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## Does Narrative Quality Matter during Implementation of a School-based Prevention Intervention? A Test of Narrative Engagement Theory

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### Abstract

Narratives play a powerful role in sharing meaning and making sense of experiences. Specifically, health narratives convey storylines, characters, and messages about health-related behaviors and provide audiences with models for healthy behaviors, prompting audiences' health-related reflections and decision-making. Narrative engagement theory (NET) explains how personal narratives can be integrated into interventions to promote health. This study utilizes NET to test direct and indirect effects of teachers' narrative quality on adolescent outcomes during a school-based substance use prevention intervention that includes narrative pedagogy and an implementation strategy. Observational coding of teacher narratives in video-recorded lessons along with self-report student surveys ( $N = 1,683$ ) were subjected to path analysis. Findings showed significant direct effects of narrative quality on student engagement, norms (i.e., personal, best-friend injunctive, and descriptive norms), and substance use behavior. The analysis also yielded support for indirect effects of narrative quality on adolescent substance use behavior via student engagement, personal norms, and descriptive norms. Findings highlight important issues related to teacher-student interaction during implementation and contributes implications for adolescent substance use prevention research.

### Keywords

narrative engagement; adolescent substance use; teacher-student interaction; norms; prevention intervention

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“Deprive children of stories and you leave them unscripted, anxious stutterers in their actions as in their words ... lacking a sense of how life should go; it is perhaps more common for individuals to end up ‘mis-scripted,’ presented mainly with unhealthy narrative models for life” (Smith & Shortt, 2003, p.71).

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The quote above suggests that if children are not provided with healthy stories—characters, heroes, and situations where they see themselves as healthy, competent, and successful—they will seek out their own stories and develop (un/desired) mental and behavioral models surrounding health. These sentiments underlie an approach to teaching called narrative pedagogy (Clandinin & Connelly, 2004) and is implicit in the narrative persuasion literature within health communication research (Kreuter et al., 2007; Shaffer et al., 2018). Combining narrative pedagogy and narrative persuasion within the context of curriculum development for substance use prevention, Miller-Day and Hecht (2013) proposed narrative engagement theory (NET) which explains how personal narratives can be integrated into interventions to promote health. The underlying assumption of this theory is that adolescents make health decisions based on the story lines available to them (socially, locally, and personally), that they embrace stories that cohere and resonate with their experiences, that mental models of normative health behaviors can be shaped through narrative persuasion, and that providing narratives exemplifying pro-health messages and decision-making surrounding health can ultimately influence adolescents to make healthy choices (Miller-Day & Hecht, 2013). NET provides criteria for determining the quality of narratives based on their ability to provoke interest, realism, and identification. The current study conducts an empirical test of NET in the context of adolescent substance use prevention. To advance our theoretical understanding of NET it is necessary to first discuss the use of narrative in health interventions.

## Narratives and Health

Human beings are natural storytellers who utilize narratives to share meaning and make sense of experiences (Fisher, 1989). As a result, storytelling is one of the most powerful delivery tools for health information (Hopfer & Clippard, 2011). A story that is told with enough vivid and sensory detail has the power to engage even the resistant listener, enhance identification with the characters, model pro-health behaviors (Lee et al., 2011; Moyer-Gusé & Nabi, 2010; Shin, 2021). NET argues that narrative health messages can reframe an audience's preexisting narrative knowledge by addressing their mental models; that is, cognitive representations of the world, their place in that world, and presenting alternatives that shape cognition and decision making (Johnson-Laird, 2006). The ability to strategically embed health messages into stories make narratives a practical approach to intervention and prevention efforts (Green, 2006; Miller-Day & Hecht, 2013).

In addition to modeling behavior change, narratives can enhance overall knowledge about a health topic and change attitudes (Hopfer et al., 2017; Murphy et al., 2013). Also, narratives help change unhealthy behaviors by demonstrating that such actions are not normative, despite prior perceptions (Moyer-Gusé, 2008). Viewers often connect cognitively and emotionally to narrative messages and the characters' experiences more so than if they were just presented with information that may require higher levels of health literacy (Ballard et al., 2020; Murphy et al., 2013), helping address common health disparities. Thus, health education messages presented in narratives allow for connections with populations that are typically more difficult to reach (Hopfer & Clippard, 2011; Miller-Day & Hecht, 2013).

Research has found that targeting specific populations (See Ballard et al., 2021 for African American women; Frank et al., 2015 for Mexican American women; Hecht et al., 2018 for rural youth) through culturally grounded narratives enhances persuasive impact (Larkey & Hecht, 2010; McFarlane & Morgan, 2021). Adapting narratives in health interventions to match cultural conditions is integral for the effectiveness of narrative interventions (Hecht & Krieger, 2006; Shin et al., 2018; Shin & Pettigrew, 2022). The more audience members relate to a character or overall storyline, the higher the persuasive effects of the message (Frank et al., 2015; Kiene & Barta, 2003; Moyer-Gusé et al., 2011; Smith et al., 2007). Thus, researchers suggest that when an individual watches a narrative involving a character who resembles a member of the viewers' specific community, culture, or themselves, they are more likely to be engaged and persuaded to accept health information (Hamby et al., 2017; McQueen et al., 2011; Ratcliff & Sun, 2020). Health narratives are developed from personal accounts of individuals' actual experiences that are then modified to deliver a health message to a targeted audience, while maintaining as much original content as possible (Houston et al., 2011; Larkey & Hecht, 2010).

For some health issues, such as substance use prevention, there may be significant reactivity and resistance to health messaging (Ratcliff & Sun, 2020). Yet, one of the strengths of a narrative approach is the tendency to overcome individuals' resistance or counterarguing (Hopfer & Clippard, 2011; McQueen et al., 2011). People are often resistant to explicit health messages because of perceived invulnerability to adverse outcomes (Krakow et al., 2017; Moyer-Gusé, 2008; Slater & Rouner, 2002). In comparison to non-narrative presentations of health information, narratives are a subtler form of persuasion because the messages are entrenched in the story and experiences of relatable characters (Kreuter et al., 2007; Moyer-Gusé, 2008; Moyer-Gusé et al., 2011). The more engaged an audience is in the narrative, the less resistant they will be to the delivered health message (Ratcliff & Sun, 2020). Thus, narratives are useful in overcoming resistance to health promotion messages because audiences are involved in the story, and persuasive efforts are less overt (Hinyard & Kreuter, 2007; Kreuter et al., 2007; Sood, 2002). In this respect, NET is well suited to understand the narrative persuasion processes, particularly for adolescent substance use prevention research.

## **Narrative Engagement Theory (NET)**

NET posits that a narrative's power is based on its ability to engage the audience to provide mental behavioral models. Miller et al. (1998) and Miller-Day and Hecht (2013) argue that engagement exists on a continuum from high to low cognitive and emotional distance from the narrative and can be measured by an audience's interest in the narrative, perceived realism, and identification with characters. An individual's interest relates to their overall involvement and attention to the story (Green, 2006; Shin et al., 2018). To be engaged in a narrative, this means that the audience views the story as authentic or realistic, and can connect to the plot (Lee et al., 2011; Shin & Pettigrew, 2022). Furthermore, engagement relates to the audience's perceived similarity or identification with the characters (Miller et al., 1998; Shin, 2021). In developing stories to convey health messages, interest, realism, and identification should be considered, to allow for high levels of engagement (Lee et al.,

2011). Individuals who are engaged in the narrative are more likely to connect or attend to the health message and be persuaded to change behavior (Miller-Day & Hecht, 2013).

In applying NET, prior studies consistently found that higher engagement with narratives shifted mental models regarding health topics and had substantial persuasive effects on intervention outcomes (McQueen et al., 2011; Miller-Day et al., 2015; Shin et al., 2018). Narrative engagement has led to higher perceived risk and susceptibility to the health issue, decreasing resistance, and positively influencing attitudes and behaviors (Hopfer & Clippard, 2011; McFarlane & Morgan, 2021; Nan et al., 2017). This research demonstrates that narrative effects are strongest when receivers are engaged. In assessing the effectiveness of narratives in substance use prevention interventions, researchers have found that both affective and cognitive responses to stories influence audience member engagement (Banerjee & Greene, 2012; Miller-Day & Hecht, 2013; Shin et al., 2018).

## **Narrative in School-Based Substance Use Prevention Interventions**

### **School-Based Prevention Interventions**

Initiation of substance use, defined as “the first use of a particular substance” (Substance Abuse and Mental Health Services Administration, 2019, p. 21), often starts during adolescence, with tobacco and alcohol use frequently preceding the use of marijuana and other illicit drugs (Miller & Hurd, 2017). Preventing the initiation of adolescent substance use is essential to reduce the likelihood of drug-related disorders and health problems in adulthood (Caetano et al., 2014). Research suggests that schools may play an important role in substance use prevention, particularly in early adolescence (Sigfusdottir et al., 2011). Early adolescence, operationally defined as the developmental period between the ages of 10 to 14 years, represents a vulnerable period for the onset of risky behaviors (i.e., alcohol and other substance use) (American Psychological Association, 2002).

While there are a variety of effective contexts for substance use prevention, school-based preventative interventions are cost effective (Miller & Hendrie, 2008), can be scaled up and disseminated widely (Pettigrew & Hecht, 2015), and are efficacious for reducing risk behaviors like substance use among high-risk youth (Newton et al., 2022; Pettigrew et al., 2023; Tobler et al., 2000). Schools and classrooms are particularly great settings for delivering substance use prevention programs because a large portion of adolescent social life takes place in school settings with their peers (Cuijpers, 2002). School-based programs allow for early adolescents to learn alongside their peers to build collective efficacy around preventing or reducing risky behaviors while at the same time building self-efficacy (Burke et al., 2009). Unfortunately, as evidenced in meta-analyses of school-based interventions, many are impeded in their effectiveness by a pedagogical approach that is not interactive (Tobler et al., 2000). Interactive prevention interventions provide contact and communication opportunities between and among implementers and students for the exchange of ideas among participants and encourage learning (Tobler et al., 2000). Incorporating narrative pedagogy into school-based prevention provides an opportunity for teachers and students alike to have agency in telling their own personal and locally-based stories, with classroom-based discussions that heighten youth engagement and create new understandings of decisions surrounding substance use (Miller-Day & Hecht, 2013).

Narrative pedagogy is an interactive approach to teaching in which educators and students work together to reflect on, as well as interpret shared experiences (Ironsides, 2015).

### **Narrative Pedagogy and School-Based Prevention**

*Narrative pedagogy* is an approach to teaching and learning that evolves from the experiences of the teacher based on an understanding of how people make sense of phenomena through stories (Clandinin & Connelly, 2004). As stories are authored and analyzed, practical knowledge is both taught and learned (Nehls, 1995), and the ability to know and connect with students becomes the focus of the learning environment (Brown et al., 2008). When implementing this pedagogical approach, students and teachers form learning partnerships in which their own stories are shared and co-interpreted to achieve lesson objectives and meet the needs of the learning community (Ironsides, 2006). The curriculum lessons include youth narratives and explicit instruction for teachers/implementers to solicit students' personal accounts and reflect on the lesson and student accounts by offering up their own topic relevant to personal accounts as illustration and example (Miller-Day & Hecht, 2013).

Specifically, quality in narrative pedagogy would be comprised of excellence in all of the following areas: students frequently sharing their personal experience on lesson-related topics, teachers cultivating a climate of interest and respect for student stories, teachers providing examples through story form, and teachers offering personal accounts if necessary and appropriate (Miller-Day et al., 2015). Guided by NET and the practice of narrative pedagogy, Hecht and colleagues (Hecht et al., 2003; Hecht & Krieger, 2006) developed (to-date) the only narrative-based substance use prevention curriculum for implementation in middle-school classrooms, "keepin' it REAL (kiR)". *kiR*'s development is based on a "from kids, through kids, to kids" approach (Hecht & Miller-Day, 2009). Adolescent narratives are solicited from youth (from kids), integrated into lesson examples, role-plays, activities, scenarios, and videos that are youth-scripted and produced (through kids), and then presented in classes (to kids). The curriculum consists of ten, 45-minute lessons with teachers trained to share their own stories and elicit student stories about experiences related to resistance strategies in drug offer situations. *kiR* is an evidenced-based curriculum designed to enhance student engagement using adolescent and teacher narratives to alter mental models of substance use norms, provide models of pro-social behavior, and ultimately reducing substance use (Hecht et al., 2006, 2010, 2018; Pettigrew et al., 2015).

### **Norms and Adolescent Substance Use**

From a developmental perspective, adolescents are strongly influenced by social norms, which are observed or unspoken behaviors and attitudes that are perceived as prevalent and acceptable within a group or population (Simons-Morton & Farhat, 2010); that is, beliefs regarding what behaviors are considered typical or acceptable in a given group (Kincaid, 2004). Perceived norms have been categorized as descriptive norms (perceptions about what others do), injunctive norms (perceptions about what other approve and disapprove of), and personal norms (internalized values and expectations for behavior) (Cialdini et al., 1990; Elek et al., 2006). Social norms are a key component to many substance use prevention interventions because a rich body of literature supports the idea that perceptions of social

norms are among the foremost influences on adolescent substance use (Eisenberg et al., 2014).

Injunctive norms such as peer approval or disapproval of substance use and related sanctions and descriptive norms (e.g., peer use) are clearly associated with adolescent substance use (Kam et al., 2009; Kam & Wang, 2015), with peer communication about substance use playing an important role in influencing and differentiating abstainers, experimenters, and regular users of alcohol, tobacco, and other drugs and in predicting intention and actual uses of substance (Kam et al., 2016; Shin, 2021; Swaim & Stanelly, 2019; Wyman et al., 2021). Interestingly *perceived* friend/peer use appear to have a stronger association with respondent substance use than measures of actual friend/peer use (Amialchuk et al., 2019; Larimer et al., 2020). Studies have found such descriptive norms of greater friend/peer use as one of factors positively associated alcohol, cigarette, and marijuana use (Guo et al., 2020; Schuler et al., 2019; Spillane et al., 2021; Swaim & Stanelly, 2019), as well as cannabis use (Korn et al., 2021). Finally, personal norms or adolescent's themselves think is acceptable behavior, ultimately influencing substance use decisions (Kam et al., 2009; Kam & Middleton, 2013; Shin & Miller-Day, 2017). It is important that substance use prevention interventions address perceptions of injunctive and descriptive norms and ask students to reflect on their own personal norms (Kam & Yang, 2014; Kam, Wang et al., 2014; Kam et al., 2017). In this respect, the *kiR* program highlights student narratives integrated into each lesson and provides explicit instruction to implementers to share exemplar narratives and solicit student stories during the lesson.

While much is known about the effectiveness of narrative pedagogy, the pathways through which the narrative quality of the program affects program outcomes is less well understood. NET argues that for a narrative-based program to be effective there must be high levels of narrative quality, including the incorporation of engaging narratives into each lesson as well as creating a classroom culture respectful of narrativity (Miller-Day & Hecht, 2013), which can be a challenge, especially if an implementer has had little exposure to narrative pedagogy (Clandinin & Connelly, 2004). Training is provided for teachers implementing *kiR* and this training, as well as all implementer materials (e.g., lesson plans), address the importance of quality in narrative pedagogy. Yet, although there is ample evidence supporting the effectiveness of the overall *kiR* intervention (Hecht et al., 2003, 2006, 2018; Kulis et al., 2005, 2007; Pettigrew et al., 2015; Warren, 2006), the quality of the personal narratives shared in the classroom during *kiR* lessons have never been assessed. Beyond the training and written reinforcement in the implementer materials (e.g., prompts to “share your own story here if applicable”) classroom teachers typically have little to no formal training in or knowledge of narrative pedagogy, potentially affecting their ability to deliver a narrative intervention effectively (Miller-Day et al., 2015). Therefore, there is likely to be variation in narrative quality across teachers delivering *kiR*. As a narrative-based intervention, narrative quality should be particularly important to *kiR*'s program effectiveness. Thus, the current study aims to examine narrative quality of the *kiR* program and its effects on student outcomes (See Figure 1 for the conceptual model):

H1: Teachers' narrative quality is positively related to student engagement.

H2: Student engagement is positively related to personal anti-substance-use norms (H2a), best-friend anti-substance-use injunctive norms (H2b), and peer anti-substance-use injunctive norms (H2c), whereas it is negatively related to descriptive norms (H2d).

H3: Personal anti-substance-use norms (H3a), best-friend anti-substance-use injunctive norms (H3b), peer anti-substance-use injunctive norms (H3c) are negatively related to substance use, whereas descriptive norms are positively related to substance use behavior (H3d).

RQ1: Does narrative quality have indirect effects on student substance use behavior via student engagement and norms?

## Methods

### Participants and Procedures

This study was part of a larger project studying how school-based programs are adapted and implemented in new contexts (for overview, see Colby et al., 2013) and we linked detailed observational coding of video data (teachers delivering the *kiR* lessons) with student self-reports of study outcomes, which was collected in 2010. Forty-one schools were originally recruited for the randomized controlled trial research and for the present study, cross-sectional survey data ( $N = 1,683$ ) were collected from 7th graders (mean age of 12 years,  $SD = 0.50$ ) attending 25 participating schools in Pennsylvania and Ohio. The survey was administered 11 weeks after the implementation of the *kiR* intervention and this procedure was consistent through all students at all participating schools. The sample consisted of 51% male and 49% female. Consistent with their rural communities, the majority reported themselves as white (79.1%), while others reported as Hispanic (2.2%), Asian or Pacific Islander (0.4%), African American (1.6%), Native American (1.6%), mixed (1.4%), and not reported (13.7%).

Prior to the data gathering, the research procedure was approved by the institutional review board (IRB) of the hosting institution and parents' informed consent and students' assent were obtained. A total of 32 teachers participated in the study. Each attended an 8-hour formal training in curriculum delivery and provided informed consent to participate in research activities. A total of 78 classes taught *kiR* producing a possible total of 780, 40 to 50 minute-videos of class sessions. We used a representative sampling procedure to select videos for coding, resulting in 276 videos in 73 classes (Graham et al., 2014; Pettigrew et al., 2013), which was generated by a stratifying procedure employing several important school-level variables (i. e., a rurality index, number of grades in the school, enrollment per grade, percent white, percent receiving free/assisted lunch, and test scores) to obtain archival data.

### Observational Measures

Trained research staff received 14 hours of training for coding observational data, which included didactic instruction on the operational definitions for student engagement and overall lesson narrative quality, with ongoing coder meetings to clarify and discuss

coders' uncertainty of operational definitions. Training continued until intercoder reliability (Krippendorff's alpha; Hayes & Krippendorff, 2007) of .80 was reached. After establishing reliability, coders were randomly assigned and independently rated the total of 276 videos to assess narrative quality and student engagement. They viewed the 45-minute lesson in pre-determined segments (e.g., Activity 1, Activity 2), which ranged from 5 to 20 minutes (See Appendix A for the lesson components and objectives). Coders were instructed to view a segment without coding first and assign a quantitative code for the second view. Data entry files were spot checked weekly for accuracy and intercoder reliabilities were calculated bimonthly over the coding period with each alpha coefficient greater than .80 (Krippendorff's alpha at four different time points: 0.94, 0.93, 0.84, and 0.92).

**Teachers' narrative quality.**—Based on NET, the overall narrative quality was rated by one item on a 5-point scale, using a rubric to define each option. Raters evaluated the quality of the teacher's use of narrative conventions in teaching for each segment of the lesson. The rating captures the overall *opportunity* for and *frequency* of storytelling (e. g., teachers telling stories about themselves or others, soliciting student stories, etc.). For example, a rating of 5 was characterized as: “instructor encouraged storytelling by the students, students frequently shared personal experience, the teacher cultivated a climate of interest and respect for student stories, the teacher provided examples through story form, and offered personal accounts if necessary and appropriate” whereas a rating of 1 “did not meet minimum standards for adequacy in any area.” Observational ratings of narrative quality were averaged together across all coded lessons to create a class-level narrative quality variable.

**Student engagement.**—NET predicts greater engagement with higher quality and quantity of narratives. Accordingly, student engagement was computed as the average of two indicators: student attention and student participation. Both were rated on a 4-point scale (1 = strongly disagree to 4 = strongly agree). Ratings for these indicators were averaged together for each lesson to create a lesson-level student engagement variable. These were then averaged across all coded lessons for each class to create a class-level student engagement variable.

Class-level observational variables were linked with student self-report variables following procedures outlined by Pettigrew et al. (2015). This procedure allowed for us to confidently match 68% of class-level observations to students in those classes. To maintain conservative estimates, for the remaining 32% of cases, we matched observational data with school-level student reports ( $N = 1,683$ ).

### Student Survey Measures

Student surveys were constructed to measure relevant outcomes. As indicated above, our theory led us to include content on substance-use norms and our measures focused on this construct, as well.

**Personal anti-substance-use norms.**—To measure students' personal disapproval of substance use (Hansen & Graham, 1991), students responded to four items, asking “Do



you think it is wrong for someone your age to drink alcohol regularly (beer, wine, or hard liquor)/ to smoke cigarettes/ to smoke marijuana/ to use chewing tobacco?”, using a four-response scale (1 = not at all to 4 = yes, it is very wrong). Cronbach’s alpha test showed a good reliability (Cronbach’s  $\alpha = .93$ ). Higher scores represented stronger personal disapproval of substance use.

**Best-friend anti-substance-use injunctive norms.**—Four items were used from the Communities that Care Youth Survey (Arthur et al., 2002) to assess students’ perceptions of best friends’ disapproval on substance use. Items asked, “Do your best friends think it is wrong for someone your age to drink alcohol regularly (beer, wine, or hard liquor)/ to smoke cigarettes/ to smoke marijuana/ to use chewing tobacco?”, using a four response scale (1 = not at all to 4 = yes, it is very wrong). Cronbach’s alpha test showed a good reliability (Cronbach’s  $\alpha = .93$ ). Higher scores represented stronger disapproval of substance use from best friends.

**Peer anti-substance-use injunctive norms:** Adapted from Arthur et al.’ measure (2002), students answered four items asking, “Do most people your age think it is wrong for someone your age to drink alcohol regularly (beer, wine, or hard liquor)/ to smoke cigarettes/ to smoke marijuana/ to use chewing tobacco?”, using a four response scale (1 = not at all to 4 = yes, it is very wrong). Cronbach’s alpha test showed a good reliability (Cronbach’s  $\alpha = .92$ ). Higher scores represented stronger disapproval of substance use from peers.

**Descriptive norms.**—Four items were used to assess students’ perceptions of peer use (Hansen & Graham, 1991). Items included “Out of every 100 students your age, how many do you think drink alcohol/ smoke cigarettes/ smoke marijuana/chew tobacco at least once a month” (1 = none of them to 11 = all of them). Cronbach’s alpha test showed a good reliability (Cronbach’s  $\alpha = .87$ ). Higher scores represented perceived prevalence of peer substance use.

**Lifetime substance use.**—Using Hansen and Graham’s measure (1991), students responded four items asking, “How many drinks of alcohol have you had in your entire life” (1 = none, I have never had even one sip of alcohol, 10 = more than 100 drinks), “How many cigarettes have you smoked in your entire life” (1 = none, I have never had even one puff, 10 = more than 20 packs of cigarettes), “How many times have you used marijuana in your entire life” (1 = none, I have never used marijuana even once, 7 = more than 30 times), “How many times have you used chewing tobacco in your entire life” (1 = never, 8 = more than 50 times). Due to the nature of the single item measure, no reliability test was conducted. Higher scores represented more use of substances in lifetime.

## Analysis Summary

Prior to the main analysis, descriptive statistics and reliability tests were conducted using student survey data. Table 1 shows the descriptive statistics, and bivariate correlations for key variables. Next, the measurement model was tested by the following indices that guided the practical model fit of the path model testing the direct and indirect effects of teachers’

narrative quality on student lifetime substance use. The comparative fit index [(*CFI*) > .95], the root mean square error of approximation [(*RMSEA*) < .05], and the standardized root mean square residual [(*SRMR*) < .08] explains a most desirable fit (Hu & Bentler, 1999; Kline, 2005). Since  $\chi^2$  is influenced by sample size, it was excluded for the model fit criteria. Gender was included as a covariate in the main model, because it plays a significant role in predicting adolescent substance use behavior (Evans et al., 2017; Kam et al., 2017). To test hypotheses, direct paths were drawn from teachers' narrative quality to student engagement, from student engagement to four different norms, from norms to four different substance use. To test a research question, the indirect effects were examined using a bootstrapping estimation method. Based on Preacher and Hayes's (2008) recommendation, bootstrapping was chosen as the preferred method to deal with the non-normal distribution of indirect effects by obtaining the 95% bias-corrected confidence intervals in the mediation model. To handle the missingness of data (Graham, 2012), the full maximum likelihood method was employed, using *MPlus* (Muthén & Muthén, 2015).

## Results

The path analysis shows the goodness of fit: ( $\chi^2 [17] = 45.82$ ; *RMSEA* = .04; *CFI* = .99; *SRMR* = 0.03). Figure 2 and Table 2 present the analysis results, which explained .04 – 21% of the variance in the endogenous variables. Unstandardized path coefficients are reported in the mediation model based on Slater, Hayes, and Ford's (2007) recommendation. The analysis yielded support for the first hypothesis posing that teachers' narrative quality was positively related to student engagement. The second hypothesis received partial support. As predicted, student engagement was positively related to personal anti-substance-use norms (H2a) and best-friend anti-substance-use injunctive norms (H2b), while it was negatively associated with descriptive norms (H2d). The analysis, however, did not garner support for the relationship between student engagement and peer anti-substance-use injunctive norms (H2c). Similarly, the third hypothesis was partially supported. That is, personal anti-substance-use norms were negatively related to all of the substance use (H3a). Best-friend anti-substance-use injunctive norms were negatively related to substance use (e.g., alcohol, cigarette, and marijuana), except chewing tobacco use (H3b). Descriptive norms were positively related to all of the substance use (H3d). Peer anti-substance-use injunctive norms was significant, yet positively related to chewing tobacco use. This relationship violated our assumption of H3c.

Finally, path analysis also yielded support for the indirect effects of teachers' narrative quality on adolescent substance use behavior via student engagement and personal anti-substance-use norms as well as student engagement and descriptive norms. Indirect effects, however, were detected neither through best-friend nor peer anti-substance-use injunctive norms.

## Discussion

Guided by NET, the present study examined the direct and indirect effects of narrative quality on adolescent substance use behavior via student engagement, personal norms, best-friend injunctive norms, peer injunctive norms, and descriptive norms. The first step in the

path analysis demonstrated that teachers' narrative quality was positively related to student engagement in class. The finding suggests that as teachers tell stories about themselves, solicit students' stories, and create a classroom climate open to narrative accounts, students are more likely to be attentive and participatory. In addition, it was found that student engagement was positively related to personal anti-substance-use norms and best-friend anti-substance-use injunctive norms. That is, students with high levels of engagement with the lesson were more likely to report stronger personal and best-friends' disapproval of substance use after receiving the intervention. Student engagement was also found to be inversely related to descriptive norms, suggesting that as students are more attentive and participatory in class, they are less likely to perceive the prevalence of substance use among their peers. The prevalence of adolescent substance use was discussed during the intervention and such information was consistently provided to all the students as part of the lesson on norms. Overall, these findings offer empirical evidence for the significant relationships between student engagement and norms and support the previous literature highlighting the important role of narrative pedagogy (Clandinin & Connelly, 2004) and narrative engagement (Miller-Day & Hecht, 2013). Findings also showed that personal anti-substance-use norms and best-friend anti-substance-use norms were significantly associated with lifetime substance use behavior. Students with stronger personal and best-friend disapproval of substance use are less likely to report substance use behavior in their lifetime. The findings align with other studies indicating the protective roles of personal and best-friend anti-substance-use norms against adolescent substance use behavior (Kam et al., 2009; Kam & Wang, 2015; Shin & Miller-day, 2017; Kam et al., 2016). Similarly, consistent with previous research (Kam & Middleton, 2013; Kam & Yang, 2014), the positive associations between descriptive norms and adolescent substance use behavior were detected in this study, suggesting that as students perceive prevalent substance use among their peers, they are more likely to report substance use behavior in their lifetime.

One of the unique contributions of this study is that it tests indirect as well as direct pathways from narratives. Indirect effects of teachers' narrative quality were discovered in relation to adolescent substance use behavior. Specifically, mediation effects of student engagement and personal anti-substance-use norms and descriptive norms were detected. While NET and other studies of narrative pedagogy tout the benefits of increasing student engagement, this study also shows that teacher narrativity may be particularly salient for shaping personal conceptions about substance use. This novel finding needs to be replicated to add confidence in the benefits and limits of storytelling, but it seems to encourage narrative integration into prevention interventions that rely on shifting norms (or other beliefs) as part of their logic models. Although ancillary to the primary analysis in this study, it is worth noting that observations of teacher narrativity showed a relatively high level of quality ( $M = 3.52$  for ratings from 1–5) with substantial variation ( $SD = .85$ ). This relatively high level could be explained by several factors. It could be that many teachers incorporate narrativity into their normal pedagogy, which encourages building classroom relationships and student engagement. It could also be that teachers picked up on cues in the *kiR* curriculum (e.g., discussion prompts calling for stories and personal examples, etc.) to incorporate narrativity. The training included the promotion of narrativity and the usefulness of on-theme personal accounts to illustrate and explain lesson concepts and the lessons,

themselves, are structured around narrative so it was natural for teachers to assume this style of pedagogy. The genre of curriculum (i.e., a skill-based, character development program contrasted with an academic subject like mathematics) may also have led to more personal examples and narrativity. Whether related to teacher or curriculum, the narrativity of the *kiR* lessons in this study were of relative high quality.

Findings revealed that no relationship between student engagement and peer anti-substance-use norms and a surprising positive correlation between peer anti-substance-use norms and lifetime chewing tobacco use. Thus, it was suggested that narrativity and student engagement were related to other types of norms (personal and descriptive) but changing students' perceptions of what their peers find acceptable was not possible. Indeed, changing someone's opinion about predominant beliefs may be difficult for any intervention much less for one focused on individual skills (e.g., resistance strategies, decision making) and of relatively short duration. Our data could reflect a broader social norm of tolerance (whatever anyone does is fine, reticence toward offering injunctions on any behavior) rather than specific injunctions against substance use. Even more unexpected, however, was the significant positive association between peer injunctive norms and tobacco use. Because we used cross-sectional data, it is important to note that any of these relationships could be bi-directional. This leaves as a possible explanation that those who have engaged in chewing tobacco use have more tolerance for any substance use behavior. This idea finds support in other research showing that those who have had alcohol tend to overestimate the number of people who drink in their schools (Brooks-Russel et al., 2014). Similarly, it is possible that those who have used chewing tobacco adopt the perspective that others do not condemn its use. An alternative explanation is that the present study is sample-dependent because participants came from rural populations where chewing tobacco is more common than urban areas (Roberts et al., 2016).

The findings also help explain the efficacy of *kiR* that has been established by three, group randomized clinical trials (Hecht et al., 2003; Hecht et al., 2006; Hecht et al., 2018). While studies have unpacked some of the effects including subgroup analyses (Kulis et al., 2007), examining implementation (Pettigrew et al., 2015), and looking at components (Hecht et al., 2008), the current analyses demonstrate that narrative quality of the lessons is also a key factor in its success.

### Limitations and Future Direction

The present study is one of a few studies that use both observational and student survey data to examine the narrative quality and adolescent substance use during the implementation of a school-based prevention intervention, *kiR*. Although the current study has significant theoretical and practical implications, it is not without limitations. First, students' responses were collected immediately after the intervention, which only allowed us to test the short-term effects of the intervention. Future research should investigate the longitudinal effects of the intervention on adolescent outcomes. Second, the sample came from participating schools in rural areas, which is not generalizable to adolescents in all areas. Third, the dataset was collected in the year of 2010, which may not best represent adolescents today. Nonetheless, we believe that the study findings shed light on the importance of narrative

quality and the effectiveness of a narrative-based intervention for adolescent substance use prevention. Future researchers should collect more data that better represent generalization across the geographic locations and embrace the diverse youth culture. Last, the present study used a single item measure and composite variables in the path analysis. The use of latent variables is recommended for more robust analysis of the mediation model testing.

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## Appendix A: KIR Lesson Components and Objectives

### LESSON ONE: Options and Choices

#### Objectives:

- Identify the keepin' it REAL resistance strategies of Refuse, Explain, Avoid, and Leave.
- Describe the five steps of the ABCDE decision-making model.
- Apply the ABCDE Decision-making model to everyday situations.
- Explain how their decisions can impact future goals.

### LESSON TWO: Risks

#### Objectives:

- Define risk.
- Identify the positive and negative consequences of risk.
- Differentiate between healthy and unhealthy risks.
- Explain how taking risks may affect their goals.

### LESSON THREE: Communication and Conflict

#### Objectives:

- Explain what it means to agree to disagree.
- Demonstrate the differences between assertive, passive, and aggressive styles of communication.
- Express why assertive communication is an effective strategy.

### LESSON FOUR: Refuse

#### Objectives:

- Explain the resistance strategy of Refuse.

- Demonstrate the assertiveness techniques of Repetition, Acknowledge and Maintain.
- Pair non-verbal and verbal techniques with other refusal skills to create a more effective refusal strategy.

## **LESSON FIVE: Explain**

### **Objectives:**

- Define the resistance strategy of Explain.
- Justify their actions in a clear way.
- Assertively express a decision or opinion using I Statements.

## **LESSON SIX: Avoid**

### **Objectives:**

- Define the REAL strategy of Avoid.
- Explain how planning ahead can be used to avoid a situation.
- List three methods for avoiding an uncomfortable situation.

## **LESSON SEVEN: Leave**

### **Objectives:**

- Explain the REAL strategy Leave.
- Identify situations where leaving is the best option.

## **LESSON EIGHT: Norms**

### **Objectives:**

- Explain the difference between actual and perceived norms.
- Identify the actual norms of alcohol, tobacco, and drug use among their peers.
- Describe how a skewed perception of peer norms may influence a person's behavior.

## **LESSON NINE: Feelings**

### **Objectives:**

- Identify situations that may cause them stress.
- Explore healthy ways to deal with stress.
- Identify people in their support network who they can go to for help.

## LESSON TEN: Support Networks

- Explain four different ways to ask for help.
- Identify their short- and long-term goals and related worries.
- Discuss the key concepts covered in the kiR curriculum.

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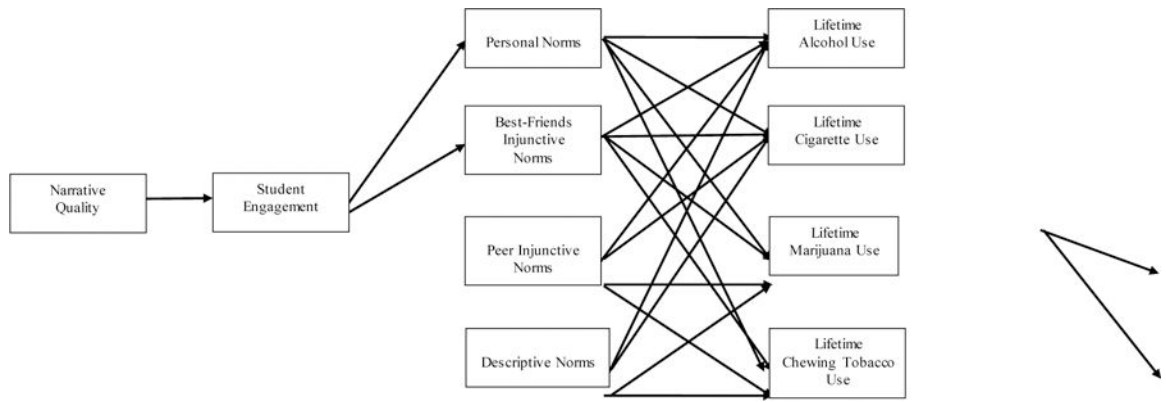


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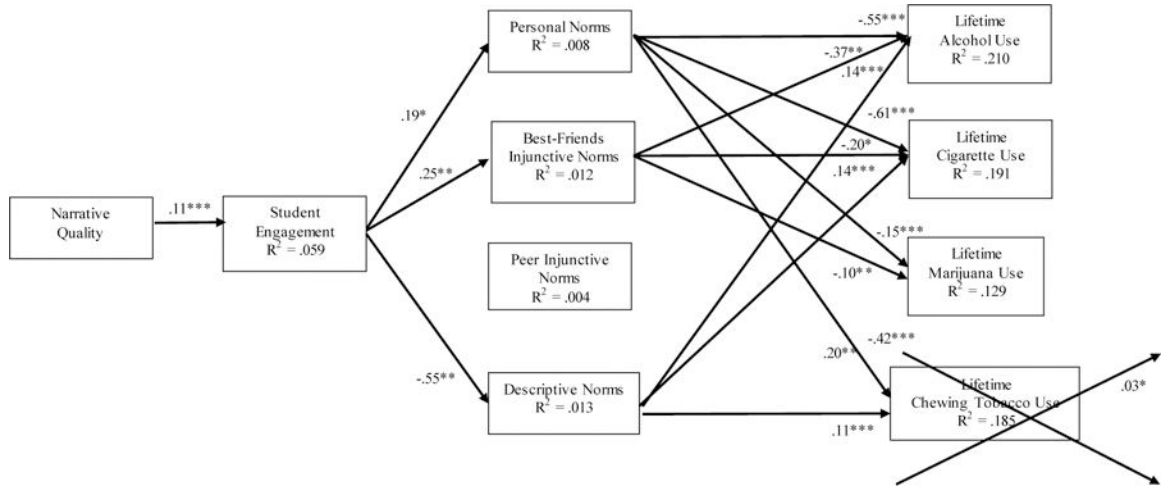
**Figure 1.**  
Conceptual Model

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**Figure 2.**  
Path Analysis Result

*Note.* Path coefficients in the figure are unstandardized and only significant pathways and correlations are highlighted by boldface ( $\chi^2[17] = 45.82$ ; RMSEA = .04; CFI = .99; SRMR = 0.03). Effect of gender was controlled but the pathways are not shown in the figure for reasons of clarity. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

*Footnote.* Path analysis without gender as a covariate shows the appropriate model fitness. ( $\chi^2[28] = 60.88$ ; RMSEA = .03; CFI = .99; SRMR = 0.03). Most of the significant effects remained, except for the significant associations between narrative quality and student engagement, between best-friends injunctive norms and lifetime alcohol, cigarette, and marijuana use, were not detected.

Table 1.

Means, Standard Deviations, and Bivariate Correlations,

Variable	M (SD)	1	2	3	4	5	6	7	8	9	10
1. TNA	3.52 (0.85)	---									
2. SE	2.44 (0.37)	0.24***	---								
3. PN	3.48 (0.81)	-0.13	0.10**	---							
4. BFIN	3.32 (0.85)	-0.04	0.11**	0.72***	---						
5. PIN	3.01 (0.85)	-0.04	0.07*	0.42***	0.54***	---					
6. DN	3.25 (1.83)	0.09**	-0.12***	-0.22***	-0.28***	-0.30***	---				
7. AL	2.48 (1.78)	0.04	-0.09**	-0.38***	-0.36***	-0.20***	0.23***	---			
8. CI	1.54 (1.60)	0.04	-0.09***	-0.39***	-0.33***	-0.17***	0.24***	0.54***	---		
9. MA	1.11 (0.64)	0.04	-0.04	-0.25***	-0.21***	-0.10***	0.19***	0.39***	0.59***	---	
10. CH	1.31 (1.11)	0.04	-0.07*	-0.30***	-0.26***	-0.08**	0.21***	0.48***	0.53***	0.37***	---

Note. TNA teacher narrative quality, SE student engagement, PN personal anti-substance-use norms, BFIN best-friend anti-substance-use injunctive norms, PIN peer anti-substance-use injunctive norms, DN descriptive norms, AL lifetime alcohol use, CI lifetime cigarette use, MA lifetime marijuana use, CH lifetime chewing tobacco use. Reliability is reported as Cronbach Alpha.

\* p < .05

\*\* p < .01

\*\*\* p < .001

**Table 2.**

## Direct and Indirect Effects for Path Analysis

Parameter	Unstd. (SE)	Parameter	Unstd. (SE)
TNQ → SE	0.11 *** (0.01)	DN → AL	0.14 *** (0.04)
		DN → CI	0.14 *** (0.3)
SE → PN	0.19 * (0.07)	DN → MA	0.03 * (0.1)
SE → BFPI	0.25 ** (0.08)	DN → CH	0.11 *** (0.2)
SE → PIN	0.14 (0.08)		
SE → DN	-0.55 ** (0.17)	TNQ → SE → PN → AL	0.11 * (0.01)
		TNQ → SE → PN → CI	0.01 * (0.01)
PN → AL	-0.55 *** (0.11)	TNQ → SE → PN → MA	0.00 (0.00)
PN → CI	-0.61 *** (0.09)	TNQ → SE → PN → CH	0.01 † (0.00)
PN → MA	-0.15 *** (0.04)		
PN → CH	-0.42 *** (0.06)	TNQ → SE → BFPI → AL	0.01 (0.01)
		TNQ → SE → BFPI → CI	0.01 (0.00)
BFPI → AL	-0.37 ** (0.11)	TNQ → SE → BFPI → MA	0.00 (0.00)
BFPI → CI	-0.20 * (0.09)	TNQ → SE → BFPI → CH	0.00 (0.00)
BFPI → MA	-0.10 ** (0.04)		
BFPI → CH	-0.12 (0.06)	TNQ → SE → PIN → AL	0.00 (0.00)
		TNQ → SE → PIN → CI	-0.00 (0.00)
PIN → AL	-0.06 (0.08)	TNQ → SE → PIN → MA	-0.00 (0.00)
PIN → CI	0.11 (0.07)	TNQ → SE → PIN → CH	-0.00 (0.00)
PIN → MA	0.04 (0.03)		
PIN → CH	0.20 *** (0.05)	TNQ → SE → DN → AL	0.01 * (0.00)
		TNQ → SE → DN → CI	0.01 * (0.00)
		TNQ → SE → DN → MA	0.00 (0.00)
		TNQ → SE → DN → CH	0.01 * (0.00)

Note. *TNA* teacher narrative quality, *SE* student engagement, *PN* personal anti-substance-use norms, *BFPI* best-friend anti-substance-use injunctive norms, *PIN* peer anti-substance-use injunctive norms, *DN* descriptive norms, *AL* lifetime alcohol use, *CI* lifetime cigarette use, *MA* lifetime marijuana use, *CH* lifetime chewing tobacco use

*Unstd.* = unstandardized estimate, *SE* = standard error.

† p = .05

\* p < .05

\*\* p < .01

\*\*\* p < .001