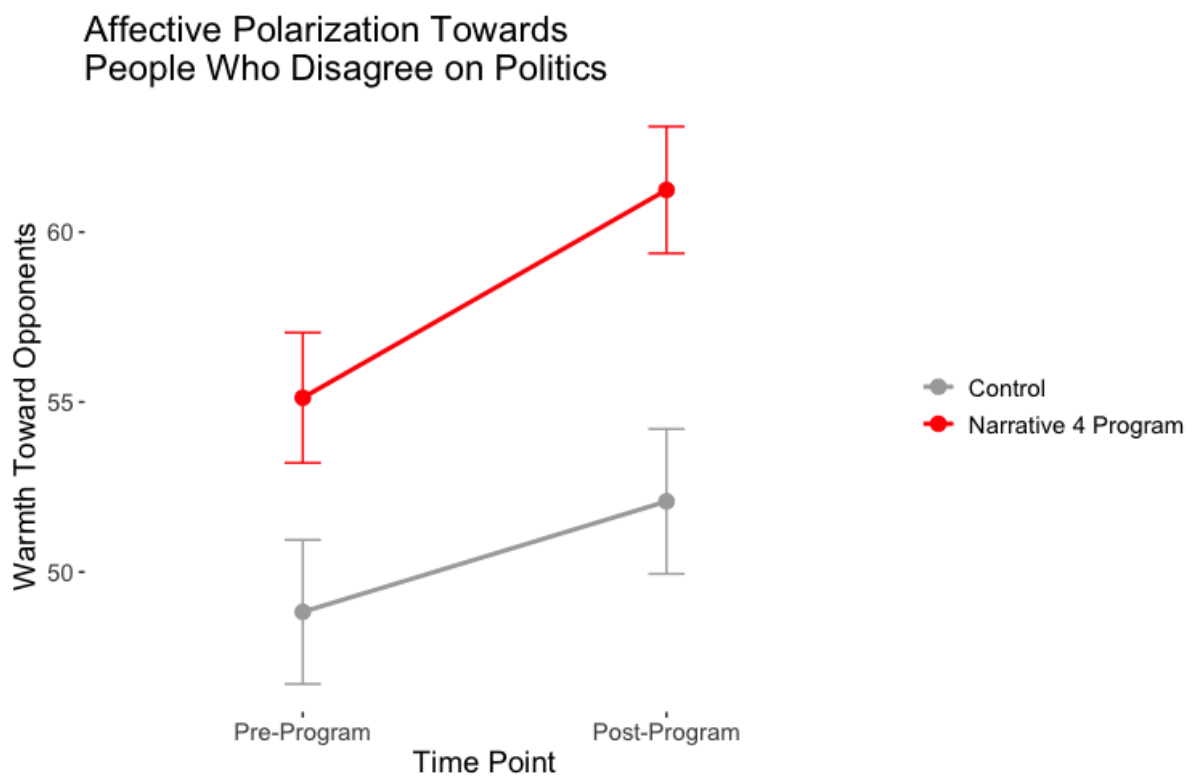


Figure 8. Effect of condition on affective polarization over time.

**Section 1 Discussion.** Taken together, results from Section 1 suggested Narrative 4 programming is beneficial for a variety of outcomes (e.g., empathy, perspective taking, and many pro-social outcomes). Importantly, overall, even when controlling for the effect of pre-existing attitudes and participants' school, classroom, and grade level, results remained significant, suggesting Narrative 4 programming is effective for a wide range of students across varying schools, classrooms, and is effective for both 10th and 11th graders. These findings, while the first to test these effects, provide promising evidence for the broader efficacy of Narrative 4 programming in U.S. high schools for promoting more empathy, pro-sociality, and reduced polarization, while also highlight the merits of storytelling interventions more broadly.

### ***Section 2: Exploring the Role of Empathy in Pro-Social Outcomes***

In our second set of analyses, we examined the mediational power of empathy for explaining how Narrative 4 programming can produce more pro-social outcomes in participants. To do this, we conducted several mediational models using PROCESS (Hayes & Rockwood, 2020). In each model, condition was entered as the independent variable and post-test empathy towards those with diverse opinions was the mediator, but the outcome variable in each model differed. In each analysis, our outcome measure was one of the pro-social variables (e.g., civic engagement, affective polarization etc.). Results are described below. Full mediation results are presented in Table S11 in supplementals.

In terms of civic engagement (i.e., participants' self-reported willingness to positively impact their community in the future), results suggested empathy significantly mediated effects (indirect effect=.23, SE=.06, 95% CI [.11, .36]). Participants in Narrative 4 programming (as compared to the control condition) were significantly more empathetic at the post-test time point (B=.44, SE=.12, 95% CI [.21, .68]), and more empathy led to greater support for participating in civic engagement in the future (B=.52, SE=.05, 95% CI [.41, .62]).

In terms of civic diversity (i.e., support for learning about people with diverse backgrounds and beliefs), results suggested that again empathy significantly mediated effects (indirect effect = .30, SE=.08, 95% CI [.15, .45]). Participants in Narrative 4 programming were significantly more empathetic at the post-test time point as compared to the control condition (B=.47, SE=.12, 95% CI [.24, .70]), and more empathy led to greater support for civic diversity (B=.63, SE=.05, 95% CI [.54, .72]).

Empathy also significantly mediated effects (indirect effect=.20, SE=.06, 95% CI [.10, .32]) when examining the relationship between condition and respect towards community members. Participants in Narrative 4 programming (vs. control) were significantly more empathetic at the post-test time point (B=.44, SE=.12, 95% CI [.21, .67]), and more empathy led to greater respect (B=.46, SE=.04, 95% CI [.38, .53]).

Finally in terms of affective polarization, empathy also significantly mediated effects (indirect effect=.11, SE=.05, 95% CI [.03, .22]). Participants in Narrative 4 programming were significantly more empathetic at the post-test time point when compared to participants in the control condition (B=.58, SE=.13, 95% CI [.32, .84]). Further, more empathy led to greater warmth towards political opponents (i.e., less affective polarization) (B = .20, SE=.07, 95% CI [.06, .33]).

**Section 2 Discussion.** The Section 2 findings suggest that increased empathy is a key mechanism for explaining the efficacy of Narrative 4 programming in promoting many pro-social outcomes (e.g., civic engagement) and reducing political polarization. Results from Section 1 and 2 suggest Narrative 4 programming is highly effective and beneficial for fostering empathy in high school age students, but how do participants feel about their experiences with Narrative 4? We turn to that next.

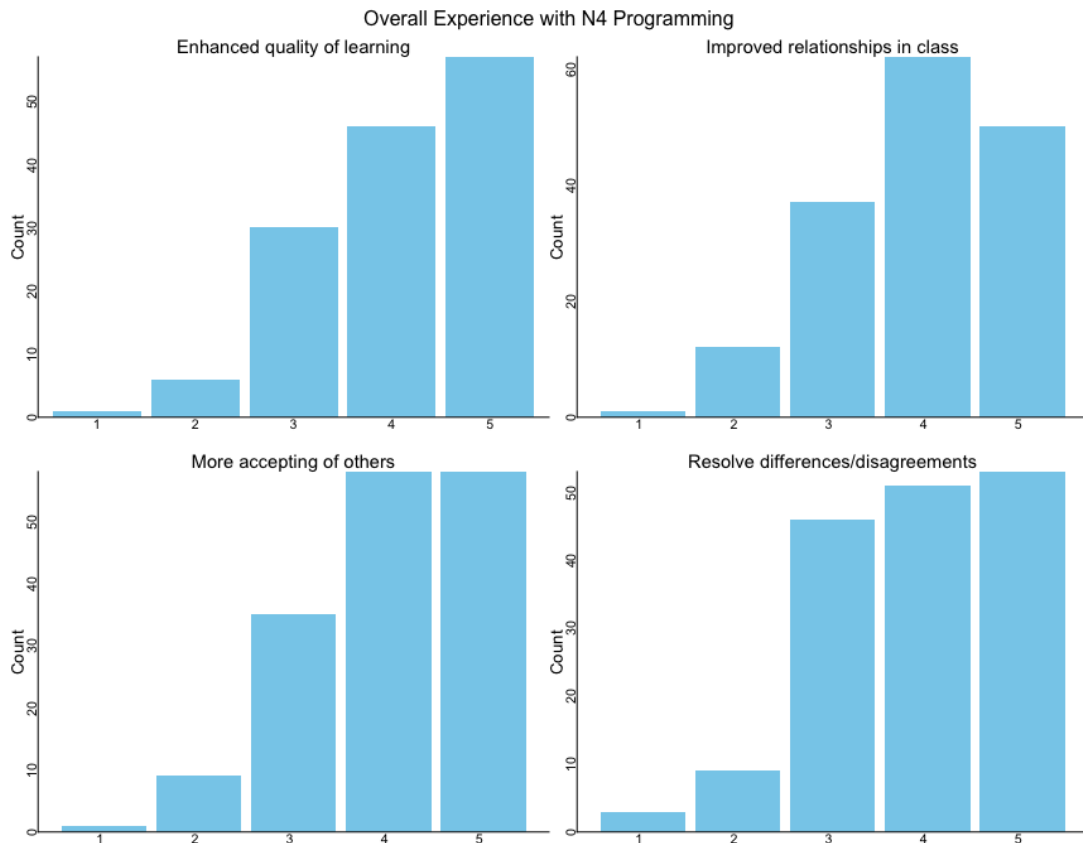
### ***Section 3: Evaluations of Narrative 4 Programming***

In our final set of analyses, we examined how those who went through Narrative 4 programming evaluated the experience overall and the story exchange experience specifically. Only participants that participated in the Narrative 4 programming (and not the control condition) were included in these analyses. The distribution of their answers is presented below.

**Evaluations of Narrative 4 Programming Overall.** Participants in the Narrative 4 programming condition were asked several questions connected to their perceptions and experiences of Narrative 4 programming. Participants reported the extent to which their experiences with Narrative 4 have “enhanced the quality of learning in my class(es)”, “improved relationships within my class(es)”, “taught me to be more accepting of others”, and “helped me resolve differences or disagreements in class”. Participants responded to each item using a 5-point scale from “Strongly Disagree” to “Strongly Agree”.

Results indicated that students believe Narrative 4 programming enhanced the quality of learning within their classes ( $M=4.61$ ,  $SD=1.64$ ). A one-sided one-sample t-test indicated participant scores were significantly higher than the mid-point,  $t(161)=12.48$ ,  $p<.001$ , meaning responses were significantly above the neutral mid-point of the scale suggesting participants overall positively evaluated Narrative 4 programming in terms of learning enhancement. Similar results emerged when participants considered the extent to which Narrative 4 programming improved relationships within their classes ( $M=3.91$ ,  $SD=.94$ ). Again, the one-sided one-sample t-test indicated participant scores were significantly higher than the neutral mid-point  $t(161)=12.35$ ,  $p<.001$ . Participants also reported that the Narrative 4 programming taught them to be more accepting of others ( $M=4.01$ ,  $SD=.93$ ), and these scores were significantly above the neutral mid-point as well  $t(160)=13.83$ ,  $p<.001$ . Finally, participants reported that Narrative 4 programming had helped them to resolve differences and

disagreements in class ( $M=3.88$ ,  $SD=1.00$ ). The one-sided one-sample t-test again suggested participant responses were significantly higher than the neutral mid-point,  $t(161)=11.21$ ,  $p<.001$ . See Figure 9. Taken together, these analyses suggest participants had overall favorable views of Narrative 4 programming.

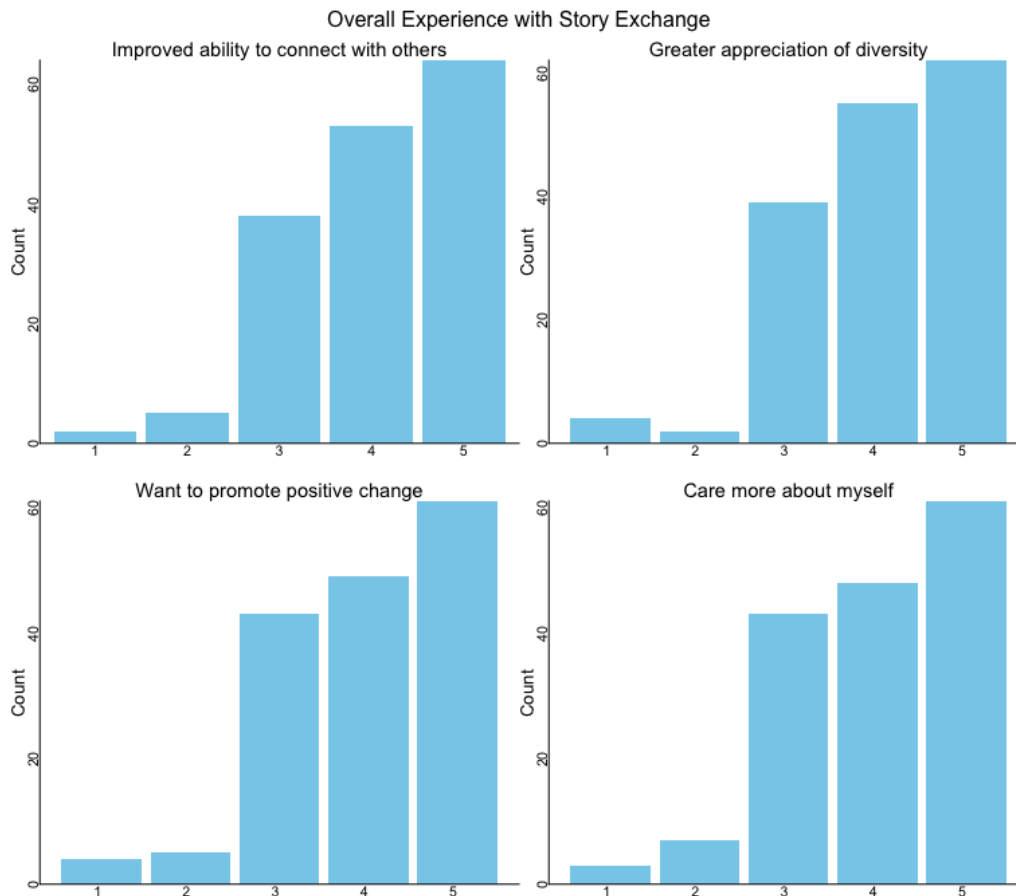


*Figure 9.* Distribution of responses. X-axis represents the 5-point Likert scale from Strongly Disagree (1) to Strongly Agree (5). The Y-axis represents the number of participants who responded to each Likert option.

**Evaluations of Story Exchange Experience.** Participants in the Narrative 4 programming condition were also asked several questions connected to their perceptions and experiences of Narrative 4 programming. Participants considered the story exchange they completed as part of the Narrative 4 programming. Participants responded to the following statements: “I feel that sharing personal stories in this way improves my ability to connect with others”, “I appreciate diversity more now that I have participated in a Narrative 4 story

exchange”, “This story exchange experience makes me want to work to promote positive change in my community”, and “I feel that hearing my partner tell my story helped me care more about myself”. Participants responded to each item using a 5-point scale from “Strongly Disagree” to “Strongly Agree”.

Results indicated that participants believed Narrative 4 programming enhanced their ability to connect with others ( $M=4.06$ ,  $SD=.93$ ). A one-sided one-sample t-test indicated participant scores were significantly higher than the midpoint  $t(161)=14.52$ ,  $p<.001$ , meaning participants positively evaluated the role of the story exchange in enhancing their connection with others. Similar results emerged when participants considered the extent to which the story exchange increased their support for diversity ( $M=4.04$ ,  $SD=.95$ ), again participant scores were significantly higher than the neutral midpoint  $t(161)=14.01$ ,  $p<.001$ . Participants also reported that since the story exchange, they now are more motivated to make positive change in their community ( $M=3.98$ ,  $SD=1.00$ )--participant scores were significantly above the neutral midpoint  $t(161)=12.46$ ,  $p<.001$ . Finally, participation in the story exchange helped them care more about themselves ( $M=3.97$ ,  $SD=.99$ ). The one-sided one-sample t-test again suggested participant responses were significantly higher than the neutral mid-point,  $t(161)=11.21$ ,  $p<.001$ . In total, these analyses suggest participants had overall positive views of the story exchange exercise. See Figure 10.



*Figure 10.* Distribution of responses. X-axis represents the 5-point Likert scale from Strongly Disagree (1) to Strongly Agree (5). The Y-axis represents the number of participants who responded to each Likert option.

**Section 3 Discussion.** Taken together, these results suggest participants had positive evaluations of Narrative 4 programming in general, and of the story exchange exercise in particular. These results point to the positive experience the high school students had in this study and are a promising sign for the participant experience of Narrative 4 programming in classrooms that choose to partake in this programming in the future.

### General Discussion

Taken together, these results highlight the merits of Narrative 4 school programming for improving both empathy and a variety of pro-social outcomes among young people across diverse schools in Kentucky USA. This programming promoted greater empathy towards

others (as compared to the control condition) which in turn fostered greater pro-sociality and reduced affective polarization. Further, evidence suggests this programming aided participants in skills such as active listening and perspective taking—highlighting the programs’ benefits across a wide range of outcomes. Finally, participants reported their experience with Narrative 4 was positive suggesting it is not just an effective intervention, but one that young people enjoy and see value in.

Additionally, across analyses, when controlling for participants’ pre-existing attitudes, the effect of classroom, grade-level, and school, results remained largely consistent—highlighting the robustness of Narrative 4’s program and its efficacy across many contexts. Not only did effects remain stable, but in general the effect of school, grade-level and classroom did not significantly influence any outcome variables. This lack of an effect of school, grade, and classroom, suggests the efficacy of Narrative 4 programming on these outcome variables is likely to translate to other high schools across the United States. While further testing is needed to ensure this is the case—we believe this first evaluation is promising regarding the generalizability of positive outcomes for American high school students who engage with Narrative 4 programming.

These findings provide important insights for scholars attempting to develop interventions to improve empathy and pro-sociality (especially among adolescents in the United States), but can also be leveraged by scholars to develop new interventions with new populations and in other contexts (e.g., attempting to build empathy between polarized adults). This work highlights the power of storytelling to build empathy for diverse groups of people, in turn increasing pro-sociality and reducing division with those we disagree with. This work is in-line with established academic research on the power of narratives to bridge divides (Kubin et al., 2021; 2023) but shows how such interventions can be brought to the real world through educational interventions.

These findings are also important for practitioners and policy makers, by highlighting how society can promote empathy and pro-sociality through school-based interventions. We hope these findings point both practitioners and policy makers into promising evidence-based directions for educational programming that ultimately fosters compassion, connection, and civic action and bridges divides among youth. Additionally, we hope this research provides further support for the efficacy of Narrative 4's education programming—aiding in Narrative 4's pursuit of bringing this intervention into more schools across the United States and beyond.

These results also highlight the ways researchers and practitioners can collaborate to connect research to practice and rigorously and scientifically evaluate on-the-ground programming. Through this partnership both academics and practitioners on the team worked together to reach each other's goals. Through this experience, we have all benefitted from the strengths of the others on the team. For example, Narrative 4 benefitted by being able to experimentally show the efficacy of their program, while the academics benefitted by testing an intervention on the ground in a real world context. We hope this collaboration inspires others to develop evidence backed interventions that can be implemented in the real world through partnerships between academics and practitioners.

### **Limitations**

This research has many merits by using rigorous methodology (promoting internal validity) while also conducting this research in an ecologically valid context (i.e., schools across Kentucky)—promoting external validity. While we believe this is a promising first step, there are limitations to this work which we outline further below. We view these limitations as promising future lines of research for both academic and practitioners.

While this study provides a promising experimental methodology by including a control condition, participants (and/or classrooms) were not randomly assigned to condition. Teachers were asked (before the school year began) to select some of their classes to be within

the Narrative 4 intervention program while others were placed in the control condition. We requested teachers to do this with the goal of classes with larger numbers of students being able to partake in the Narrative 4 programming—(potentially) benefitting more students within the school. This is why there were a larger number of students in the Narrative 4 programming as compared to the control condition. While we made this decision to provide more students the opportunity to partake in the programming, this also means students (and classrooms) were not randomly assigned to each condition. While we found no evidence of systemic differences in pre-test ratings by students in the control and Narrative 4 programming conditions (reducing the likelihood students were inherently different from one another in each condition), we still want to caution readers that not having random assignment could have led to unforeseen systematic differences between groups that are not accounted for in the current research. Future studies should further test effects through random assignment.

Additionally, while effects were consistent across schools, grade levels, and classrooms in this study, interpretation should still consider how generalizable these results are. While effects were robust across very different schools in Kentucky (urban vs rural, varying SES, and varying racial diversity in each school), further research is needed to examine the efficacy of this program in other contexts. While we believe it is reasonable to suggest this is promising evidence for the efficacy of this programming in American high schools, further testing is needed to confirm this. Additionally, we do not claim these findings will necessarily translate to other countries (e.g., British high schools) nor to other contexts (e.g., U.S. adults). However, we hope to further test the program's ability to foster empathy and pro-sociality in other contexts in the future.

Finally, we caution that the measures used in this study were self-report measures. While these measures are well-established in the field of psychology, self-report does not represent actual behaviors and beliefs but rather ones' own self-reported beliefs (and intention

to engage in certain behaviors in the future). While using such established self-report measures in this research is a good first step, we encourage scholars and practitioners to use other behavioral, implicit, and observational measures in the future to further broaden understandings of how such interventions may improve pro-social outcomes in young people and beyond.

### **Conclusion**

Practitioners and scholars are often working on similar problems facing society (e.g., the problem of diminishing empathy) and often consider and develop similar interventions (e.g., narrative storytelling). Yet, rarely do scholars and practitioners collaborate to rigorously examine interventions in externally valid contexts. In this work, we provide a case study for how scholars and practitioners can work together to evaluate the efficacy of interventions. We find Narrative 4 programming is highly successful in promoting a variety of positive outcomes including empathy, curiosity, and perspective taking. This program also promotes pro-sociality by increasing civic engagement, respect for others, and even reducing affective polarization. Further participants evaluate their experiences with the program positively. Narrative 4 programming shows promise across diverse schools and classrooms—pointing to the intervention’s potential promise for other high schools across the United States and beyond. These findings are a promising first step in understanding how we can foster a more connected and empathetic society.

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**Supplemental Materials****Promoting Empathy, Connection, and Pro-Sociality Through Storytelling in American High Schools: A Collaboration Between Academic and Practitioners**

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### Effect of Condition on Empathy

Table S1. *SEM Analyses for Empathy by Condition*

	<b>Empathy in Class Post-Program B, SE, p-value</b>	<b>Empathy Towards Others Post-Program B, SE, p-value</b>
<b>No Covariates</b>		
<b>Condition</b>	B=.50, SE=.10, $p<.001$	B=.40, SE=.10, $p<.001$
<b>With Covariates</b>		
<b>Condition</b>	B=.50, SE=.10, $p<.001$	B=.42, SE=.10, $p<.001$
<b>Empathy Pre-Test</b>	B=.38, SE=.05, $p<.001$	B=.45, SE=.05, $p<.001$
<b>School</b>	B=-.002, SE=.04, $p=.96$	B=-.001, SE=.04, $p=.97$
<b>Grade</b>	B=.07, SE=.10, $p=.50$	B=-.05, SE=.10, $p=.64$
<b>Classroom</b>	B=-.01, SE=.01, $p=.22$	B=-.002, SE=.01, $p=.87$

**Effect of Condition on Civic Engagement and Support for Civic Diversity**

**Table S2. SEM Analyses for Civic Outcomes by Condition**

	<b>Civic Engagement Post- Program B, SE, p-value</b>	<b>Civic Diversity Post-Program B, SE, p-value</b>
<b>No Covariates</b>		
<b>Condition</b>	B=.21, SE=.10, $p=.04$	B=.36, SE=.09, $p<.001$
<b>With Covariates</b>		
<b>Condition</b>	B=.20, SE=.10, $p=.03$	B=.32, SE=.09, $p=.001$
<b>Pre-Test Score</b>	B=.54, SE=.05, $p<.001$	B=.47, SE=.06, $p<.001$
<b>School</b>	B=-.07, SE=.04, $p=.07$	B=-.04, SE=.04, $p=.29$
<b>Grade</b>	B=.10, SE=.10, $p=.34$	B=.05, SE=.10, $p=.63$
<b>Classroom</b>	B=.000, SE=.009, $p=1.00$	B=-.002, SE=.009, $p=.80$

**Effect of Condition on Perspective Taking**

**Table S3. SEM Analyses for Perspective Taking by Condition**

	<b>Perspective Taking With Classmates Post-Program B, SE, p-value</b>	<b>Perspective Taking With Others in Community Post-Program B, SE, p-value</b>
<b>No Covariates</b>		
<b>Condition</b>	B=.31, SE=.08, $p<.001$	B=.35, SE=.08, $p<.001$
<b>With Covariates</b>		
<b>Condition</b>	B=.30, SE=.08, $p<.001$	B=.33, SE=.08, $p<.001$
<b>Perspective Taking Pre-Test</b>	B=.50, SE=.06, $p<.001$	B=.34, SE=.06, $p<.001$
<b>School</b>	B=.004, SE=.03, $p=.90$	B=-.003, SE=.03, $p=.92$
<b>Grade</b>	B=.02, SE=.08, $p=.78$	B=.002, SE=.09, $p=.98$
<b>Classroom</b>	B=-.02, SE=.008, $p=.009$	B=-.01, SE=.008, $p=.20$

**Effect of Condition on Curiosity**

**Table S4. SEM Analyses for Curiosity by Condition**

	<b>Curiosity In Class Post-Program B, SE, p-value</b>	<b>Curiosity of Differing Beliefs Post-Program B, SE, p-value</b>
<b>No Covariates</b>		
<b>Condition</b>	B=.29, SE=.09, $p=.002$	B=.28, SE=.09, $p=.002$
<b>With Covariates</b>		
<b>Condition</b>	B=.30, SE=.10, $p=.002$	B=.26, SE=.09, $p=.004$
<b>Curiosity Pre-Test</b>	B=.39, SE=.06, $p<.001$	B=.38, SE=.06, $p<.001$
<b>School</b>	B=-.01, SE=.04, $p=.79$	B=.009, SE=.04, $p=.80$
<b>Grade</b>	B=-.05, SE=.11, $p=.65$	B=-.05, SE=.10, $p=.64$
<b>Classroom</b>	B=-.001, SE=.01, $p=.94$	B=-.001, SE=.009, $p=.90$

**Effect of Condition on Respect**

**Table S5. SEM Analyses for Respect by Condition**

	<b>Respect In Class Post-Program B, SE, p-value</b>	<b>Respect in Community Post-Program B, SE, p-value</b>
<b>No Covariates</b>		
<b>Condition</b>	B=.29, SE=.09, $p=.001$	B=.32, SE=.10, $p=.001$
<b>With Covariates</b>		
<b>Condition</b>	B=.27, SE=.09, $p=.004$	B=.31, SE=.10, $p=.001$
<b>Respect Pre-Test</b>	B=.39, SE=.06, $p<.001$	B=.44, SE=.06, $p<.001$
<b>School</b>	B=-.05, SE=.04, $p=.22$	B=-.002, SE=.04, $p=.95$
<b>Grade</b>	B=-.04, SE=.10, $p=.71$	B=-.06, SE=.10, $p=.55$
<b>Classroom</b>	B=-.001, SE=.009, $p=.89$	B=-.002, SE=.01, $p=.86$

**Effect of Condition on Active Listening**

**Table S6. SEM Analyses for Active Listening by Condition**

<b>Active Listening Post-Program</b>	
<b>B, SE, p-value</b>	
<b>No Covariates</b>	
<b>Condition</b>	B=.32, SE=.09, $p < .001$
<b>With Covariates</b>	
<b>Condition</b>	B=.26, SE=.09, $p = .005$
<b>Pre-Test Score</b>	B=.51, SE=.07, $p < .001$
<b>School</b>	B=-.003, SE=.04, $p = .93$
<b>Grade</b>	B=.06, SE=.10, $p = .52$
<b>Classroom</b>	B=-.004, SE=.009, $p = .68$

**Effect of Condition of Perceived Class Climate**

**Table S7. SEM Analyses for Class Climate by Condition**

<b>Class Climate Post-Program</b>	
<b>B, SE, p-value</b>	
<b>No Covariates</b>	
<b>Condition</b>	B=.55, SE=.16, $p=.001$
<b>With Covariates</b>	
<b>Condition</b>	B=.54, SE=.16, $p<.001$
<b>Class Climate Pre-Test Score</b>	B=.43, SE=.05, $p<.001$
<b>School</b>	B=-.07, SE=.06, $p=.30$
<b>Grade</b>	B=-.05, SE=.17, $p=.76$
<b>Classroom</b>	B=-.008, SE=.02, $p=.63$

**Effect of Condition on Affective Polarization**

**Table S8. SEM Analyses for Affective Polarization by Condition**

<b>Affective Polarization Post-Program</b>	
<b>B, SE, p-value</b>	
<b>No Covariates</b>	
<b>Condition</b>	B=9.16, SE=3.72, $p=.01$
<b>With Covariates</b>	
<b>Condition</b>	B=4.93, SE=3.32, $p=.13$
<b>Affective Polarization Pre-Test Score</b>	B=.63, SE=.06, $p<.001$
<b>School</b>	B=1.33, SE=1.333, $p=.32$
<b>Grade</b>	B=1.15, SE=3.50, $p=.74$
<b>Classroom</b>	B=-.18, SE=.36, $p=.61$

## Belonging and Authenticity Measures and Results

Across surveys, participants also responded to the following measures:

*Belonging.* Students' sense of belonging in their classroom was assessed using a 12-item measure adapted from Malone et al., (2012). Example item “I feel accepted by others in class”. Pre-Program  $\alpha=.93$ , Post-Program  $\alpha=.91$

*Authenticity.* Students' sense of themselves being authentic in school was assessed using a 12-item measure adapted from Wood et al., (2008). Example item “I am true to myself in most situations”. Pre-Program  $\alpha=.70$ , Post-Program  $\alpha=.86$

Results. Overall, Narrative 4 programming (vs. control) did not lead to significant differences in participants' perceptions of their own belonging in class nor their self-reported authenticity. See Table S9 and Table S10.

**Table S9.**

Outcome variable	Pre-test control	Pre-test Narrative 4	Post-test control	Post-test Narrative 4
<b>Belonging</b>	3.55(.90)	3.47(.81)	3.55(.82)	3.51(.78)
<b>Authenticity</b>	4.92(.75)	4.93(.87)	4.93(1.03)	5.02(1.12)

**Table S10. SEM Analyses for Belonging and Authenticity by Condition**

	<b>Belonging Post-Program B, SE, p-value</b>	<b>Authenticity Post-Program B, SE, p-value</b>
<b>No Covariates</b>		
<b>Condition</b>	B=-.04, SE=.10, $p=.66$	B=.09, SE=.14, $p=.53$
<b>With Covariates</b>		
<b>Condition</b>	B=.14, SE=.09, $p=.10$	B=.10, SE=.14, $p=.50$
<b>Pre-Test Score</b>	B=.56, SE=.05, $p=.001$	B=.43, SE=.08, $p<.001$
<b>School</b>	B=-.02, SE=.04, $p=.50$	B=-.02, SE=.06, $p=.77$
<b>Grade</b>	B=-.01, SE=.09, $p=.91$	B=.11, SE=.15, $p=.58$
<b>Classroom</b>	B=-.03, SE=.009, $p=.006$	B=.001, SE=.02, $p=.94$

## Mediation Analyses

**Table S11. Mediation Results**

Effect of Condition on Empathy (SE), [95%CI]	Effect of Empathy on Outcome (SE), [95%CI]	Index of Moderated Mediation Effect (SE), [95%CI]	Total Effect (SE), [95%CI]	Direct Effect (SE), [95%CI]
<b>Civic Engagement</b>				
B=.44(.12) [.21, .68]	B=.52(.05) [.41, .62]	B=.23(.06) [.11, .36]	B=.24(.12) [.003, .48]	B=.01(.11) [-.20, .22]
<b>Civic Diversity</b>				
B=.47(.12) [.24, .70]	B=.63(.05) [.54, .72]	B=.30(.08) [.15, .45]	B=.46(.12) [.23, .69]	B=.16(.09) [-.02, .34]
<b>Respect</b>				
B=.44(.12) [.21, .67]	B=.46(.04) [.38, .53]	B=.20(.06) [.10, .32]	B=.31(.10) [.12, .50]	B=.11(.08) [-.05, .27]
<b>Affective Polarization</b>				
B=.58(.13) [.32, .84]	B=.20(.07) [.06, .33]	B=.11(.05) [.03, .22]	B=.31(.14) [.04, .58]	B=.20(.14) [-.08, .47]

*Note:* All variables were standardized for these analyses (except condition). Condition = 0 is control, Condition = 1 is Narrative 4 programming.