

Harnessing the Power of Narrative to Improve Perspective-Taking and Empathy: Final Report for Heterodox Academy's *Increasing Open Inquiry on College Campuses* Research Grant

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When interacting with, observing, or thinking about other individuals, perceivers struggle to fully understand and empathize with a target person's perspective, experiences, emotions, goals, and situational constraints. This lack of perspective-taking and target-oriented empathy often results in erroneous negative judgments about an observed target person. We conducted two experimental studies to examine whether a narrative cognition mindset enhances undergraduate student's perspective-taking and empathy skills. In each study, participants were randomly assigned to a narrative cognition intervention or control. Both groups were asked to keep a record of their daily observations about others for 10 days. Afterward, perspective-taking and empathy was measured. Results indicated that the narrative cognition intervention enhanced students' perspective-taking and empathy behavior, but no effects on self-reported measures of perspective-taking and empathy were found. Overall, results indicated that daily storytelling was an enjoyable and effective method to create mindset habit which led perceivers to draw more thoughtful and accurate judgments of others.

When interacting with, observing, or thinking about other individuals, perceivers view the other person through an egocentric lens, i.e., perceivers interpret events and observations filtered through their own background, expectancies, and experiences (Bruner, 1957). As a result, perceivers struggle to recognize a target person's perspective, experiences, emotions, goals, and situational constraints. This lack of perspective-taking and target-oriented empathy often results in erroneous negative judgments about an observed target person, a harmful tendency that is exacerbated when the target person belongs to a different social group than the perceiver (Pettigrew, 1998). Our research suggests that narrative cognition reduces egocentric tendencies and encourages perspective-taking and empathy for others in the social environment. Accordingly, we conducted an intervention to examine whether perspective-taking and empathy skills would be enhanced through the development of a narrative cognition mindset.

Cognitive Biases in Social Perception

For decades, psychological research has long acknowledged that the perception process is not veridical; rather, perceivers view the world through the

egocentric lens of their own backgrounds, experiences, and expectations (e.g., Bruner, 1957). This filtered process is often considered adaptive as it allows perceivers to quickly identify and respond to the most relevant and salient aspects of a given situation. However, overreliance on egocentric perspectives, and underutilization of perspective-taking and empathy has been implicated in wrongful convictions (Findley & Scott, 2006), academic underachievement (Rosenthal & Jacobson, 1968), and the misinterpretation of scientific evidence (Loehle, 1987). In each case, an egocentric tendency coupled with diminished perspective-taking and empathy interfered with accurate, unbiased processing of information. Research indicates that egocentric perspectives in social perception influence judgments automatically and without conscious awareness (Todorov & Uleman, 2002), suggesting that such biases are an inevitable part of social perception. Here, we propose that the development of a narrative cognition mindset can disrupt this reliance on hasty and faulty assumptions, assumptions that interfere with accurate social judgments and impede harmonious interpersonal and intergroup relationships.

Narrative and Perspective-Taking

The definition of narrative varies among scholars; but at its essence, a narrative represents causally-linked actions or events that unfold over time (e.g., Graesser & Ottati, 1995). Developing a narrative

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cognition mindset is particularly well-suited to an invention with a goal of creating long-term, positive changes because information organized into a narrative is processed more quickly (Graesser et al., 1980), better remembered (Graesser & Ottati, 1995), and more likely to influence judgments (Adaval & Wyer, 1998) than the same information organized into non-narrative frameworks. The development of a narrative cognition mindset, thus, could have particularly powerful effects on perceivers' perceptions and behavior.

Narrative cognition is tightly bound with perspective-taking and other-oriented empathy. Unlike abstract, logic-based paradigmatic thinking, narrative cognition focuses attention, cognition, and emotional responses on the narrative protagonist and the protagonist's situation, experiences, intentions, emotions, and view of the world (Costabile, 2016; Kaufman & Libby, 2012; Zwaan et al., 1995). Readers of narratives take the perspective of the narrative protagonists, a tendency that has been found in children as young as three years old (Rall & Harris, 2000). In doing so, readers mentally simulate a protagonist's emotional states (Gernsbacher et al., 1992), goals (Houghton & Klin, 2019), auditory experiences (Brunye et al., 2010), and perceptual experiences (Brunye et al., 2012), suggesting that readers are not merely visualizing the events in the narrative, but rather they psychologically experience the narrative events as the protagonists do. In turn, narrative exposure has been found to predict empathy (Panero et al., 2016), interpersonal sensitivity (Djikic et al., 2013; Mar et al., 2006), and positive attitudes toward stigmatized individuals (Kaufman & Libby, 2012).

In our own work (Costabile, 2011, 2016), we found that college students are adept at constructing narratives from brief descriptions of behaviors (e.g., "Steve stepped in front of an elderly man in line") with very minimal instruction. Participants reported that constructing a narrative felt easy and natural (Costabile, 2016). Moreover, analyses indicated that participants spontaneously engaged in perspective-taking and empathy with the observed target in the course of narrative construction and in turn, perceivers were less likely to demonstrate common egocentric tendencies, such as attributional biases and confirmation biases (Costabile, 2016; Costabile & Madon, 2019), leading to more accurate and less biased social perceptions.

Mindset Habit

A mindset activated in one context can influence perceptions in a second, unrelated context (Miele

& Molden, 2010). Research suggests that multiple rehearsals of perspective-taking tasks might create a mindset habit (Finkel et al., 2013). Given the ease with which college students constructed perspective-taking narratives in our own studies, we propose that a narrative cognition mindset will foster perspective-taking and empathy abilities, and through mindset rehearsal, participants will develop a narrative mindset habit that would increase the tendency for perceivers to engage in perspective-taking and empathy in their daily experiences.

Pilot Study

To examine whether rehearsal of narrative mindset would influence perspective-taking judgments in a second, unrelated context, 60 undergraduate college students viewed a series of behaviors (e.g., "Chad blushed when a group of girls walked by a behavior"). Participants were randomly assigned to either a narrative mindset condition in which they were instructed to construct a story based on each behavior or to an impression condition in which they were instructed to form a general impression of each person described in the behavior. After a brief distractor task, participants were then asked to describe an interpersonal conflict in their life in which they felt they had been wronged by someone else. Perspective-taking was assessed by the degree to which participants attributed the conflict to chronic, internal characteristics of the transgressor (egocentric judgment) or to external, temporary characteristics (perspective-taking judgment). Results indicated that participants randomly assigned to the narrative cognition mindset condition did in fact show perspective-taking tendencies in that they were more likely to attribute the conflict to temporary external characteristics than to chronic internal characteristics, whereas those given impression formation mindset illustrated the opposite tendency, $F(1, 58) = 5.98, p = .02, \eta_p^2 = .09$. This pilot study provides initial evidence that a rehearsal of a narrative mindset can affect perspective-taking tendencies in an unrelated context.

Overview of Experiments

We conducted two online experiments to test the efficacy of our narrative mindset habit intervention on the experience of perspective-taking and empathy. Each experiment randomly assigned participants to either the narrative mindset intervention or to the control condition. Both experiments recruited a sample of undergraduate students from a large Midwestern U.S. public university. In addition to the self-report measures requested in the call for proposals, we included behavioral measures of perspective-taking and

empathy to assess how these variables influence interpersonal and intergroup judgments, such as blame and stereotyping. We determined that our intervention would be considered effective if participants who completed the narrative mindset intervention demonstrated greater perspective-taking and empathy than those who completed the control condition.

Method

Study Design

This project used a 2 (within subjects: pre-intervention perspective-taking and empathy measures versus post-intervention perspective-taking and empathy measures) X 2 (between subjects: narrative cognition intervention mindset versus control mindset) mixed design model. Experiments took place online using a web-based platform. Participants were randomly assigned to either a narrative intervention condition or a control condition. Each condition consisted of three phases: initial session, rehearsal sessions, and testing session.

Power Analysis

We conducted a power analysis using a repeated measures within-between interaction. Due to the possibility for smaller effect sizes in the intervention than found in the pilot study due to the online nature of the intervention and potential lack of participant compliance, we estimated the effect size to be $\eta_p^2 = .05$. The test-retest reliability of the perspective-taking and empathy subscales of the Interpersonal Reactivity Index (IRI; Davis, 1980) ranges from .67-.80 (Fernandez et al., 2011), thus we estimated within-subject correlation of .70, and power = .95. Results indicated a minimum sample size of 48 participants per experiment (G*Power, Version 3.1; Faul et al., 2007). Given the novel nature of this intervention, we aimed for a sample of 150 participants completing Experiment 1, and 300 participants for Experiment 2. Participants were recruited via Iowa State University listserv postings. Participants were compensated \$40 for completion of the study and received partial payment in relation to the amount of progress they made throughout the study.

Participants

In Experiment 1, 176 students participated in the introductory session. All participants were currently enrolled as undergraduate students at the time of their participation, with an average of two years duration in college. Of this sample, 73 identified as men, 80 identified as women, 2 identified as nonbinary, and 21 individuals did not provide gender information. Participants' age ranged from 18 to 27 years ($M =$

20.08 years, $SD = 1.39$). Seventy-eight percent of the sample identified as White, 6% as Latino, 1% as Asian, 1% as Asian Indian, 2% as Native American, 2% as Middle Eastern, and 11% did not indicate their ethnic identity. Of the initial sample, 121 participants completed the final testing session. Attrition rate was higher for those in the narrative condition (46%) when compared to the control condition (12%); to account for this, we slightly over-assigned participants to the narrative mindset condition resulting in 53 participants in the narrative mindset condition and 68 in the control mindset condition.

In Experiment 2, 388 participants completed the introductory session. All participants were enrolled as undergraduate students at the time of their participation, with an average of two years duration as an undergraduate student. Of this sample, 135 identified as men, 237 identified as women, 10 identified as nonbinary, and 6 individuals did not provide gender information, with a mean age of 20.41 years, $SD = 1.82$ (ages ranged from 18 to 35). Eighty-six percent of the sample identified as White, 7% identified Latino, 4% identified as Asian, 2% identified as Asian Indian, 1% identified as Black or African-American, 0.5% identified as Native American, and 0.3% identified as Middle Eastern (sum exceeds 100% as participants were asked to select all categories that best describe them). Of the initial sample, 288 participants completed the final testing session. Attrition rate was higher for those in the narrative condition (32%) when compared to the control condition (19%); to account for this possibility, we slightly over-assigned participants to the narrative mindset condition resulting in similar final participant numbers across conditions: 143 participants in the narrative mindset condition and 145 in the control mindset condition.

Procedure

Narrative Mindset Intervention Initial Session

First, participants completed baseline measures of perspective-taking and empathy. Participants were then introduced to the concept of narrative cognition, the important social benefits of engaging in narrative cognition, and how participants can construct their own narratives from events they observe by reflecting on situational and motivational aspects driving the observed behavior. After receiving instructions online, participants practiced constructing a narrative from discrete behaviors using provided guidelines. In Experiment 1, participants were asked to create a story using five specific features of narrative cognition from their observations: (1) identify the spe-

cific person and the specific behavior (e.g., “The student slipped on the steps”), (2) reflect on the setting of the behavior, such as time of day and location (e.g., “It was early morning outside of Carver Hall on a cold January day”), (3) reflect on the general circumstances that might affect the behavior such as social, physical, or cultural environment (e.g., “It was a crowded time period between classes, it was snowy and wet, and difficult to see the steps”), (4) imagine the goals of the person observed (e.g., “She seemed to be running late for an appointment because she was in a rush, and perhaps moving too quickly for the slippery steps”), and (5) think about the conclusion and consequences of the behavior. Participants were encouraged to use their imaginations to fill in any information that they are unable to glean from their observations.

In Experiment 2, the narrative instructions were streamlined into two steps to make the task less onerous for participants to reduce participant attrition. Participants were merely asked to identify the specific person and behavior, and then they were asked to write their story of the event. When writing the story, participants were reminded to think about: the setting or general circumstances, description of what happened before the observed behavior, description of the characters’ goals, thoughts, or feelings during the events, description of what happened after the observed behavior, but they were not asked to write a response to each of these components, merely to use the components to guide the construction of a single narrative.

Consistent with best practices in intervention compliance, participants specified their implementation intentions (Gollwitzer, 1999) in which they specified when, where, and how they planned to construct their own narratives of behaviors they observe over the course of the next ten days, to identify possible barriers to the task (e.g., not engaging in social interaction one day), and to describe ways to overcome such barriers (e.g., observe online behavior or events in the news). Because autonomy enhances intrinsic motivation to engage in a behavior (Ryan & Deci, 2000), this intervention allows for considerable autonomy in how and when narrative construction would occur in a given day.

Narrative Mindset Intervention Rehearsal Sessions

To enhance mindset habit development, participants were asked to complete 8 rehearsal sessions, one per day, over the next 10 days. At each rehearsal session, participants were briefly reminded of the definition and value of narrative cognition, and then asked

to describe two narratives they constructed from behavior that they observed that day. It was expected that each rehearsal session would take approximately five minutes to complete.

To enhance the efficacy of the narrative mindset intervention in Experiment 2, on the first three rehearsal sessions participants were provided with sample behavior and narratives to read before they wrote their own to provide additional guidance into effective storytelling (e.g., sample behavior: *The student's face flushed red when the professor asked him to read aloud to the class*; sample narrative: *Patrick hadn't done the reading for his U.S. history class. He had been up all night studying for an exam in a different class, and so he was exhausted and unprepared for his history class the next day. To his chagrin, the professor called on him to read a passage of the assignment aloud to the class and explain what he means. Patrick felt his face turn red as he stumbled through his course materials trying to find the assigned articles. He was so embarrassed to be unprepared for class. He vowed to extra prepared for Thursday's class.*). Moreover, in addition to the two behaviors from their own daily observations, participants were asked to write a narrative from a behavior we provided to facilitate the selection of discrete behaviors that would serve well for narrative elaboration (e.g., “Barbara borrowed her mom's car and left it with an empty tank of gas”).

Control Condition Initial and Rehearsal Sessions

The initial and rehearsal sessions followed the structure of the narrative intervention condition; however, participants in the control condition were not encouraged to engage in narrative or perspective-taking strategies. Instead, they were instructed merely to describe the behaviors that they see others engage in and how those behaviors relate to underlying characteristics of the individuals performing the behavior.

In Experiment 2, the changes made in the narrative mindset rehearsal sessions were duplicated here in which participants received sample responses for the first three rehearsal sessions, and we asked to provide their impressions based on the same behaviors provided to participants assigned to the narrative mindset task.

Testing Session (Identical for Both Conditions)

Twelve days after the initial session, participants completed measures assessing their levels of perspective-taking and empathy for others. All participants completed the IRI (Davis, 1980) during the initial session and during the final testing session to assess metacognitive judgments regarding perspective-

taking and empathy. Additionally, participants completed brief behavioral measures of perspective-taking and empathy, described below. Visual perspective-taking and autobiographical events were assessed in Experiment 1, and novel target evaluation, stereotyping, and autobiographical events were assessed in Experiment 2.

Visual Perspective-Taking. Participants were asked to imagine the feeling of drawing an “E” on their forehead (Galinsky, et al., 2006) and indicate what direction the letter faces to assess whether the participant is reflecting on the self from their own perspective of themselves or from the perspective of someone else. This measure was not analyzed in this final report.

Autobiographical Memory. Participants were asked to describe a recent interpersonal conflict in their own life which was due to someone else’s transgression against them and to describe the cause of the transgression. Greater situational or own (participants’ attributions to themselves) attributions of blame and less person attributions to the other person would be considered evidence of greater perspective-taking and empathy.

Novel Target Evaluation. Participants read a paragraph describing ambiguous behaviors performed by an individual in which the behaviors could potentially suggest that the target individual is clumsy, or that potentially suggest that the target individual is in a situation in which they merely appear to be clumsy are not (e.g., dancing with a partner who is just learning the steps of a difficult dance). Participants were then asked to make trait judgments of the target (Costabile & Madon, 2016). Reduced trait attributions of clumsiness would be considered evidence of greater perspective-taking and empathy.

Stereotype Assessment. Participants read a first-person essay describing a young person experiencing homelessness. Participants were then asked to rate the narrator’s stereotypicality and their liking and empathy for the narrator (Vescio et al., 2003). This measure was not analyzed in this final report.

Self-Insight. Participants were asked in a free response format whether they felt that their perceptions had changed as a result of participation in our experiment. Responses were coded in two ways: (1) whether or not participants indicated any positive change in their own perceptions, and (2) whether participants directly mentioned a change toward seeing others with greater empathy or greater attention to a person’s current circumstances.

Analyses Overview

To provide a transparent and thorough investigation into the effects of narrative cognition mindset on perspective-taking and empathy, a multiverse analysis was conducted for the target measures of perspective-taking and empathy (for a discussion on multiverse analysis, see Steegen et al., 2016). This involved testing hypotheses using three primary analyses for each subscale: mixed design analysis of variance (ANOVA) with time (pre- and post-intervention measures) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor; ANCOVA controlling for pre-intervention measures of perspective-taking and empathy; and a univariate ANOVA with change scores (difference from pre- to post-intervention) as the dependent variable. A subset of the behavioral measures were also analyzed for this report. These behavioral measures were assessed using a series of ANOVAs to examine whether narrative intervention condition differs from the control condition. Please note participants who completed the measures for any given analysis were included in that analysis, even if they did not complete all measures in the study.

Results

Experiment 1

Perspective-Taking Self-Report Subscale

A mixed design ANOVA with time (pre- and post-intervention measures) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor indicated no main effects nor interactions, all $F_s < 2.00$, and all $p_s > .20$, $\eta_p^2 < .02$ (see means and standard deviations in Table 1).

Table 1

Study 1 pre-post intervention perspective-taking scores

	Perspective-Taking Pre-Intervention		Perspective-Taking Post-Intervention		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Control	3.52	0.70	3.53	0.77	1 - 5
Narrative	3.60	0.58	3.51	0.68	1 - 5

An ANCOVA to examine the effects of intervention (narrative versus control) on final session perspective-taking controlling for pre-intervention measures of self-reported perspective-taking revealed only a main effect of pre-intervention perspective-taking, $F(1, 118) = 192.80, p < .001, \eta_p^2 = .62$. Intervention itself did not significantly affect perspective-taking scores, $F(1, 118) = 1.21, p = .27, \eta_p^2 = .01$.

A univariate ANOVA examining the effects of the intervention on perspective-taking change scores (i.e.,

the difference from pre- to post-intervention) as the dependent variable indicated no effect of the intervention on self-reported perspective-taking change, $F(1, 119) = 1.45, p = .23, \eta_p^2 = .01$.

Empathy Self-Report Subscale

A mixed design ANOVA with time (pre- and post-intervention measures) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor indicated no main effects nor interactions, all $F_s < 2.00$, and all $p_s > .20, \eta_p^2_s < .02$. See means and standard deviations in Table 2.

Table 2

Study 1 pre-post intervention empathy scores

	Empathy Pre-Intervention		Empathy Post-Intervention		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Control	3.91	0.67	3.86	0.73	1 - 5
Narrative	3.85	0.64	3.81	0.68	1 - 5

An ANCOVA to examine the effects of intervention (narrative versus control) on post-intervention empathy controlling for pre-intervention measures of empathy revealed only a main effect of pre-intervention empathy, $F(1, 118) = 230.80, p < .001, \eta_p^2 = .66$. Intervention itself did not significantly affect empathy scores, $F(1, 118) = 0.001, p = .97, \eta_p^2 < .01$.

A univariate ANOVA examining the effects of the intervention on empathy change scores (difference from pre- to post-intervention) as the dependent variable indicated no statistical effect of the intervention on self-reported empathy, $F(1, 119) = 0.02, p = .90, \eta_p^2 < .01$.

Autobiographical Memory

A mixed design ANOVA with target of conflict blame (other person, situation, and self) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor indicated the predicted pattern, yet failed to attain statistical significance: Self-blame inferences were increased for the narrative intervention group ($M = 2.70, SD = 1.25$) when compared to the control ($M = 2.59, SD = 1.16$), and situation-blame inferences were increased for the narrative intervention group ($M = 3.83, SD = 1.25$) when compared to the control ($M = 3.31, SD = 1.31$); however, other-person-blame was similar for those in the narrative intervention group ($M = 4.38, SD = 1.13$) when compared to the control ($M = 4.37, SD = 1.25$), $F(1, 118) = 1.47, p = .23, \eta_p^2 = .03$. There was also the expected main effect of blame source in which the other

person was most often judged to be the source of blame, $F(1, 119) = 108.93, p < .001, \eta_p^2 = .48$, which makes sense given that participants were instructed to write about an event in which the other person was to blame.

Self-Insight

An χ^2 analysis examining whether participants felt that their perceptions of others has improved found that of the 118 participants who responded to this free-response question, 85 (72%) of participants reported they sensed a positive in change in their perceptions of others. This sense of improvement did not vary by intervention type (narrative versus control), $\chi^2 (N = 118) = 2.97, p = .10$. When responses were coded for specific mention of perspective-taking or reflecting on the reasons that lead to a person's behavior, 38% of participants reported responses related to perspective-taking and empathy for others, and this measure did not vary by intervention type (narrative versus control), $\chi^2 (N = 118) = 0.09, p = .85$.

Together, this work suggests that all participants, regardless of control or narrative intervention conditions felt that having a deliberate task to observing others for 10 days was beneficial to how they see others in the world. The methodology for Experiment 2 was changed to enhance the efficacy of the narrative manipulation and reduce its difficulty to obtain adherence to the intervention.

Experiment 2

Perspective-Taking Self-Report Subscale

A mixed design ANOVA with time (pre- and post-intervention measures) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor indicated a marginal effect of time indicating that participants reported greater self-reported perspective-taking at the final session ($M = 3.57, SD = 0.70$) when compared to the introductory session ($M = 3.52, SD = 0.64$), $F(1, 286) = 3.63, p =$

$.06, \eta_p^2 = .01$. There was also an unexpected main effect of intervention condition in which participants in the control condition ($M = 3.62, SE = .05$) reported greater perspective-taking than those in the narrative condition ($M = 3.47, SE = .05$), $F(1, 286) = 4.28, p = .04, \eta_p^2 = .02$. Contrary to predictions, the interaction of intervention condition with time was not statistically significant, $F(1, 286) = 0.42, p = .52, \eta_p^2 = .001$.

Table 3

Study 2 pre-post intervention perspective-taking scores

	Perspective-Taking Pre-Intervention		Perspective-Taking Post-Intervention		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Control	3.59	0.65	3.49	0.70	1 - 5
Narrative	3.45	0.62	3.65	0.70	1 - 5

An ANCOVA to examine the effects of intervention (narrative versus control) on final session perspective-taking controlling for pre-intervention measures of self-reported perspective-taking revealed only a main effect of pre-intervention perspective-taking, $F(1, 285) = 496.38, p < .001, \eta_p^2 = .64$. Intervention itself did not significantly affect perspective-taking scores, $F(1, 285) = 0.83, p = .36, \eta_p^2 = .003$.

A univariate ANOVA examining the effects of the intervention on perspective-taking change scores (difference from pre- to post-intervention) as the dependent variable indicated no effect of the intervention on self-reported perspective-taking change, $F(1, 286) = 0.311, p = .58, \eta_p^2 = .001$.

Empathy Self-Report Subscale

A mixed design ANOVA with time (pre- and post-intervention measures) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor indicated a trend on empathy that is approaching statistical significance: Empathy scores for the narrative intervention group increased from pre-intervention ($M = 3.70, SD = 0.63$) to post-intervention ($M = 3.74, SD = 0.71$); whereas scores of those in the control group decreased slightly from pre-intervention ($M = 3.84, SD = 0.65$) to post-intervention ($M = 3.81, SD = 0.69$), $F(1, 286) = 2.44, p = .12, \eta_p^2 = .01$. The effects of intervention, $F(1, 286) = 2.11, p = .12, \eta_p^2 = .01$, and time, $F(1, 286) = 0.02, p = .90, \eta_p^2 < .001$, were not statistically significant. Means and standard deviations presented in Table 4.

Table 4

Study 2 pre-post intervention empathy scores

	Empathy Pre-Intervention		Empathy Post-Intervention		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Control	3.84	0.65	3.81	0.69	1 - 5
Narrative	3.69	0.64	3.74	0.71	1 - 5

An ANCOVA to examine the effects of intervention (narrative versus control) on post-intervention empathy controlling for pre-intervention measures of empathy revealed only a main effect of pre-intervention empathy, $F(1, 285) = 531.68, p < .001, \eta_p^2 = .65$. Intervention

itself did not significantly affect empathy scores, $F(1, 285) = 1.42, p = .23, \eta_p^2 = .01$.

A univariate ANOVA examining the effects of the intervention on empathy change scores (difference

from pre- to post-intervention) as the dependent variable indicated no statistical effect of the intervention on self-reported empathy, but a potential trend in the expected direction, $F(1, 286) = 2.44, p = .12, \eta_p^2 = .01$.

Novel Target Evaluation

A mixed design ANOVA with type of trait inference (trait related to information in ambiguous paragraph, clumsy, and trait judgment unrelated to the ambiguous information, kindness) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor indicated the predicted interaction: Clumsy trait inferences were reduced for the narrative intervention group ($M = 4.45, SD = 1.19$) when compared to the control ($M = 4.90, SD = 1.30$); whereas kind trait inferences were slightly higher for those in the narrative intervention group ($M = 4.44, SD = 1.19$) when compared to the control ($M = 4.33, SD = 1.12$), $F(1, 290) = 9.12, p = .003, \eta_p^2 = .03$. There was also the predicted main effect of trait relevance in which the target was judged to be more clumsy than kind, $F(1, 290) = 9.57, p = .002, \eta_p^2 = .03$; however, the interaction indicates that this finding was primarily driven by the increased clumsy judgments of those in the control condition.

Autobiographical Memory

A mixed design ANOVA with target of conflict blame (other person, situation, and self) as a within-subjects factor and intervention condition (narrative versus control) as a between-subjects factor indicated the predicted interaction: Self-blame inferences were increased for the narrative intervention group ($M = 2.76, SD = 1.20$) when compared to the control ($M = 2.46, SD = 1.12$), and situation-blame inferences were increased for the narrative intervention group ($M = 3.81, SD = 1.46$) when compared to the control ($M = 3.64, SD = 1.34$); however, other-person-blame was slightly lower for those in the narrative intervention group ($M = 4.15, SD = 1.29$) when compared to the control ($M = 4.40, SD = 1.12$), $F(2, 574) = 3.32, p = .04, \eta_p^2 = .01$. There was also the expected main effect of blame source in which the other person was most often judged to be the source of blame, $F(2, 570) = 110.84, p < .001, \eta_p^2 = .28$, which makes sense given that participants were instructed to write about an event in which the other person was to blame.

Self-Insight

An χ^2 analysis examining whether participants felt that their perceptions of others had improved found that 201 (70.5%) participants reported a positive change. This improvement did not vary by intervention type (narrative versus control), $\chi^2(N = 285) = 0.55, p = .52$. When responses were coded for specific mention of

perspective-taking or reflecting on the reasons that lead to a person's behavior, 42% of participants reported responses related to perspective-taking and empathy for others, and this measure varied by intervention condition with 51% of those in the narrative intervention condition reporting changes related to perspective-taking and empathy when compared to 33% in the control condition, $\chi^2(N = 285) = 9.19, p = .003$.

Discussion

The present project developed an intervention to increase college students' tendency to engage in perspective-taking and illustrate empathetic concern for others via narrative cognition. Results of two experiments (Davis, 1980) indicate that although scores on self-report measures of perspective-taking and empathetic concern did not reliably vary as a function of the designed intervention, behavioral measures illustrated an increase of perspective-taking and empathy as a result of the twelve-day narrative intervention. The results of this intervention suggest that aspects of narrative cognition can be harnessed into a mindset habit in which perceivers begin to view others in their environment with greater empathy and with less of their own egocentric biases.

We did not find the predicted differences on the perspective-taking and empathy subscales of the IRI (Davis, 1980). Other researchers have found that the test-retest reliability of the IRI is very high (.67-.80; Fernandez et al., 2011) and our data are consistent with this high reliability, with subscale test-retest correlations of .78-.86, suggesting that it is difficult to affect meaningful change scores on this very stable construct without a more intensive intervention. This is especially apparent given that the intervention appeared to effectively improve prosocial perceptions and judgments as assessed via interpretation of an ambiguous behaviors and attributions of blame after a conflict with a close other.

In Experiment 1, participants in the narrative intervention condition were asked to complete six different prompts for each of their narrative observations: (a) identify behavior, (b) describe setting, (c) describe general circumstances, (d) identify goals of the person, (e) describe the narrative conclusion, and finally (f) write a brief summary detailing the narrative. This was an onerous task, and the method corresponded with a 45% attrition rate likely due to participant fatigue or disinterest. Based on the high attrition rate and the small effects observed in Experiment 1, the methodology for Experiment 2 was changed to enhance the efficacy of the intervention. The narrative intervention task was

simplified into just two steps: (a) identify behavior and (b) write your story. This simplification corresponded with a reduced attrition rate. Similarly, examination of participant rehearsal session data indicated that some of the stories written in Experiment 1 were either about people already known to participants or about behaviors that are not discrete actions (e.g., “My roommate thought I had something to do later”) and thus might not have allowed for participants to adequately engage in all aspects of narrative cognition. Thus, in Experiment 2, we provided participants with one discrete behavior at each rehearsal session to serve as model stimuli; we also provided sample stories for the first three rehearsal sessions; further, we asked individuals to only observe individuals whom they did not know; and we increased the sample size to more fully probe small but meaningful differences between conditions. These alterations appeared to enhance the efficacy of the intervention.

One positive and unexpected finding of this project is how well it was received by participants who completed the study. Indeed, most participants reported that participating in this research project enhanced their “people watching” skills. In their free response comments, one participant wrote that “It has made me place myself in people's shoes so that a somewhat ‘weird’ behavior may have a perfectly normal explanation behind it,” and another wrote, “I find myself thinking even more so what external events could be affecting and influencing others' actions,” and a third commented, “I don't assume the worst out of a situation as much.” Other participants mentioned the value of observation in general, writing that, e.g., “It made me notice things when most of the time I'm oblivious,” “I think if anything it made me pay more attention to the people around me,” and “People can do really nice things but you often don't notice unless you are being observant.” This feedback indicates that college students enjoyed the experience of “people watching” and giving their attention to those individuals in their surrounding environments, even those who were in the control condition. Accordingly, if an instructor selected this intervention for a course, students would likely find the intervention to be enjoyable and beneficial.

Limitations and Future Directions

It is important to note this this project was conducted using participants recruited from a single Midwestern U.S. university. More work is necessary to examine whether the findings of this intervention would be similar at other locations with more diverse student populations. Additionally, the attrition rates for these studies were higher than desired. Thus, it is possible

that observed results might only be applicable to those individuals who tend to enjoy “people watching” or “storytelling.” More work is needed to see if the intervention would also be effective on those who are less naturally inclined to the assigned tasks. It is possible that shortening the intervention to three or four days would reduce the attrition rate and might still be sufficient at engendering a narrative cognition mindset. Future work should examine the efficacy of the intervention with fewer rehearsal sessions.

Conclusion

Narrative cognition appears effective at enhancing perspective-taking and empathy behavior; however, no effects of narrative cognition were found with regard to self-reported measures of perspective-taking and empathy. Daily rehearsal of storytelling observations of other people's behavior appears to be an enjoyable and effective method to create mindset habit that encourages more thoughtful, generous, and accurate judgments of others.

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