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Narrative Persuasion, Causality, Complex Integration, and Support for Obesity Policy

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Narrative messages have the potential to convey causal attribution information about complex social issues. This study examined attributions about obesity, an issue characterized by inter-related biological, behavioral, and environmental causes. Participants were randomly assigned to read one of three narratives emphasizing societal causes and solutions for obesity or an unrelated story that served as the control condition. The three narratives varied in the extent to which the character in the story acknowledged personal responsibility (high, moderate, and none) for controlling her weight. Stories that featured no acknowledgment and moderate acknowledgment of personal responsibility, while emphasizing environmental causes and solutions, were successful at increasing societal cause attributions about obesity and, among conservatives, increasing support for obesity-related policies relative to the control group. The extent to which respondents were able to make connections between individual and environmental causes of obesity (complex integration) mediated the relationship between the moderate acknowledgment condition and societal cause attributions. We conclude with a discussion of the implications of this work for narrative persuasion theory and health communication campaigns.

Obesity is caused by a complex set of interrelated factors that include biological predispositions, individual decisions about health behavior, and physical, economic, and social environments (Kumanyika et al., 2008). While many people acknowledge some complexity in obesity's causes (Niederdeppe, Robert, & Kindig, 2011), a majority of Americans believe that poor personal choices are the primary cause of obesity and ill health (Bleich & Blendon, 2010;

Robert & Booske, 2011). These views are shaped by a culture that sees individual responsibility as a moral virtue (e.g., Brownell et al., 2010).

Beliefs about causal responsibility (individual choices vs. external societal factors) strongly predict beliefs about whether or not societal-level institutions should intervene to address social problems like poverty, unemployment, and health care (Iyengar, 1996; Weiner, 1993). People who believe that obesity is caused exclusively by individual shortcomings tend to oppose public policies to address the problem, while those who acknowledge that societal causes play a role have higher levels of policy support (Barry, Brescoll, Brownell, & Schlesinger, 2009; Niederdeppe, Shapiro, & Porticella, 2011; Oliver & Lee,

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2005). This has led several scholars to suggest that health communicators should develop messages to emphasize societal causes of problems like obesity and frame these issues as worthy of structural interventions to create healthier environments (Barry, Gollust, & Niederdeppe, 2012; Iyengar, 1991; Wallach & Dorfman, 1996). Current levels of support for many obesity-reducing policies are limited, however, and many people view obesity as an individual problem (Barry et al., 2009; Barry et al., 2012). In this context, messages designed to increase support for these policies are likely to be met with resistance. This is particularly true for conservatives, who have lower obesity-related policy support than liberals. Conservatives are also more resistant than liberals to messages about societal causes of obesity-related diseases like diabetes (Gollust, Lantz, & Ubel, 2009).

Recent qualitative work suggests that narratives may be uniquely positioned to influence causal attributions and policy support by encouraging people to integrate complex information about causes of social problems (Lundell, Niederdeppe, & Clarke, 2012). The current study tests this idea by examining responses to stories about obesity's multifaceted causes and (possible) solutions. The study has three goals: (1) test whether causal attributions and policy support vary by the degree of individual responsibility for obesity (high, moderate, and none) acknowledged in the story, while maintaining consistent emphasis on societal causes and solutions for obesity; (2) explore whether these effects vary by political ideology; and (3) examine whether complex integration explains narrative design effects on causal attributions and policy support.

NARRATIVE PERSUASION, CAUSALITY, AND COMPLEX INTEGRATION

Several studies suggest that narratives may be particularly effective in generating support for policies to address social issues like obesity (Niederdeppe et al., 2011; Slater, Rouner, & Long, 2006; Strange & Leung, 1999). A growing literature on narrative persuasion offers several possible reasons for these findings. First, stories provide opportunities to connect with characters who live in challenging physical, social, and economic environments, conditions the reader may never have experienced (Strange & Leung, 1999). Connections with those characters, in the form of identification (often conceptualized as empathy and perceived similarity) and favorable emotional responses toward them, increase the likelihood of persuasion (Cohen, 2001; Dunlop, Wakefield, & Kashima, 2008; Moyer-Gusé, 2008; Slater & Rouner, 2002). Second, stories that engage, absorb, and transport the audience reduce the likelihood of generating counterarguments (Busselle & Bilandzic, 2008; Green & Brock, 2000). Since counterarguing reduces persuasion, stories that effectively reduce counterarguments produce a persuasive advantage (Petty & Cacioppo, 1986). Third, stories may be

uniquely positioned to convey complex causal information in a way that invites the audience members to integrate that causal information and alter their causal attributions (Dahlstrom, 2010; Lundell et al., 2012; Tsoukas & Hatch, 2001). While much of the existing literature on narrative persuasion has focused on identification and narrative engagement as explanatory mechanisms for story effects, this study focuses on the role of complex causal integration as another variable involved in the process of narrative persuasion.

Narratives have been defined as "a representation of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic being addressed" (Kreuter et al., 2007, p. 222). Central to this and other definitions is the idea that story plots uniquely integrate causes and their effects. Stories connect "actions and implications together in a causal chain, rather than relying on a set of propositions that may be more or less well integrated" (Green, 2006, p. S164). Causal relationships are "the glue that holds stories together" (Dahlstrom, 2010, p. 860; Magliano, 1999).

Some scholars further suggest that narrative forms may have advantages over other forms of information at conveying complex causal information. Tsoukas and Hatch (2001), for instance, argue that narratives are effective in conveying information about complex topics because they are able to show the audience members, rather than tell them about, interrelated and mutually reinforcing causal factors. Green (2006) contends that narratives are better able to connect causes and effects than sequential arguments. Similarly, Lang (1989) found that news stories presented in chronological order (a narrative in causal sequence) require less cognitive effort to process and increase memory for story content relative to traditional broadcast news forms that begin with novel information and then describe causal antecedents. More broadly, Schank and Abelson (1995) maintain that stories are fundamental to the way we integrate our experience and our knowledge of the world, including how we make sense of social problems, their causes, and solutions. Each of these arguments suggests that stories may be well suited to communicate about health issues like obesity with interconnected individual and societal causes. Nevertheless, few studies have tested the ability of a narrative to help readers integrate complex information.

Assessing Causal Interpretation in Narratives

Cognitive Response Theory (CRT; Greenwald, 1968) and the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986) argue that thoughts generated in response to a message influence its persuasive potential. Positive thoughts (those consistent with arguments offered in the message) increase the likelihood of persuasion, while negative thoughts (those that counter arguments offered in the message) decrease it. Slater and Rouner (2002) extended this logic to posit that narrative persuasion should increase when the audience

TABLE 1
Possible Thoughts in Response to Messages About Obesity and Complex Attributions

	Individual Attribution	No Individual Attribution
Societal attribution (source-intended processing)	Complex integration, <i>n</i> = 253 thoughts Example: "I thought about how difficult it can be to get out and exercise if you don't have a safe place to do it."	Simple elaboration, <i>n</i> = 516 thoughts Example: "I can think of several neighborhoods that could benefit from programs like this."
No societal attribution (source-unintended processing)	Counterelaboration, <i>n</i> = 492 thoughts Example: "People need to be willing to change themselves too."	Noncausal thoughts, <i>n</i> = 403 thoughts Example: "I thought of people in my life who suffer from diabetes."
Explicit rejection of societal attribution	Counterarguing, <i>n</i> = 70 thoughts Example: "People need to be more proactive on their own than wait for some entity to change their behaviors."	Counterarguing, <i>n</i> = 50 thoughts Example: "Healthy food is abundant and cheaper than junk food."

Note. *n* shows the number of thoughts (out of 1,788 total thoughts from experimental conditions) that were classified into each category.

generates favorable thoughts about the intended persuasive content of a story. If a story effectively describes societal causes and/or solutions for obesity, it should generate positive thoughts about the story's intended persuasive theme. We call this class of thoughts "source-intended processing" (Niederdeppe, Kim, Lundell, Fazili, & Frazier, 2012). Source-intended processing about societal attributions for obesity could take two forms: *simple elaboration* (thoughts focused solely on societal cause or solution attributions for obesity) or *complex integration* (thoughts that integrate societal and individual attributions; Table 1). Since obesity is indeed caused by both individual and societal factors, and most people already hold strong beliefs about individual responsibility for obesity, we argue here that messages to increase support for obesity-reducing policies are likely to be most effective if they generate complex integration—thoughts that convey that individual and societal causes of obesity are interrelated and mutually reinforcing. This definition is consistent with previous work in psychology (Suedfeld & Tetlock, 1977) and communication (Shah, Kwak, Schmierbach, & Zubric, 2004).

Green (2006) and Kreuter et al. (2007) also argue that narratives can distract the reader from an intended persuasive message, producing "source-unintended processing" (Niederdeppe et al., 2012). This type of processing could have nothing to do with causal attributions for obesity, which in the current persuasive context we describe as *noncausal thoughts*. Source-unintended processing could also take the form of thoughts exclusively about individual causes or solutions for obesity. Based on attribution theories, we argue that the persuasive goal of messages to increase support for obesity-related policies should be to increase societal,

not individual, attributions for the problem. We thus refer to thoughts only about individual attributions for obesity as *counterelaboration*. We use the term *elaboration* because thoughts about individual attributions are issue-relevant, but identify them as "counter-" because they run counter to the intended persuasive goal. Consistent with previous work, thoughts that explicitly refute societal attributions for obesity (the persuasive goal) are considered *counterarguing*.

CONSIDERATIONS IN THE DESIGN OF NARRATIVE MESSAGES TO INCREASE THE COMPLEXITY OF ATTRIBUTIONS

Designing messages to increase complexity of attributions also involves choices about the relative emphasis to place on individual responsibility (beliefs that are usually strongly held) and societal responsibility (beliefs that are less commonly or strongly held). Several authors argue for the importance of emphasizing both individual and societal responsibility in messages (Adler & Stewart, 2009; Forde & Raine, 2008; Westen, 2010), while others suggest deemphasizing individual responsibility (Marmot & Bell, 2011). On the one hand, a message explicitly acknowledging individual causes of a health problem runs the risk of activating or diverting attention to beliefs about individual responsibility—encouraging counterelaboration (Niederdeppe et al., 2011). This, in turn, could undermine policy support if counterelaboration is negatively associated with support for policy. On the other hand, failure to acknowledge individual responsibility could lead to reactance in the forms of counterarguing and anger, as an

exclusive focus on societal responsibility could be seen as undermining human agency in a culture that strongly values individualism (Byrne & Hart, 2009; Dillard & Shen, 2005).

Previous studies offer little guidance about the likely effects of emphasizing individual responsibility in messages about societal causes of obesity, as most studies have compared messages emphasizing either societal or individual causes (Gollust et al., 2009; Hoeken & Hustinx, 2007; Major, 2009). Nevertheless, we believe there is sufficient justification to predict several specific narrative design effects on message processing (described in further detail later), and that these predictions lead to broader predictions about the narrative's overall effectiveness in shaping causal attributions and policy support.

HYPOTHESIZED NARRATIVE EFFECTS ON COMPLEX INTEGRATION, CAUSAL ATTRIBUTIONS, AND POLICY SUPPORT

This study made use of a short narrative about a character who struggled to lose weight but eventually lost 11 pounds with help from a community group that made a variety of improvements (green space, development) to her neighborhood. We varied the degree to which the character took personal responsibility for her efforts to lose weight (high, moderate, none). While many studies of narrative persuasion have used longer messages that did not have obvious persuasive intent (e.g., entertainment-education series; films; television dramas; Moyer-Gusé, 2008; Slater et al., 2006), we follow a parallel tradition of work that has examined the impact of shorter narratives with clear persuasive intent that also connect events and characters to health topics (e.g., antismoking public service announcements [PSAs]; news stories; personal testimonials; e.g., Dunlop et al., 2008).

As described earlier, attribution theories argue that causal attributions shape whether or not a person supports societal efforts to address social problems (Weiner, 1993). In the case of obesity, the belief that broader societal forces cause obesity is associated with support for obesity-related policy (Barry et al., 2009; Oliver & Lee, 2005). People already hold very strong beliefs about individual responsibility for obesity, so messages that acknowledge individual responsibility are unlikely to further increase this belief (a ceiling effect). Rather, we argue that effective communication to increase support for obesity-related policy should aim to increase perceptions of the complexity of health causation and responsibility—increasing attributions to societal causes and solutions while maintaining attributions to individual responsibility, which should in turn increase policy support. Based on this argument, we begin with the hypothesis (H1) that societal cause attributions will positively predict obesity-related policy support.

We continue by positing that the moderate personal responsibility (MPR) message, which acknowledges

personal responsibility but does not emphasize it, will produce more complex integration than the other conditions (H2). We make this prediction because the no personal responsibility (NPR) condition makes no effort to integrate these causes, while the high personal responsibility (HPR) condition risks overemphasizing and reinforcing these already strongly held beliefs, as found by Niederdeppe et al. (2011). Consistent with CRT and ELM, we likewise predict that greater complex integration will predict higher societal cause attributions (H3), since this type of processing includes thoughts about the message's intended persuasive theme. Taken together, these hypotheses suggest that the MPR condition will be effective at increasing societal cause attributions (H4), and in turn policy support (H5). They also suggest the MPR condition will indirectly influence societal cause attributions via complex integration—that effects of the MPR condition on societal cause attributions will be mediated by complex integration (H6).

HYPOTHESES ABOUT NARRATIVE EFFECTS ON OTHER PROCESSING MEASURES AND CHARACTER PERCEPTIONS

Previous studies do not support strong predictions about the persuasive potential of the HPR and NPR. While these conditions are unlikely to produce as much complex integration as the MPR condition (which in turn should undermine their likelihood of persuasion), they may persuade through several other mechanisms, some of which suggest opposing predictions.

On the one hand, a recent study suggests that a strong emphasis on personal responsibility in a story about societal causes of obesity runs a risk of reinforcing these already strongly held beliefs, which could reduce simple elaboration and replace it with counterelaboration (Niederdeppe et al., 2011). Thus, we predict that the HPR condition will produce less simple elaboration (H7) and more counterelaboration (H8) than the NPR condition. Based on the ELM, we likewise predict that simple elaboration should positively predict societal cause attributions (H9), while counterelaboration should undermine them (H10). Combined, these conditions should produce a persuasive advantage for the NPR over the HPR condition.

On the other hand, there is reason to suspect that the HPR condition could increase identification with the character or reduce feelings of anger toward that character. Affective disposition theory posits that audiences make moral judgments about story characters that shape their feelings toward those characters and their enjoyment of the story (Raney, 2004; Zillmann & Cantor, 1972). Audiences develop positive feelings toward characters who show strong moral character and desire for good things to happen to them. Since Americans strongly value the importance of personal responsibility for health and consider it a moral virtue (Brownell et al., 2010),

we expect readers to have more favorable moral judgments toward a character who demonstrates HPR (a sign of strong moral character) than toward a character who conveys NPR.

These moral judgments may influence identification with a character, as measured by empathy and perceived similarity (Raney, 2004). Specifically, we expect readers to empathize more with (H11) and perceive themselves as more similar to (H12) a character who takes personal responsibility (the HPR condition) than one who demonstrates lower levels of personal effort (the NPR condition). We expect both empathy (H13) and perceived similarity (H14) to predict societal cause attributions, since individuals are more likely to be persuaded by a story in which they feel a stronger empathic connection (Campbell & Babrow, 2004; Cohen, 2001) and see themselves as similar to the protagonist (Moyer-Gusé, 2008).

Furthermore, since arguments about individual responsibility are strongly held by the American public and are likely highly accessible to many people (e.g., Brownell et al., 2010), failure to acknowledge personal responsibility in an obesity narrative (NPR) is likely to lead to psychological reactance (Niederdeppe, Bu, Borah, Kindig, & Robert, 2008). Reactance is both a cognitive (counterarguing by directly refuting arguments) and emotional process (expressing anger; Dillard & Shen, 2005). We thus predict that messages that include individual and societal causes, including the high and moderate personal responsibility conditions, will be less likely to produce counterarguing (H15 for HPR; H16 for MPR) and anger toward the story's protagonist (H17 for HPR; H18 for MPR) than the NPR condition. Counterarguing (H19) and anger (H20), in turn, should undermine persuasion (Petty & Cacioppo, 1986; Weiner, 1993).

RESEARCH QUESTIONS ABOUT NARRATIVE EFFECTS ON CAUSAL ATTRIBUTIONS AND POLICY SUPPORT

Combined, some theoretical arguments suggest a persuasive advantage for NPR versus other conditions, while others suggest an advantage for the HPR over other conditions. We thus ask whether these conditions increase societal cause attributions (RQ1) and policy support (RQ2) relative to the control group. While these stories were designed to increase societal cause attributions and policy support without changing individual cause attributions for obesity, it also remains an open question whether or not they are likely to influence this outcome (RQ3).

POLITICAL IDEOLOGY AND RESPONSE TO OBESITY POLICY NARRATIVES

Health-related policy, including obesity, is politically charged (Oliver & Lee, 2005). People with liberal ideologies

have higher support for obesity-related policies (Barry et al., 2009) and are more receptive to messages designed to increase that support than conservatives. For instance, Gollust et al. (2009) concluded that a message focused exclusively on the role of the neighborhood environment in causing type 2 diabetes (often a consequence of obesity) produced polarized responses between Democrats (toward higher levels of support for policies to reduce type 2 diabetes) and Republicans (toward lower policy support). Niederdeppe et al. (2011) also observed divergent responses to an obesity-related message by political ideology, finding that a story emphasizing societal causes of obesity (while acknowledging individual causes) increased societal attributions among liberals but not conservatives. Both author groups reasoned (but did not explicitly test) that the differences emerged because values about personal responsibility are more salient and accessible to conservatives than to liberals (although both groups hold them strongly). This reasoning suggests that changing the level of acknowledgment for individual responsibility in a narrative designed to increase societal cause attributions and policy support would likely produce divergent responses between liberals and conservatives. While previous studies have not manipulated these levels, these two prior studies suggest that obesity-related narratives in general should have a larger effect on liberals than conservatives.

At the same time, some narrative persuasion research suggests that narratives may be particularly effective in contexts where a message advocates a "value-discrepant" position (Slater & Rouner, 1996; Slater et al., 2006). Since conservatives tend to hold very strong personal responsibility values (Feldman, 1998), it is also plausible to suggest that messages describing societal causes of obesity without acknowledging personal responsibility could be more persuasive among conservatives than liberals (since those messages would be value-discrepant). In light of these seemingly opposing findings from previous work, we pose two research questions asking whether effects of the narrative conditions (relative to control) on societal cause attributions (RQ4) and policy support (RQ5) differ by political ideology.

METHODS

Procedure and Stimuli

Adults in a large shopping mall in a midsized northeastern city were invited to participate in a study on their opinions about health issues between May 13 and June 16, 2010. Participants were offered a \$10 mall gift card in exchange for participation. Adults aged 18 years and older who were interested in the study were asked to provide informed consent after reading the study procedures. Next, they were seated at one of 10 laptop computers that were set up within an open area of the mall. The study was administered using MediaLab (Jarvis, 2008).

All participants ($n = 500$) were randomly assigned to view one of four stories entitled “Meet Michele Wolfe.” Three of the stories described Michele’s recent weight loss amid numerous economic and environmental barriers to healthy living. We manipulated the extent to which Michele took personal responsibility for her weight loss (high, moderate, and none) across the three conditions. Content related to societal causes and solutions for obesity was held constant. The fourth story, which served as a control, was unrelated to obesity. Participants read the message on their screen and were asked a series of questions about their message-related thoughts, character perceptions, emotional responses, beliefs about obesity’s causes and solutions, support for policies, and basic demographics. The study was approved by the university’s institutional review board (IRB).

Condition 1: High personal responsibility (HPR). Participants assigned to the HPR condition read a one-page story about a middle-aged woman named Michele Wolfe who faced challenges in her efforts to lose weight but received valuable assistance from a (fictitious) community group called the Neighborhood Development Association (NDA). The narrative was based on the stories of several people and community programs described on the website of the Robert Wood Johnson Foundation (2008) Commission to Build a Healthier America. The story conveyed Michele’s strong sense of personal responsibility for losing weight and becoming healthy but emphasized four societal challenges: (1) high cost and lack of access to healthy foods, (2) widespread availability of unhealthy foods, (3) time constraints from a low-income job, and (4) a lack of safe and affordable places for exercise. The second half of the story described the NDA’s efforts to add a local supermarket, bicycle trails, and walking paths that enabled Michele to make healthy decisions about diet and exercise.

Condition 2: Moderate personal responsibility (MPR). The MPR condition followed the exact same structure, emphasized the same challenges, and featured the same NDA interventions as the first condition, but featured less direct acknowledgment of personal responsibility.

Condition 3: No personal responsibility (NPR). The NPR condition had the same structure, emphases, and interventions but contained no indication that Michele had taken any responsibility for her own health or weight loss.

Condition 4: Control. The control condition, equivalent in length to the other conditions, described a woman’s (Michele Wolfe) quest to rediscover a bird species thought to be extinct. The story provided the control group with a parallel activity that did not address obesity.

Examples of differences between the narratives. To illustrate distinctions between the high, moderate,

and low personal responsibility narrative conditions, consider the following passage, which appeared after the description of the NDA’s neighborhood development efforts. The beginning of the passage for all three stories read, “Here, she feels comfortable getting out of the house . . .” Underlined text below emphasizes key story differences. The HPR condition emphasized her own personal effort, continuing, “. . . and exercising outside—activities Michele sees as tremendously important for improving her health. This has helped Michele to develop healthier lifestyle habits.” The MPR condition also acknowledged Michele’s efforts, but with caveats, continuing, “. . . and getting outside. This has helped Michele to have more options for improving her health—even though following through on them is often a challenge.” The NPR condition suggested no personal effort at all, continuing, “. . . even if she’s not intending to exercise” (the full text of all stories is available from the first author by request).

Manipulation check. We conducted two pilot studies (total $n = 113$) with college student samples to ensure that the manipulations were perceived as intended. We randomly assigned participants to read the HPR, MPR, or NPR message. The first pilot study did not yield significant differences between MPR and NPR, so we modified the NPR condition for the second pilot study. We combined the two data sets (excluding those in the no responsibility condition in the first pilot study) to compare the messages on two measures: perceived individual responsibility (three items using a Likert scale ranging from 1 (*strongly disagree*) to 3 (*neither disagree nor agree*) to 5 (*strongly agree*), Cronbach’s $\alpha = .70$; e.g., “This story suggests that Michele is personally responsible for losing weight”) and perceived societal responsibility (two items, same scale ranging from 1 to 5, $r = .39$; e.g., “This story suggests that society is responsible for helping Michele to lose weight”). Participants perceived equivalent emphasis on societal responsibility across messages ($M_{HPR} = 3.8$, $M_{MPR} = 4.1$, $M_{NPR} = 4.0$; $F(2, 110) = 1.7$, $p = .19$), and each of these values was significantly higher than the midpoint of the scale (all tests $p < .001$). Respondents perceived more emphasis on individual responsibility in the HPR versus MPR condition and the MPR versus NPR condition ($M_{HPR} = 3.7$, $M_{MPR} = 3.2$, $M_{NPR} = 2.7$; $F(2, 110) = 17.3$, $p < .001$; partial $\eta^2 = .24$; each pairwise t -test $p < .01$). One-sample t -tests revealed that the HPR condition ($p < .001$) and MPR condition ($p < .05$) were significantly greater than the midpoint (3) of the perceived individual responsibility scale. The NPR condition was lower than the midpoint of the scale ($p < .05$). The manipulation was thus deemed successful.

Participants

We excluded 15 participants who took (on average) less than 2 seconds per question and thus did not have time to interpret

and answer the questions thoughtfully. This left an analytic sample of 485 adults (used in all subsequent analyses). Participants' ages ranged from 18 to 83 years ($M = 36.4$, $SD = 16.3$). More than half (57%) were female, and most participants were non-Hispanic White (80%). Thirty-seven percent had a college degree, 37% attended some college, and 26% had no college education. The median household income was between \$25,000 and \$49,999. Forty-nine percent were married, while others had never been married (37%) or were divorced, widowed, or separated (14%). Comparing these statistics to estimates from the U.S. Census (2011), the sample overrepresents females (51% of the U.S. population), those with a college degree (28% of the U.S. population), and those with lower household income (U.S. household income median = \$52,000) but is similar in terms of age (U.S. population median age = 37 years) and the proportion of non-Hispanic Whites (78% of the U.S. population). Respondents reported their weight and height, from which we calculated their body mass index (BMI, weight in pounds multiplied by 703 and divided by height in inches squared). Twenty-six percent of respondents were obese ($BMI > 30$; National Institutes of Health, 1998) and 29 percent were overweight ($BMI > 25$ and < 30). These obesity rates are lower than 2011 U.S. population estimates (36%; Centers for Disease Control and Prevention, 2011). Thirty percent of the sample identified as Democrat, 22 percent as Republican, 29 percent as Independent, and 19 percent as "something else." These rates are comparable to national estimates of the two major political parties (31% Democrat, 27% Republican; Gallup, 2011). The average respondent was near the mid-point of a 7-point political ideology scale (1 = *extremely conservative*, 7 = *extremely liberal*; $M = 4.1$, $SD = 1.4$, $Mdn = 4$). There were no statistically significant differences in group demographic composition, rates of obesity, political party, or political ideology by randomized condition. There was also no evidence that the effects of randomized condition on intended persuasive outcomes varied by BMI category, so this variable was not considered further in the analysis.

Measures

Cognitive responses. Participants were asked to type up to five thoughts that occurred to them as they were reading the story (Cacioppo, von Hippel, & Ernst, 1997). Respondents saw five different text boxes and were asked to enter each thought in a separate box. Text entered within a text box was considered a discrete thought (as defined by the participants). A team of undergraduate coders classified each thought ($n = 1,788$ for narrative conditions) into one or more of three categories: (1) internal attributions (thoughts that mentioned internal, controllable causes or solutions for obesity), (2) external attributions (thoughts that mentioned causes or solutions for obesity external to the individual), and (3) reactive counterarguments (thoughts that directly

refuted external attributions or conveyed frustration or irritation toward that position or a character who is seen as a proponent or beneficiary of that position; see Niederdeppe et al., 2011). Thoughts that did not include any attributional information were classified as noncausal thoughts ($n = 403$). Twenty percent were double-coded; the fourth and fifth authors resolved disagreements. Interrater reliability was acceptable for each coding decision (Krippendorff's $\alpha_{\text{internal}} = .79$; $\alpha_{\text{external}} = .82$; $\alpha_{\text{counter}} = .79$). We used these codes to create four mutually exclusive categories: (1) complex integration (thoughts that combined external and internal attributions without refutation), (2) simple elaboration (thoughts only about external attributions without refutation), (3) counterelaboration (thoughts that focused exclusively on internal attributions), and (4) counterarguing (the number of reactive counterarguments; see Table 1). Counterelaboration ($M = 1.55$, $SD = 1.25$) and simple elaboration ($M = 1.43$, $SD = 1.13$) occurred more often than complex integration ($M = .70$, $SD = .90$) and counterarguing ($M = 0.33$, $SD = .72$).

Empathy toward the character. We used 10 items selected from Campbell and Babrow (2004) to measure empathy toward the character (e.g., "I felt upset for those who suffer from the problem described in the message") using a 5-point scale from *strongly disagree*, 1, to *strongly agree*, 5. We averaged these items into a scale ($\alpha = .78$, $M = 3.72$, $SD = .66$).

Perceived similarity. We used six items developed by Shapiro, Porticella, and Hancock (2008) to gauge perceived similarity to the character (on the same 5-point scale used to measure empathy; e.g., "This person has values that are like the values I would ideally wish to practice"). We averaged them into a scale ($\alpha = .90$, $M = 2.89$, $SD = .85$).

Anger toward the character. We asked respondents the extent to which they felt anger toward the story's protagonist on a scale from (1) *hardly any anger* to (7) *a great deal of anger*. On average, respondents expressed little anger toward the character ($M = 1.88$, $SD = 1.43$).

Causal attributions for obesity. Respondents reported their level of agreement (on a 5-point scale from *strongly disagree*, 1, to *strongly agree*, 5) with six randomly ordered statements about why Americans are overweight. Items were derived from previous surveys on the topic (e.g., Bleich & Blendon, 2010). Factor analysis confirmed the expected two-factor solution from previous studies using similar items (Niederdeppe et al., 2011) and led us to create two averaged scales: individual cause attributions (three items, e.g., "most people lack the willpower to exercise regularly," $\alpha = .81$, $M = 3.72$, $SD = .92$) and societal cause attributions (three items, e.g., "healthy food is too expensive for most people," $\alpha = .70$, $M = 3.17$, $SD = 1.01$).

Obesity-related policy support. We asked respondents about their support (on a 5-point scale ranging from *strongly oppose*, 1, to *strongly support*, 5) for a series of six randomly ordered policies that have been (a) proposed to address the problem of obesity, (b) judged as politically feasible by health policy experts, and (c) judged as having high potential impact by public health experts (Brescoll, Kersh, & Brownell, 2008; e.g., “have zoning laws requiring that all new residential and commercial developments include sidewalks and other safe paths to encourage physical activity”). We averaged the items into a scale ($\alpha = .82$; $M = 3.72$, $SD = .83$).

Political ideology. We classified respondents who answered 1, 2, or 3 on the political ideology scale (ranging from *very conservative*, 1, to *very liberal*, 7) as conservative ($n = 111$, 23%), those who answered the midpoint on the scale (4) as moderate ($n = 222$, 46%), and those who answered 5, 6, or 7 as liberal ($n = 152$, 31%).

RESULTS

Hypotheses Linking Complex Integration, Causal Attributions, and Policy Support

We tested H1, and all other hypotheses about bivariate associations, with Pearson correlations (Table 2). In support of H1, societal cause attributions were positively associated with policy support ($r = .37$, $p < .001$). We tested H2, and all other hypotheses about effects of story conditions, in two stages. We began with an analysis of variance (ANOVA). If an ANOVA revealed significant differences, we conducted focused contrast tests of study hypotheses (Table 3). In support of H2, respondents in the MPR condition engaged in more complex integration than those in the HPR and NPR conditions ($F(2, 361) = 8.6$, $p < .001$, $\eta^2 = .05$). In support of H3, complex integration was positively associated with societal cause attributions ($r = .16$, $p = .02$).

We predicted that the MPR condition would produce significantly higher societal cause attributions (H4) and policy support (H5) than the control condition. We also asked two research questions about whether the HPR and NPR conditions would influence these outcomes (RQ1 and RQ2), and a third about whether any condition would influence individual cause attributions (RQ3). An ANOVA revealed statistically significant differences in societal cause attributions by randomized condition ($F(3, 485) = 3.5$, $p = .02$, $\eta^2 = .02$). Subsequent pairwise contrasts revealed that the MPR condition (supporting H4) and the NPR condition (addressing RQ1) were significantly higher than the control group. While the HPR condition was also higher than the control group, this difference was not statistically significant ($p > .05$; addressing RQ1). The MPR and NPR conditions were not significantly different from the HPR condition ($p > .05$). There were no differences in policy support by randomized condition (rejecting H5 and addressing RQ2; $F(3, 485) = 1.8$, $p = .15$, $\eta^2 = .01$). There were also no differences in individual cause attributions by randomized condition (addressing RQ3; $F(3, 485) = 1.00$, $p = .39$, $\eta^2 < .01$).

While differences in societal cause attributions between the MPR and HPR conditions were not statistically significant, the MPR condition had a higher absolute value on this outcome than the HPR condition and produced higher levels of societal cause attributions than the control group. The MPR condition also produced statistically significantly higher levels of complex integration than the HPR condition. As significant total effects (in this case, differences in societal cause attributions between the MPR/NPR and HPR conditions) are not a necessary condition for mediation, we used Preacher and Hayes's (2008) PROCESS macro for SPSS to test whether there was a significant indirect effect of the MPR condition (versus the HPR condition) on societal cause attributions, via complex integration (see Preacher & Hayes, 2008). We included the NPR condition as a covariate. Supporting H6, the indirect effect of the MPR condition on societal cause attributions via complex integration (estimated

TABLE 2
Correlations between Processing Variables and Intended Persuasive Outcomes (Excluding the Control Group)

	Overall ($n = 363$)		Liberals ($n = 114$)		Moderates ($n = 167$)		Conservatives ($n = 81$)	
	Societal Cause Attributions	Policy Support	Societal Cause Attributions	Policy Support	Societal Cause Attributions	Policy Support	Societal Cause Attributions	Policy Support
Societal cause attributions	1.00	.37*** (H1)	1.00	.27**	1.00	.28***	1.00	.58***
Complex integration	.16** (H3)	.07	.12	.08	.15	.04	.23*	.12
Simple elaboration	.08 (H9)	.02	.13	.10	.02	-.01	.14	.00
Counterelaboration	-.10 (H10)	-.04	-.10	-.10	-.06	.03	-.16	-.04
Empathy with the character	.31*** (H13)	.32***	.18*	.18	.33***	.29***	.48***	.46***
Perceived similarity	.23*** (H14)	.20***	.23**	.02	.25**	.17*	.43***	.50***
Counterarguing	-.17** (H19)	-.13**	-.16	-.01	-.15*	-.13	-.17	-.12
Anger toward the character	.04 (H20)	.01	-.10	-.19**	.07	.10	.17	.07

Note. Asterisk denotes correlations significantly different from zero at $p < .05$ using a two-tailed test; ** $p < .01$; *** $p < .001$. Hypotheses that are underlined were supported.

TABLE 3
Randomized Condition Effects on Dependent Variables

		Level of Responsibility			Control
		High Personal	Moderate Personal	No Personal	
<u>H2</u>	Complex integration*** (m > h, n)	.54 (.75)	.97 (.99)	.60 (.88)	—
<u>H4</u> , RQ1	Societal cause attributions* (m, n > c)	3.15 (1.03)	3.29 (1.00)	3.29 (.93)	2.93 (1.07)
H5, RQ2	Policy support	3.74 (.82)	3.79 (.77)	3.77 (.83)	3.57 (.89)
RQ3	Individual cause attributions	3.70 (.97)	3.73 (.93)	3.83 (.82)	.63 (.97)
H7	Simple elaboration	1.42 (1.20)	1.49 (1.06)	1.37 (1.15)	—
H8	Counterelaboration	1.65 (1.29)	1.40 (1.18)	1.59 (1.28)	—
<u>H11</u>	Empathy with the character** (h, m > n)	3.76 (.61)	3.84 (.67)	3.55 (.66)	—
<u>H12</u>	Perceived similarity*** (h > m > n)	3.08 (.82)	2.81 (.85)	2.55 (.90)	—
H15 H16	Counterarguing	.32 (.74)	.33 (.70)	.34 (.72)	—
<u>H17</u> <u>H18</u>	Anger toward the character** (h, m < n)	1.66 (1.30)	1.76 (1.33)	2.22 (1.62)	—
Total		n = 121	n = 123	n = 119	n = 122

Note. Asterisk denotes an outcome for which ANOVA revealed statistically significant differences by condition, $p < .05$; ** $p < .01$, *** $p < .001$. Hypotheses that are underlined were supported. Parentheses in column 1 show results of pairwise t -tests that revealed significant differences ($p < .05$) where h = high, m = moderate, n = no responsibility conditions and c = control condition. Parentheses in columns show standard deviations.

with bootstrapping) was significantly greater than zero, as evidenced by a 95% confidence interval (CI) that did not overlap with zero ($B = .08$, 95% CI .03 to .16). The total effect of the MPR condition on societal cause attributions, however, was not statistically significant ($B = .14$, $p = .29$),

Associations Between Attributions and Other Cognitive, Emotional, and Character Responses

Correlations between simple elaboration (rejecting H9), counterelaboration (rejecting H10), and anger toward the character (rejecting H20) and societal cause attributions were not significant (Table 2). These findings rule out the possibility that these variables could explain the effects of the MPR and NPR conditions on societal cause attributions. Correlations between both empathy with the character and perceived similarity with societal cause attributions were positive and statistically significant (supporting H13 and H14), while the association between counterarguing and societal cause attributions was negative and significant (supporting H19).

Randomized Condition Effects on Other Cognitive, Emotional, and Character Responses

There were no differences in the frequency of simple elaboration ($F(2, 361) = .4$, $p = .71$, rejecting H7),

counterelaboration ($F(2, 361) = 1.3$, $p = .27$, rejecting H8), or counterarguing ($F(2, 361) = .03$, $p = .97$, rejecting H15 and H16) by randomized condition (Table 3). Those in the HPR and MPR groups felt more empathy toward the character ($F(2, 360) = 6.9$, $p < .001$, $\eta^2 = .04$, supporting H11), perceived themselves as more similar to her ($F(2, 362) = 11.7$, $p < .001$, $\eta^2 = .06$, supporting H12), and felt less anger toward Michele than those in the NPR condition ($F(2, 362) = 5.2$, $p < .01$, $\eta^2 = .03$, supporting H17 and H18). However, since these findings are not consistent with the overall pattern of randomized condition effects on societal cause attributions (where the MPR and NPR conditions had a persuasive advantage versus the control group but the HPR condition did not), they cannot explain the observed pattern of effects on this outcome.

Ideological Differences in Story Effects on Societal Cause Attributions and Policy Support

To address RQ4 and RQ5, which concerned whether effects would be moderated by political ideology, we conducted ANOVAs that included randomized condition, political ideology, and their interaction as the independent variables and either societal cause attributions (RQ4) or policy support (RQ5) as the dependent variable. We included gender and race (White vs. non-White) as controls because these

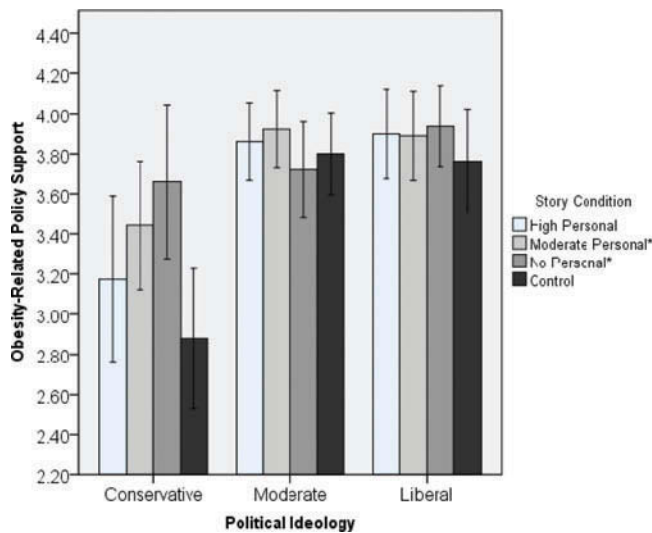


FIGURE 1 Effects of randomized condition on obesity-related policy support by political ideology (addressing RQ4 and RQ5). Asterisk denotes conditions that were significantly higher than the control group in a pairwise contrast test ($p < .05$) (color figure available online).

variables were significantly associated with political ideology. While ideology was a significant predictor of societal cause attributions ($F(2,485) = 3.04, p = .05, \eta^2 = .01$; liberals ($M = 3.22$) and moderates ($M = 3.24$) had higher attributions than conservatives ($M = 2.94$)), the interaction between political ideology and condition was not significant ($F(6,485) = .95, p = .46$). There was, however, a significant interaction between political ideology and condition on policy support ($F(6,485) = 2.32, df = 6, 485, p = .03, \eta^2 = .02$). To probe the interaction (see Hayes, 2005, p. 446), we tested for differences in policy support by condition among conservatives, moderates, and liberals. Significant randomized condition effects on policy support were observed for conservatives only, not liberals ($F(3,111) = 3.67, p = .02, \eta^2 = .09$). Focused contrasts revealed that the NPR ($M = 3.66, p < .01$) and MPR conditions ($M = 3.44, p = .02$) were higher than the control group ($M = 2.87$). The HPR condition was also higher than the control group, but not statistically significantly so ($M = 3.17$). The NPR and MPR conditions produced policy support among conservatives that were comparable to levels observed among liberals and moderates across all four conditions (Figure 1).

Ideological Differences in Paths Linking Story Conditions to Policy Support

Finally, in an effort to understand why effects on policy support were different for conservatives than the other two political groups, we stratified the sample by political ideology and examined the pattern of correlations among study variables separately for liberals, moderates, and conservatives

(Table 2). The magnitude and direction of each correlation was comparable across groups for several outcomes, with three notable exceptions. Correlations between both empathy and perceived similarity, and policy support, were stronger among conservatives ($r = .46$ and $r = .50$, respectively) than among moderates ($r = .29$ and $r = .17$) or liberals ($r = .18$ and $r = .02$). However, since these variables did not show patterns of randomized condition effects that were consistent with persuasive advantage for the MPR or NPR groups, they cannot explain the overall effect of the MPR or NPR conditions on policy support among conservatives. The association between societal cause attributions and policy support was also twice as strong among conservatives ($r = .58$) than among moderates ($r = .28$) or liberals ($r = .27$). We confirmed that this difference was statistically significant using ordinary least squares (OLS) regression by examining whether political ideology, societal cause attributions and their interaction were significant predictors of policy support. The interaction term was highly statistically significant ($p < .001$), confirming that the association between societal cause attributions and policy support differed by political ideology. We thus find evidence consistent with the interpretation that narrative effects on societal cause attributions and policy support were similar among conservatives, but differed among liberals and moderates, because attributions and policy support were more strongly connected among conservatives than among the other groups.

DISCUSSION

This study offers evidence that short stories with persuasive intent can successfully convey information about the causes of complex social problems. It builds on an evolving body of evidence on the role of narratives in shaping health-related policy support (Slater et al., 2006; Strange & Leung, 1999) and enhances our understanding of how people interpret messages conveying information about the causes of complex social problems.

The extent to which stories acknowledged personal responsibility for weight loss, while emphasizing environmental factors, shaped societal cause attributions (among all groups) and policy support (among conservatives). The moderate personal responsibility (MPR) and no personal responsibility (NPR) conditions were the only two messages to increase societal cause attributions (among all respondents) and policy support (among conservatives) relative to the control group. The HPR condition had no such effect. These findings are noteworthy in light of challenges observed in previous attempts to increase societal cause attributions and policy support related to obesity (e.g., Gollust et al., 2009; Niederdeppe et al., 2011). In fact, to our knowledge, this is the first study to increase obesity-related policy support among conservatives.

Moderate Personal Responsibility, Complex Integration, and Societal Cause Attributions

The MPR condition led to greater complex integration of societal and individual causes of obesity than the other two experimental conditions. This complex integration, in turn, was positively associated with societal cause attributions (which also predicted policy support). This significant indirect effect is consistent with the assertion that narratives hold potential to help readers see the causes of social problems, and strategies to address them, in a multifaceted and complex way (Tsoukas & Hatch, 2001). We thus believe this pathway offers support for the idea that the ability to convey complex causal information represents an important aspect of stories worth further theorizing and study. While the indirect path was not large, we suspect that our measure of complex integration is subject to considerable noise because respondents were asked to type rather than write out their thoughts after reading the story. Many responses were short, perhaps a result of constraints in typing ability and directions that did not require them to articulate their thoughts in longer or more complete sentences. Thus, the indirect effect reported in the article may represent an underestimate of the true effect of this causal pathway. At the same time, the study did not include a nonnarrative condition, so it is unclear whether the narrative form of the message or its content accounts for differences between the MPR condition and the control group. Future work should compare narrative and nonnarrative messages that vary levels of responsibility to identify unique contributions of content and narrative structure.

No Acknowledgment of Personal Responsibility and Societal Cause Attributions

The NPR condition did not persuade through this mechanism, and we could not explain the observed pattern of effects for this message with measures of cognitive response and anger toward the character because these variables did not differ across the randomized experimental conditions. The NPR message did not lead to systematically different patterns of message-related thoughts than the HPR condition, nor did it evoke a high level of anger (2.06 on a 7-point scale, although it did generate more anger than the MPR and HPR conditions). Empathy toward the character and perceived similarity to the story's protagonist, while varying by randomized condition, similarly could not explain the observed pattern of NPR condition effects on persuasive outcomes (or any condition, for that matter). These variables suggested an advantage for the HPR condition over the NPR condition in generating empathy and an advantage for the HPR condition over both the MPR and NPR conditions in perceived similarity. This advantage, however, did not translate into a significant persuasive effect on societal cause attributions or policy support for this condition among any political ideological group. We think it unlikely that

the condition led to greater narrative engagement or transportation than the other two conditions, although we did not measure this variable in this study. Future work should include these measures to explore whether these constructs offer alternative explanations for these findings.

Ideological Differences in Narrative Persuasion

That the MPR and NPR conditions produced greater societal cause attributions and policy support among conservative (but not liberals or moderates) was also surprising in light of previous studies finding effects for liberals only (Niederdeppe et al., 2011; Gollust et al., 2009). Nevertheless, these results are consistent with research suggesting that narratives may be particularly effective in contexts where a message advocates a "value-discrepant" position (Slater & Rouner, 1996; Slater et al., 2006). Post hoc analyses suggest that this pattern occurred because the link between societal cause attributions and policy support was stronger among conservatives than the other two political groups. While we can only speculate about the reason for this pattern, our own work suggests that conservatives tend to have fewer specific policy options in mind when thinking about possible ways to reduce obesity in the United States (Lundell, Niederdeppe, & Clarke, 2013). Offering neighborhood development as a solution may have resonated with conservatives because the idea was considered more acceptable than other policy approaches that have received considerable attention (e.g., taxes, menu labeling). We were careful not to describe the NDA as a federal entity for fear of priming negative attitudes toward government; this may have also played a role, although this is only speculation.

Implications for Health Communication Practice

Many population health scholars seeking to promote obesity-reducing policies have advocated for message strategies that combine personal and societal responsibility in productive ways (e.g., Brownell et al., 2010; Westen, 2010). Our analysis suggests stories that very strongly acknowledge individual responsibility while emphasizing societal causes may limit the effectiveness of these messages. At the same time, this study stands in contrast to a previous study where a similar narrative increased societal solution attributions for liberals but not for conservatives (Niederdeppe et al., 2011). Michele's story (used here) differed from the previous study (featuring a single version of John's story) in two ways: (1) character (a female mother in Michele's story, a male without children in John's story) and (2) the presence or absence of an environmental intervention (the NDA as an agent of change in Michele's story, describing environmental challenges without a solution in John's story). To explore the implications of these differences, we gauged perceived responsibility for John's story in the pretest (described earlier in the Methods section under "Manipulation Check")

and compared these ratings to those observed for various versions of Michele's story. John's story most closely resembled the HPR version of Michele's story in perceived individual responsibility (John = 3.9, $M_{\text{HPR}} = 3.7$) but had much lower levels of perceived societal responsibility (John = 2.9, $M_{\text{average}} = 3.9$). These findings suggest that this study's inclusion of depictions of lower levels of personal responsibility, perhaps combined with the description of a successful neighborhood intervention, may have shaped the story's success at increasing policy support among conservatives.

At the same time, discrepancies in responses to two relatively similar stories also underscore the challenges in making prescriptive narrative design recommendations. Responses to characters and plotlines are difficult to predict a priori, since content incidental to the main persuasive intent of the narrative can influence story perceptions and responses (e.g., Kreuter et al., 2007). We believe this highlights the value for campaign planners of pretesting narrative messages prior to their widespread dissemination. We believe the character and story perceptions studied here (e.g., complex integration, simple elaboration, counterelaboration), although time-consuming (particularly those based on thought listing), are likely to provide valuable insight to campaign planners in identifying unexpected responses to characters or story content.

Study Limitations

Some constructs (e.g., anger toward the character) were measured with a single item, leaving open the possibility that measurement error reduced the likelihood of detecting the role of affect in narrative persuasion. Future work in this area should utilize reliable, multi-item measures of each construct. We also asked respondents to type up to five thoughts, a decision shaped by the mode of data collection (on a laptop). In a typical thought-listing procedure, respondents are not limited to a specified number of thoughts. Our explicit instructions could have caused respondents to list more or fewer thoughts than they might have otherwise.

Message effect sizes were small for some outcomes ($\eta^2 = .02$ for societal cause attributions), although others were larger ($\eta^2 = .09$ for policy support among conservatives). The stories used in here were not designed to maximize possible theoretical differences (e.g., the societal cause and solution aspect of the stories were held constant across conditions), but resembled stories used in large-scale campaigns and thus mirror the type of messages that people may be exposed to in public settings (RWJF, 2008). They also represent exposure to a single message. We believe that our ability to detect any differences in this context is noteworthy. At the same time, we acknowledge that the study manipulated three versions of a single story, which leaves open the possibility that these findings reflect idiosyncratic responses to particular characteristics of the message. Future work should replicate these findings using a variety of stories from characters

of different backgrounds, gender, and race/ethnicity. In addition, the sample was largely White, non-Hispanic, and was recruited from a specific geographic area, although some demographic factors (BMI, political ideology) resemble state and national averages. Readers are cautioned against broad generalizations from these data alone.

Conclusions

Narratives can successfully convey causal information about social issues in ways that invite support for policy solutions to those issues. Future theorizing about narrative persuasion should continue to develop the idea that short stories may be uniquely positioned to integrate complex causal information in a compelling way that yields new insights into social problems.

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