THE CHANGING STORY: EVOLVING COGNITIVE DISSONANCE AND THE IMPACT OF NARRATIVE ENGAGEMENT

By

Jack Waier

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Media and Information – Master of Arts

2024

ABSTRACT

This study contributes to our understanding of how individuals cope with or resolve cognitive dissonance and proposes narrative engagement as a potential means in which individuals can fulfill dissonance reduction. Previous work has established dissonance can result in psychological discomfort and the role of narrative engagement in mitigating discomfort resulting from everyday threats to the self. Thus, narrative engagement was evaluated to determine if there was a resulting decrease in attitudinal change that would traditionally be seen in dissonance reduction to establish an alternative strategy. A 2 x 2 between-subjects design using undergraduate student participants from a Midwestern university were grouped randomly into conditions for this study. Participants first reported their attitudes toward tuition by placing their ratings on a semantic differential scale. The participants in cognitive dissonance conditions engaged in the induced-compliance paradigm task of writing counter-attitudinal essays on raising tuition at the university by 12%. Individuals were then given a narrative short story or asked to complete basic arithmetic problems to establish a contrast in narrative and non-narrative cognitive tasks. Individuals in the narrative condition then reported their narrative engagement on multiple scales, while non-narrative participants continued with the math problems for an equal time duration. Participants again reported their attitudes toward tuition for comparison to before the manipulation to evaluate the degree of attitudinal change experienced. The study found that narrative engagement could not be evaluated as a dissonance reduction mechanism due to difficulties replicating dissonance induction with participants. This issue may potentially stem from using a topic, such as tuition increases, that has changed significantly since previous research. Consequently, further evaluation of dissonance induction tasks is necessary to properly induce dissonance using the induced-compliance paradigm in future work.

ACKNOWLEDGEMENTS

I would like to express my gratitude to my advisor Dr. David Ewoldsen, as his commitment to my success, both academically and personally, provided crucial support through the challenges I encountered. Under his guidance, I not only acquired the knowledge needed to contribute to impactful scientific research, but also developed as an individual further capable of handling any future challenges presented to me with the help of his advice and willingness to drive me to keep going.

I would also like to thank Dr. Nancy Rhodes, who was an outstanding mentor with profoundly creative research solutions and heartfelt support for me as a student. Her readiness to offer help in times of need and genuine kindness have been invaluable in navigating my academic journey and giving me the confidence to continue in my studies when maneuvering through some of the most difficult moments.

I would like to say how grateful I am to have had Dr. Ruth Shillair as a part of my academic journey. Her constant encouragement and engagement in thoughtful discussions have played a crucial role in shaping my research and overall academic experience. She was instrumental in my decision to return to the program, and I would not have been the student I was without her help.

I can confidently say I would not be the individual that I am today without the experience that I had during my time returning to academics. More importantly, I do not believe I could have gotten here without the people that I have been incredibly lucky to have met during my time at Michigan State. Thank you so much to everyone, I will never forget this experience and forever use it to guide me in the story that comes next.

TABLE OF CONTENTS

INTRODUCTION

Throughout human history, stories and narratives have been a prevalent way to communicate and engage across various cultures and time periods (Fisher, 1984). Moreover, the drive to create narratives arose not long after the development of language and has been described as an innate mechanism for understanding the world around us (Boyd, 2018). Additionally, engagement with narratives has enabled individuals to communicate messages to gain a deeper understanding of one another's experiences (Boyd, 2018) and can potentially influence attitudes and behaviors (Singhal & Rogers, 1999). Previous research has established that narratives function as an escape and enable individuals to cope with daily life events and immerse themselves in the narrative world (Katz & Foulkes, 1962; Irimiás et al., 2021). With regards to the immersive experiences that occur in narrative engagement, Green and Brock's (2000) research on the concept of transportation elucidates the ability of engaging stories to transport individuals into an alternative world and demonstrates that this transportation can increase the persuasiveness of the narrative. Further aspects of narrative engagement that have been demonstrated are the enjoyment of the narrative and appreciation beyond enjoyment that leads to gratification to understand audience interest in different types of narratives that can explore various meanings (Oliver, 2008; Oliver & Bartsch, 2010).

Building upon these concepts, recent work on narratives by Slater et al. (2014) proposes the concept of "temporarily expanding the boundaries of the self," or TEBOTS. According to the TEBOTS model, narrative engagement provides the audiences an opportunity to expand beyond the limitations of a single "self" and engage with concepts and situations through transportation and identification to create boundary expansion of our perceived world (Slater et al., 2014). Furthermore, individuals are said to immerse themselves in narratives and their worlds to fulfill

specific motivations and threats to the self that they are only able to partially satisfy in their everyday lives (Slater et al., 2014). Therefore, the proposition that people seek out and engage with narratives more frequently in difficult or discomforting circumstances is the theoretical connection to cognitive dissonance, a state described by Festinger (1957) as a drive-like discomfort.

Cognitive dissonance may be looked at as another potential example of an "identity threat" to the self. To illustrate, Elliot and Devine (1994) proposed that when people encounter information that conflicts with their existing beliefs or attitudes, this can generate psychological discomfort and jeopardize an individual's sense of self, which they are then motivated to resolve. Resultantly, cognitive dissonance may then be viewed as an identity threat that could potentially be addressed through narrative engagement by allowing individuals to cope with and resolve the dissonance motivation experienced. In theory, this engagement would ultimately lead to the restoration of the self and reduction of the aroused dissonance motivation without a traditional dissonance reduction, such as attitude change, being needed. Further understanding this process could provide new insights into the mechanisms of how narratives influence cognitive processes and behaviors. In turn, this understanding could inform the development of more effective communication strategies in areas such as education, therapy, and media, where leveraging narrative engagement could help individuals manage conflicting information and maintain psychological well-being.

LITERATURE REVIEW

Narrative Engagement and TEBOTS

Engagement with narratives is a fundamental aspect of human society that has been demonstrated to shape the communication of individuals between one another (Boyd, 2018), shape the attitudes and behaviors of individuals (Singhal & Rogers, 1999), and provide entertaining experiences (Vorderer et al., 2004). Previous work has explored narrative's ability to serve as an escape that provides the individual an affordance to deal with events of daily life (Katz & Foulkes, 1962). Progressing from this, narrative consumption has been demonstrated to lead to this escapism, which then allows for immersion into the narrative world (Irimiás et al., 2021). Extending this idea that narratives have provided a means for individuals to cope with daily stressors of everyday life, the TEBOTS framework has been proposed as a mechanism with which individuals utilize narrative engagement to fulfill their unmet needs that occur due to the limitations of existing as a single self (Slater et al., 2014). Moreover, TEBOTS draws upon Self-Determination Theory from Ryan and Deci (2000) to propose that the concept of a single self prevents individuals from ever reaching complete fulfillment of the fundamental needs of Self-Determination Theory: autonomy, relatedness, and competence. As a result, these threats to the self-drive individuals toward narratives to allow for boundary expansion of their reality through an immersive experience that allows the individual to take perspectives of the narrative world or characters within them (Slater et al., 2014). To understand how individuals take these perspectives, both transportation and identification are imperative to understand the potential of narrative engagement in expanding the boundaries of the self (Green & Brock, 2000; Cohen, 2001).

Firstly, the concept of transportation was introduced by Green and Brock (2000) and refers to the mental state in which individuals lose their situational awareness of their surroundings and immerse themselves completely in the narrative until they are "transported" into the world of the story. Individuals that are transported into the story are considered to be more likely to adopt the beliefs, attitudes, or behaviors of the characters in the story, and this can then lead to changes in their own personal beliefs, attitudes, or behaviors (Green & Brock, 2000; Green, 2004). Moreover, an individual's prior familiarity with themes of the story increases transportation and this then correlates with greater perceptions of realism that can lead to the audience endorsing more story-consistent beliefs (Green, 2004). In comparison, identification with media characters enables an individual to involve themselves in the narrative from the perspective of a character in the story, as if the events were happening to them personally (Cohen, 2001). Correspondingly, identification with others portrayed in media is said to allow individuals to take perspectives unique from their reality, and as a result, this can help develop one's self-identity (Erikson, 1968). In addition, Brown (2020) offers that the experience of identification can reinforce an individual's pre-existing attitudes or behaviors; however, it may also prompt changes to these as they strive to identify more closely with characters and their values. Despite this, while the concept of transportation into the narrative has been established in multiple studies to be a mediator for a heightened level of entertainment, there has not been further support of identification's mediating role (Johnson et al., 2015, 2016). Therefore, transportation's role in narrative engagement should be emphasized over identification when evaluating changes in individual's attitudes or beliefs through immersive narrative experiences.

Transportation and identification are not the only important concepts to comprehend how individuals engage with narratives, as the enjoyment of narratives is also pivotal to the

framework of narrative engagement. Enjoyment has been demonstrated to be a central concept of narrative engagement and has traditionally focused on the positive emotional response from individuals during narrative consumption (Vorderer et al., 2004). Equally important to pure enjoyment of the narrative, is the extension proposed by Oliver (2008) that expands the concept of enjoyment to also include appreciation of the narrative as well. Appreciation provides narrative engagement with perspective on why individuals and audiences are drawn to narratives that allow for them to ponder the meaningful properties of the narrative and motivations in perspective of life (Oliver, 2008). Oliver and Bartsch (2010) advanced the ideas of narrative enjoyment and appreciation to contain the concepts of hedonic enjoyment and eudaimonic appreciation. In detail, hedonic enjoyment refers to the fun or suspense that the audience may experience from the narrative. While eudaimonic appreciation specifies that this appreciation comes from the narrative's ability to construct more meaningful responses from the audience and the degree to which it leaves a lasting impression with them. Further extensions of the TEBOTS model have demonstrated that increased enjoyment and appreciation for narratives can occur when an individual's self-control resources are depleted (Johnson et al., 2015).

While this work on TEBOTS has not focused on cognitive dissonance, the theoretical foundation of the model also speaks to the ability of narratives to serve as a coping mechanism with identity threats (Slater et al., 2014; Wolfers & Schneider, 2021). Consequently, through engagement with narratives, the TEBOTS model suggests that stories can serve as a means to expand beyond the boundaries of the self and attempt to find restoration from life's challenges and identity threats. Finally, recent work from Rieger and Schneider (2022) suggests that narratives can play a significant role in self-threatening situations, ostracism and mortality, for individuals that need help to cope and supports the effectiveness of the TEBOTS model.

Furthermore, bridging the insights of TEBOTS with the literature on cognitive dissonance aims to clarify how narratives can function not only as coping mechanisms for identity threats but also potentially mitigate the discomfort arising from conflicting beliefs and attitudes.

Cognitive Dissonance Theory

Since it was first proposed by Leon Festinger in 1957, the study of cognitive dissonance has yielded much research. Further, dissonance theory states that individuals experience cognitive dissonance when their attitudes, beliefs, or behaviors are inconsistent with one another (Festinger, 1957). Consequently, this inconsistency then results in psychological discomfort that people are motivated to reduce. Festinger's original proposal for the dissonance theory focused on this concept of psychological discomfort. When generated by inconsistencies, individuals are motivated in a drive-like manner to resolve the discomfort, and consequently reduce or eliminate cognitive dissonance.

Adding to this foundation, the implications in Festinger and Carlsmith's (1959) classic study on cognitive dissonance are important for understanding the role of attitude change in reducing dissonance. Furthermore, the study demonstrated that participants may alter their attitudes to align with their behavior to reduce cognitive dissonance. Notably, individuals were seen to change their attitudes even when the behavior was inconsistent with their beliefs. Finally, this study proposes that attitude change can be motivated by the need to reduce dissonance in conditions where external justifications are lacking rather than solely by a desire for consistency. Thus, it underscores the importance of examining factors that motivate attitude change if we are to understand how people manage cognitive dissonance.

However, subsequent research has furthered the original model of dissonance theory, and several alterations have been proposed. Specifically, the concept of cognitive dissonance as a

form of arousal was proposed by Brehm and Cohen (1962) and established by the work of Zanna & Cooper (1974). In this work, Zanna and Cooper introduced an attributional approach to demonstrate the arousal properties of dissonance; however, their work could not conclude if dissonance was indeed a drive-like state that Festinger proposed in 1957. While the uncertainty surrounding whether dissonance is a drive-like state did not agree with Festinger, dissonance as a type of arousal gained extensive acceptance in the field and has remained a significant element of the theory. However, evidence of the drive-like state that Festinger initially proposed was found by Elliot and Devine (1994) in their study that established when individuals are faced with information at odds with their beliefs, values, or self-concept, it creates a sense of dissonance that is experienced as psychological discomfort. This psychological discomfort then leads the individual to a motivational state that drives them to reduce their psychological discomfort. As a result, this study validated the original predictions seen in Festinger's 1957 theory that stated dissonance would lead to this discomforting drive-like state.

Furthermore, building upon this, Cooper and Fazio (1984) introduced the "New Look" model of dissonance theory, which focused on the role of personal responsibility for aversive consequences and proposed a return to dissonance as a motivational state by establishing dissonance arousal and dissonance motivation as separate concepts. In their distinction, dissonance arousal is described as the psychological discomfort that is experienced when individuals encounter information that contradicts their attitudes or beliefs, while dissonance motivation is the drive to reduce this discomfort and restore consistency. In other words, while arousal may initiate the interpretation of an event, it is actually the discomforting feeling that is caused by an individual's attributional judgment of the arousal that serves as the primary motivation to employ a strategy of cognitive dissonance reduction.

Consequently, this is also a possible explanation as to why individuals are driven to seek external experiences in the form of narratives to restore consistency and alleviate the discomfort experienced by the dissonance motivation. Additionally, the personal responsibility for negative consequences explained by the New Look Model further reaffirms the use of high and low-choice conditions in dissonance work, as low-choice conditions should remove personal responsibility and thus the dissonance arousal to provide a control condition.

Summary of Research Question and Hypotheses

Thus, the objective of this study is to investigate the connection between narrative engagement and cognitive dissonance. The study seeks to test the predictions of the TEBOTS framework and explore whether cognitive dissonance can lead to greater narrative engagement during the experience of a story. To do so, the study will assess the level of narrative engagement on various aspects, including enjoyment and appreciation (Oliver, 2008; Oliver & Bartsch 2010), transportation (Green & Brock, 2000), and boundary expansion (Slater et al., 2014; Johnson et al., 2016). Resultantly, because much of the previous research on narrative engagement and cognitive dissonance has been conducted separately, the research question of interest in this study will attempt to further understand the potential relationship between these two concepts:

RQ1: "Will narrative engagement mediate the relationship between cognitive dissonance and attitudinal change?"

Building on this research question and the previous applications of the TEBOTS model, this study proposes two hypotheses that will further examine narrative engagement's ability to allow for expansion of self-concept when facing threats to identity in the context of cognitive dissonance:

H1: Individuals in a state of cognitive dissonance will report greater narrative engagement after reading a story than individuals in a consonant state.

H2: Individuals who report greater narrative engagement during the narrative will display reduced attitudinal changes.

These hypotheses aim to elucidate the nature of the theoretical mediating role of narrative engagement in the relationship between cognitive dissonance and attitudinal change. By testing these hypotheses, this study aims to provide a more comprehensive understanding of how narratives can influence cognitive processes and behaviors under the TEBOTS model. Confirmation of these hypotheses would contribute to the broader field of narrative persuasion and cognitive dissonance and offer new insights into how stories can shape and alter individual attitudes.

METHOD

Power Analysis

An a priori G*Power analysis was conducted to determine the necessary sample size that would be needed to detect a medium effect size of f = 0.25 (d = 0.40) (Johnson et al., 2015, 2016) at a statistical power of 0.80 at the standard alpha of 0.05. Moreover, four groups and one degree of freedom were identified due to the 2 x 2 design of the experiment. Finally, the power analysis determined that a sample of 128 participants was required to achieve the statistical power necessary for the experiment. However, to ensure that the study had adequate power and account for potential attrition, a projected sample of 200 participants was targeted.

Participants

The study collected a sample of 112 undergraduate students at a large Midwestern university. Participants were recruited during the semester using the university's student research participation system for a 30-minute session either in-person on a computer or remotely online. Consequently, students received research course credit as their incentive that was given for their participation in the study. Data cleaning was completed to remove outliers in duration spent overall and for failed attention checks, leaving the remaining participants (N = 87). This sample consisted of 34 males (39.1%) and 53 females (60.9%). The average age was 21.01 (SD = 1.75), and the sample was 69.0% White, 11.5% Black, 10.3% Asian, 3.4% Hispanic or Latino, 3.4% multiracial, and 2.3% other. 65 participants completed the study in-person and 22 participants participated remotely online. Informed consent was obtained from all participants prior to their participation in the study. Inclusion criteria required that participants were currently enrolled in undergraduate university and are 18 years of age or older. Exclusion criteria included graduate students, ages younger than 18 years old, and non-English proficient or limited English

proficiency students. This was necessary to avoid difficulty during the essay task and narrative task if students were unable to read and write English fluently without assistance.

Design

The study utilized a 2 x 2 factorial between-subjects design with simple randomization. Participants were randomly assigned via Qualtrics to one of four conditions: (1) high-choice counter-attitudinal essay with the narrative following, (2) low-choice counter-attitudinal essay with the narrative following, (3) high-choice counter-attitudinal essay with the non-narrative math problems following, and (4) low-choice counter-attitudinal essay with the non-narrative math problems following. The independent variables in this study were the level of choice participants have in writing the counter-attitudinal essays for a 12% tuition increase at the university (high or low) and a narrative (a validated short story) or non-narrative (basic arithmetic problems) experience that was received following the essay task. The narrative selection was chosen by utilizing one of the seven previously validated short stories that have been utilized with the selected scales to measure narrative engagement (Johnson et al., 2015; Johnson et al., 2016). The story selected was "Two Were Left" by Hugh B. Cave, broken into twelve paragraphs and displayed on separate screens in which individuals were required to spend at least 15 seconds before any voluntary advancement was possible to ensure the narrative could not be skipped. In the non-narrative condition, the individuals were given basic addition, subtraction, and multiplication (e.g. 3+3 +?) for a duration of 9 minutes, as this was the average time spent by individuals who were pretested for their duration reading the selected story and completing the coinciding narrative engagement measures (N = 33). After completing the study, each participant was debriefed about the study, thanked for their participation and time, and given the opportunity to ask any questions they may have.

Measures

Attitude Toward Tuition. Participants' attitudes toward tuition were assessed using a semantic differential scale that was adapted from Crites et al. (1994) paper. In particular, the adapted scale includes a series of bipolar adjectives that measure both the affective and cognitive attitudes toward the subject of interest, which in this study was tuition. The scale was tailored to suit the specific context of this study and was used to explore how cognitive dissonance and narrative engagement impact participants' attitudes towards tuition by placing their rating on an 7-point scale numbered from -3 to 3 with the bipolar adjectives as the anchors. (e.g. Bad/Good, Undesirable/Desirable)

Narrative Engagement. The level of narrative engagement from participants was assessed using a combination of multiple scales as previously discussed. The level of enjoyment and appreciation were measured using the audience response scale which utilizes 12 items to create four subscales that measure the level to which the audience found the narrative fun, moving or thought provoking, suspenseful, and if the narrative left them with a lasting impression (Oliver & Bartsch, 2010). Coupled with this, the transportation of the reader into the narrative story was measured using the 15-item scale constructed by Green and Brock (2000). Additionally, the transportation scale (Green & Brock, 2000) allows for the items to be adjusted for the specific story to capture narrative context and protagonist interpretation. Each of these scales are rated on a 7-point Likert scale from 1 to 7 (1 = strongly disagree and 7 = strongly agree) for the anchors of the audience response scale and 1 = not at all and 7 = very much for the anchors of the transportation scale. The boundary expansion measures from Johnson et al. (2016), were given as a 10 item 11-point Likert scale from 0 to 10 (0 = not at all and 10 = very much) to evaluate the level of boundary expansion experienced by the participant when reading

the narrative. Further, the combination of these scales has been used in previous research and has been shown to be a valid and reliable measure of narrative engagement and its subsidiaries (Johnson et al., 2015; Johnson et al., 2016). This combination of scales provides a quantitative measure of the different aspects of narrative engagement reported by participants by taking the mean of all items for each scale to achieve one score for each of the aspects of narrative engagement, which will be used to test the experimental hypotheses.

Frustration. Additionally, to ensure that the non-narrative condition was not a significantly frustrating task that would interfere with interpretation of the outcome variables, an adapted task frustration scale was given following either conditions task taken from Peters et al. (1980). (e.g. Being frustrated comes with reading the story/solving the problems). Lastly, two attention checks were used in this study, with the first occurring in for participants when answering measures after the narrative or non-narrative task. The second and final check was offered to participants to self-report if they had been able to maintain attention. This was written to allow participants to self-disclose they had lost attention during their participation and ensure quality of data. Finally, any scales given to participants had a random presentation of question order to avoid order effects.

Demographics. Finally, a small demographics questionnaire was given as the last measures in the study to collect data on age, gender, ethnicity, and the student's research system identification code to ensure that credit was properly given as compensation.

RESULTS

The data was analyzed using SPSS version 29, along with the PROCESS v4.2 extension for SPSS (Hayes, 2017). The PROCESS extension was used to evaluate the research question of interest to determine if narrative engagement served as a mediation between cognitive dissonance and the resulting attitudinal change. Additionally, it was used test the individual hypotheses that included each different narrative engagement measure (transportation, audience response, and boundary expansion) to allow for both the direct and indirect (mediation) effects to be assessed.

Data Cleaning

The initial sample collected for this study (N = 112) was cleaned for removal of participants that either were outliers in time duration spent or failed attention checks. Further, the variance of participants' answer was assessed for the narrative engagement measures to ensure that none of the remaining participants provided outlier responses. This did not identify any further participants that needed to be cleaned from the data and consequently left the final sample (N = 87).

Table 1 *Reliability of variables and descriptive statistics*

	n	α	M	SD
Pre-Test Tuition Attitudes	87	0.903	2.69	1.12
Post-Test Tuition Attitudes	87	0.904	2.58	1.04
Psychological Discomfort	87	0.898	3.25	1.71
Frustration (Narrative)	44	0.824	2.58	1.30
Frustration (Math)	43	0.809	2.87	1.75
Audience Response	44	0.929	4.19	1.24
Transportation	44	0.842	4.30	0.90
Boundary Expansion	44	0.938	5.45	2.28

Reliability Analysis

A reliability analysis was conducted on the variables measured in the study to determine the internal consistency of the scales used (see Table 1). The results indicated that all scales exhibited satisfactory to excellent reliability. The pre-test and post-test tuition attitudes scales demonstrated high reliability, as did the psychological discomfort scale. The frustration scales for both the narrative and math versions displayed acceptable reliability. The narrative engagement measures, which include audience response, transportation, and boundary expansion, all showed good to excellent reliability. Notably, the different sample sizes occurred because participants in the non-narrative condition did not receive narrative engagement measures. Overall, the high Cronbach's alpha values indicate that the scales used in this study are reliable measures of their respective constructs (see Table 1).

Setting Comparison

To confirm that the different modalities the study was conducted in did not have a significant difference on the participants, an independent samples t-test was conducted to compare the psychological discomfort experienced in in-person (N = 65) and online (N = 22) settings. The mean discomfort for the in-person group was 3.08 (SD = 1.53), while the online group had a mean of 3.74 (SD = 2.12). Levene's test for equality of variances indicated a violation of the assumption of equal variances (F = 6.97, p = .010), so the t-test results not assuming equal variances were used. The t-test revealed no significant difference in psychological discomfort between the two settings, t(28.8) = -1.35, p = .188, with a mean difference of -0.660 (95% CI: -1.66, 0.341). The effect sizes were small to moderate (Cohen's d = -0.390) and confidence intervals including zero which indicated no substantial effect of the setting modality on psychological discomfort. Hence, the psychological discomfort experienced

by participants did not significantly differ between in-person and online settings, suggesting that the mode of study does not impact the level of psychological discomfort.

Psychological Discomfort Manipulation Check

A manipulation check was conducted to assess whether the level of choice in the essay condition (low versus high choice) had a significant impact on the psychological discomfort experienced during the dissonance induction task. An independent samples t-test compared the psychological discomfort experienced in the low choice (N = 41, M = 3.49, SD = 1.76) and high choice (N = 46, M = 3.04, SD = 1.65) conditions. Levene's test indicated equal variances (F = 0.539, p = 0.465), so the t-test results assuming equal variances were used. The t-test results showed no significant difference in psychological discomfort between the low choice and high choice conditions, $t(85) = 1.235$, p = 0.220, with a mean difference of 0.452 (95% CI: -0.275, 1.178) and a standard error difference of 0.366. The effect sizes were small: Cohen's d = 0.265 (95% CI: -0.158, 0.687). These results indicate no significant difference in psychological discomfort between the two conditions, suggesting that the degree of choice provided in the essay task did not significantly affect the level of psychological discomfort experienced.

Attitudinal Change Analysis

Due to the failed manipulation check for psychological discomfort (dissonance induction), a paired samples t-test was conducted to compare tuition attitudes before and after the experimental interventions to evaluate if the overall attitudinal change toward tuition changed in the study. The pre-test tuition attitudes had a mean of 2.69 (SD = 1.12), while the post-test tuition attitudes had a mean of 2.58 (SD = 1.04) (see Table 1). The correlation between pre-test and post-test tuition attitudes was strong (r = .766, $p < .001$) which indicated a significant relationship between the two measures. Despite this, the paired samples t-test revealed no

significant difference between pre-test and post-test tuition attitudes, $t(86) = 1.438$, $p = .154$. The mean difference was 0.115 (95% CI: -0.044, 0.273), with a standard error of the mean difference of 0.080. The effect size was small, with Cohen's $d = 0.154$ (95% CI: -0.058, 0.365) indicating that the intervention indeed had a minimal effect on changing tuition attitudes. These results suggest that there was no significant change in tuition attitudes from pre-test to post-test overall in the study as evidenced by the small mean difference and non-significant p-values.

To further explore this issue, an ANOVA analysis was conducted to evaluate the effects of both the narrative and essay conditions on post-test tuition attitudes with the pre-test tuition attitudes as a covariate to adjust for pre-existing differences in tuition attitudes before the experimental interventions. This model fit well and explained 61.2% of the variance in the post-test attitudes ($R^2 = 0.612$, *Adjusted* $R^2 = 0.588$). Additionally, the overall model was significant ($F = 25.595$, $p < .001$), with pre-test tuition attitudes showing a strong influence on post-test attitudes ($F = 116.587$, $p < .001$, $\eta^2 = 0.590$). Despite this, the independent variables (setting, narrative condition, essay condition) and their interaction did not significantly influence the post-test tuition attitudes of participants after controlling for pre-test attitudes. As a result, this model suggests that the different narrative and essay conditions did not significantly impact post-test tuition attitudes regardless of the intervention and that pre-test attitudes were the only significant predictor.

Frustration Analysis

An independent samples t-test was conducted to confirm that there was no significant difference in frustration levels between the narrative and non-narrative conditions. Participants in the narrative condition ($N = 44$) had a mean frustration score of 2.576 ($SD = 1.297$), while those in the non-narrative condition ($N = 43$) had a mean score of 2.868 ($SD = 1.749$). Levene's test

indicated unequal variances ($F = 4.409$, $p = .039$), so the t-test results assuming unequal variances were used. The t-test showed no significant difference in frustration levels between the two conditions, $t(77.422) = -0.884$, $p = .379$, with a mean difference of -0.292 (95% CI: -0.951, 0.366). The effect sizes were small, with Cohen's $d = -0.190$ (95% CI: -0.611, 0.232). These results confirm that there was no significant difference in frustration between the narrative and non-narrative conditions.

Analyses of Research Question and Hypotheses

To examine *RQ1* and determine if aspects of narrative engagement mediate the relationship between cognitive dissonance (psychological discomfort) and the resulting attitudinal change, a mediation model was evaluated using Model 4 mediation in the PROCESS macro for SPSS (Hayes, 2017). This model provided 95 percent confidence intervals (CIs) for the estimates with a bootstrap sample of 5000. The mediation model was analyzed with pre-test tuition attitudes included as a covariate to control for participants' initial beliefs on tuition. This model accounted for three different aspects of narrative engagement as simultaneous mediators: audience response, transportation, and boundary expansion.

The model can be seen in Figure 1 and while the overall model was significant, it demonstrated that cognitive dissonance (psychological discomfort) did not significantly predict any aspect of narrative engagement (audience response, transportation, boundary expansion). Furthermore, none of the aspects of narrative engagement significantly mediated the relationship between psychological discomfort and attitudinal change (post-test tuition attitudes). The direct effect of psychological discomfort on attitudinal change was not significant in the model. However, pre-test tuition attitudes were a significant predictor of the individual's post-test tuition attitudes in the model as a covariate, $b = 0.835$, $p < 0.0001$, 95% CI [0.605, 1.06]. These results

suggest that narrative engagement does not mediate the relationship between psychological discomfort and attitudinal change in this sample. Instead, the attitudes that participants held toward tuition remained largely unchanged throughout the study, aligning with the earlier analysis and explaining the overall significance of the model. Therefore, the aspects of narrative engagement considered do not explain how psychological discomfort influences attitudinal change.

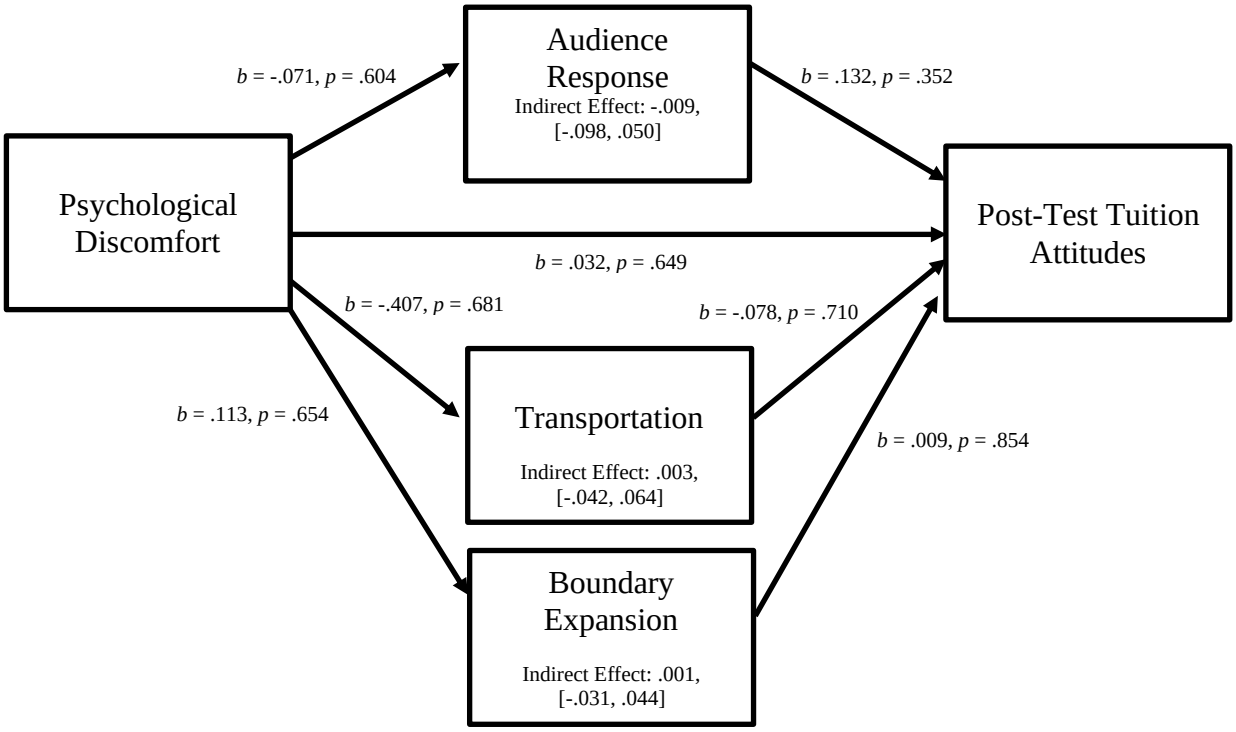

Figure 1 Mediation of cognitive dissonance (psychological discomfort) on attitudinal change via narrative engagement (audience response, transportation, and boundary expansion). 95 percent confidence intervals were created with 5000 bootstrap samples. For post-test attitudes toward tuition, overall model $R^2 = 0.601$, $F\ (5, 38) = 11.44$, $p < .0001$.

To assess *H1*, an independent samples t-test was conducted to compare narrative engagement (audience response, transportation, and boundary expansion) between individuals in a dissonant state (high choice essay condition) and those in a consonant state (low choice essay

condition). Results indicated no significant differences in transportation, boundary expansion, or audience response between the two groups. For transportation, the mean difference was 0.149 (p = .586), with individuals in the low choice condition (M = 4.38, SD = 0.84) not significantly different from those in the high choice condition (M = 4.23, SD = 0.96). Boundary expansion also showed no significant difference (mean difference = -0.624, p = .373) between means in the low choice condition (M =5.12, SD = 2.38) and high choice condition (M = 5.75, SD = 2.20). Similarly, audience response did not significantly differ (mean difference = -0.136, p = .723) between the low choice (M = 4.11, SD = 1.30) and high choice conditions (M = 4.25, SD = 1.22). These results indicate that *H1* was not supported, as being in the high choice condition for the essay task (greater dissonant state) did not significantly influence narrative engagement in terms of all three measures used in transportation, boundary expansion, or audience response.

To test *H2* and examine if individuals who reported greater narrative engagement displayed reduced attitudinal change, a linear regression was conducted. The model accounted for a significant amount of variance in post-tuition attitudes (R^2 = 0.599, *adjusted* R^2 = 0.557, $F(4, 39) = 14.543$, $p < .001$). Among the predictors however, none of the narrative engagement variables significantly predict reduced attitudinal change. Audience response (β = 0.170, p = .934), transportation (β = -0.077, p = .694), and boundary expansion (β = 0.028, p = .810) all showed no significant effect. In a similar manner to the rest of the results, participants' pre-existing attitudes towards tuition significantly predicted post-test attitudes (β = 0.759, $p < .001$), further suggesting that initial attitudes were responsible for subsequent attitudes toward tuition. These results suggest that greater narrative engagement did not lead to reduced attitudinal change in this sample. Thus, *H2* was not supported by the findings and indicated that narrative engagement did not influence attitude shifts towards tuition among participants in this study.

DISCUSSION

This study intended to examine if narrative engagement could provide an alternative process for resolving cognitive dissonance in individuals under the predictions of TEBOTS (Slater et al., 2014). Specifically, it was expected that dissonance may be resolved when interpreted as a threat to self that occurs from the psychological discomfort experienced in dissonant individuals. This would then allow for narrative engagement to serve to expand beyond the self, as described by TEBOTS, and allow for individuals to resolve the psychological discomfort they are motivated to resolve under cognitive dissonance theory. However, this relationship was not demonstrated in this study, and largely could not be evaluated due to a failure to induce dissonance in participants. This could be seen as individuals did not report greater psychological discomfort in the high choice condition for the counter-attitudinal essay, which should have led to greater psychological discomfort due to feeling responsible for consequences of their choice (Elliot & Devine, 1994; Cooper & Fazio, 1984). Consequently, while the findings did not support any of the research questions or experimental hypotheses, it is important to note that this may be due to the limitations of the current study rather than the absence of the relationships themselves. Moreover, when considering the findings of the PROCESS model analysis, it was determined that the only significant predictor of the participants' post-test tuition attitude was their pre-test tuition attitude. This relationship between pre-existing tuition attitudes and participants final attitudes was consistent with the attitude change analysis and linear regression predicting post-test attitudes. As a result, it should be taken into consideration that attitudes toward tuition in present day college students may be further anchored toward their pre-existing beliefs than they have been previously when the use of counter-attitudinal tuition essays was established as a dissonance induction.

By the same token, this study demonstrated replication issues with the accepted induced-choice paradigm task of having college students author counter-attitudinal essays as a form of dissonance induction. This is an issue that has existed with the operationalization of cognitive dissonance induction due to the strong social contextualization of the essay topics (Vaidis & Bran, 2019). Furthermore, the topic utilized in the current study of increasing tuition at universities has become highly emotional and intense for many individuals and potentially made it a challenging subject for such experiments. Further, in a systematic literature review of student loan debt and mental health, Sinha et al. (2024) found the rising cost of higher education is a deeply personal and often distressing issue for students and their families when dealing with the burden of increasing significant financial strain. Moreover, it was highlighted that themes of stress, anxiety, and depression dominate the literature on student loans and that the consequences of this financial burden extend beyond mental health to negatively affect overall wellbeing. The results of the present study potentially align with these broader findings in the literature that indicate student loan burdens potentially have negative detrimental impacts on individuals cognitive processing. This intense emotional response can overshadow the internal analysis required in a dissonance induction task and instead cause reactance in the individual rather than cognitive dissonance if the psychological discomfort is associated with a loss of freedom (Rosenberg & Siegel, 2018). A potential explanation that should be explored by future work, is if students are interpreting the raised tuition as a further loss of financial freedom, then the psychological discomfort generated by the counter-attitudinal essay task could instead be driving them toward reactance. As a result, while the induced-choice paradigm remains a valuable tool, its application to the topic of tuition increases may be problematic and require careful consideration for potentially alternative approaches to ensure the validity and reliability of the

future research.

A potential contribution that can be gained from the present study is that the task frustration measures from Peters et al. (1980) were successfully adapted and applied to the context of narratives to ensure that the differences between narrative and non-narrative conditions were not significantly frustrating. This provides future studies with the opportunity to assess the use of alternative non-narrative conditions outside of the basic arithmetic problems that were used in the current study. Additionally, consideration for also administering this scale following the counter-attitudinal essay task in combination with the psychological discomfort manipulation check could elucidate further insight into if student participants are finding this task significantly frustrating, and whether this frustration is impacting the cognitive dissonance response seen in individuals. This methodological refinement could enhance the robustness of cognitive dissonance findings and provide clearer insights into the mechanisms underlying cognitive dissonance states and attitudinal change.

Moreover, based on the findings of the current study, it is recommended that cognitive dissonance research further evaluates using tuition-based counter-attitudinal essays before continuing the use of this accepted dissonance induction method in future work related to the theory. As previously discussed, this topic has potentially shifted too far in severity to be used to properly induce dissonance in present day college students and instead now may cause reactance when asking students to author essays in favor of further raising tuition. An additional consideration that should be examined in future studies is the work of Ellithorpe et al. (2014) to examine the type of parenting styles that the current college aged population typically experienced growing up. This is relevant because certain parenting styles may influence how individuals respond to dissonance-inducing tasks. For instance in the latter study, it was seen that

individuals raised in authoritarian households experienced greater dissonance responses than control conditions. This supported the New Look Model's assertion that aversive consequences the individual feels responsible for will increase the dissonance response experienced, as authoritarian parenting emphasizes strict rules with consequences for the individual for failing to adhere to their parents (Cooper & Fazio, 1984). The study did not find that permissive parenting styles moderated the dissonance response, however a limitation of the study was the consideration of a floor effect due to the low mean of the permissive parenting in the sample (Ellithorpe et al., 2014). Provided that there has been a rise of permissive parenting styles, it is worth considering that the previous considerations that college students are more likely to come from authoritarian households may no longer be applicable. Thus, a potential alternative explanation of the lack of dissonance induction seen in this study could be explained through a rise in permissive parenting styles (such as laissez-faire) that do not emphasize consequences for student participants authoring the counter-attitudinal essay and thus not experiencing the predicted dissonance response. Consequently, it is recommended that future work consider adding the parenting measures used in Ellithorpe et al. (2014) to examine if permissive parenting styles have become more common among college-aged individuals. If this rise is indeed demonstrated, then further work should again be done to evaluate if permissive parenting can indeed have a negative moderating effect on dissonance response with a larger mean for permissive parenting.

LIMITATIONS OF THE STUDY

The original sample collected for this study was intended to be solely conducted in an in-person setting to ensure that participants were present with the researcher in the same room where they knew they were being observed when authoring the counter-attitudinal essay, following the New Look Model of dissonance requiring consequence (Cooper & Fazio, 1984). However, significant data collection issues were experienced during the study in the efforts to reach the original intended sample of 200 participants. As a result, after 73 participants were collected in-person, in an attempt to come closer to the originally estimated 128 participants needed for power the study additionally collected 39 participants using an identical copy of the Qualtrics form administered on the computer in the in-person setting. A potential limitation of this partial online data collection used to complete the study is the previously demonstrated need of aversive consequences to increase the dissonance response of individuals and a potential concern of conducting this work on dissonance in an online setting could potentially alleviate much of the psychological discomfort that results from dissonance. While analysis of this setting difference did not display any immediate significant differences for the present study, it should be of note that this sample may not have achieved enough power to elucidate these differences and that this study should not be used as reference to conduct dissonance inductions online. Of particular concern with this decision is the difference that was seen in the loss of data points that needed to be removed during data cleaning between the two different settings. A total of 8 of the 73 (11.0%) participants were needed to be removed for outliers in time duration spent or due to failed attention checks, while in comparison to the online setting a total of 17 of the 39 (43.6%) were removed for the same criteria. This stark difference in the removal of participants is concerning despite there not being a significant difference seen in participant responses that

remained after cleaning, as it potentially lends to the concern that online participants were less likely to experience consequences for their actions without a researcher present during the study. Another limitation of this study is the use of a semantic differential to evaluate changes in participants' attitudes towards tuition costs in general. Since the counter-attitudinal essays written by participants specifically addressed increasing tuition costs, future studies should focus on evaluating participants' attitudes towards increasing tuition costs specifically. This would ensure that the construct being measured in the semantic differential aligns with the topic participants wrote about in the dissonance induction essays. Finally, this study is also still underpowered (N = 87) after data cleaning was conducted, and further work will be needed to confirm any of the findings that were documented as a result.

BIBLIOGRAPHY

Boyd, B. (2018). The evolution of stories: From mimesis to language, from fact to fiction. *WIREs Cognitive Science*, *9*(1), e1444. https://doi.org/10.1002/wcs.1444

Brehm, J. W., & Cohen, A. R. (1962). Explorations in cognitive dissonance. John Wiley & Sons Inc. https://doi-org.proxy1.cl.msu.edu/10.1037/11622-000

Brown, W. J. (2020). Identification. The International Encyclopedia of Media Psychology, 1–8. https://doi.org/10.1002/9781119011071.iemp0126

Cohen, J. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. Mass Communication and Society, 4(3), 245–264. https://doi.org/10.1207/s15327825mcs0403_01

Cooper, J., & Fazio, R. H. (1984). A new look at dissonance theory. Advances in Experimental Social Psychology, 17, 229–266. https://doi.org/10.1016/s0065-2601(08)60121-5

Crites, S. L., Fabrigar, L. R., & Petty, R. E. (1994). Measuring the affective and cognitive properties of attitudes: Conceptual and methodological issues. Personality and Social Psychology Bulletin, 20(6), 619–634. https://doi.org/10.1177/0146167294206001

Elliot, A. J., & Devine, P. G. (1994). On the motivational nature of cognitive dissonance: Dissonance as psychological discomfort. Journal of personality and social psychology, 67(3), 382-394. https://doi-org.proxy1.cl.msu.edu/10.1037/0022-3514.67.3.382

Ellithorpe, M. E., Ewoldsen, D. R., & Fazio, R. H. (2014). Socialization of dissonance processes: Reports of parenting style experienced during childhood moderate dissonance reactions. *Social Psychological and Personality Science*, *5*(1), 84-91. https://doi.org/10.1177/1948550613486675

Erikson, E. H. (1968). *Identity Youth and Crisis*. W. W. Norton & Company.

Festinger, L. (1957). *A theory of cognitive dissonance.* Stanford University Press.

Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. The journal of abnormal and social psychology, 58(2), 203–210. https://doi.org/10.1037/h0041593

Fisher, W. R. (1984). Narration as a human communication paradigm: The case of public moral argument. Communication Monographs, 51, 1–22. https://doi.org/10.1080/03637758409390180

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. Journal of Personality and Social Psychology, 79(5), 701–721. https://doi.org/10.1037/0022-3514.79.5.701

Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. *Discourse Processes*, *38*(2), 247–266. https://doi.org/10.1207/s15326950dp3802_5

Hayes, A. F. (2017). Introduction to mediation, moderation, and conditional process analysis, second edition: A regression-based approach. Guilford Press.

Irimiás, A., Mitev, A. Z., & Michalkó, G. (2021). Narrative transportation and travel: The mediating role of escapism and immersion. *Tourism Management Perspectives*, *38*, 100793. https://doi.org/10.1016/j.tmp.2021.100793

Johnson, B. K., Ewoldsen, D. R., & Slater, M. D. (2015). Self-control depletion and narrative: Testing a prediction of the TEBOTS model. Media Psychology, 18(2), 196-220. https://doi.org/10.1080/15213269.2014.978872

Johnson, B. K., Slater, M. D., Silver, N. A., & Ewoldsen, D. R. (2016). Entertainment and expanding boundaries of the self: Relief from the constraints of the everyday. Journal of Communication, 66(3), 386-408. https://doi.org/10.1111/jcom.12228

Katz, E., & Foulkes, D. (1962). On the use of the mass media as "escape": Clarification of a concept. *Public Opinion Quarterly*, *26*(3), 377. https://doi.org/10.1086/267111

Oliver, M. B. (2008). Tender affective states as predictors of entertainment preference. Journal of communication, 58(1), 40-61. https://doi.org/10.1111/j.1460-2466.2007.00373.x

Oliver, M. B., & Bartsch, A. (2010). Appreciation as audience response: Exploring entertainment gratifications beyond hedonism. Human communication research, 36(1), 53-81. https://doi.org/10.1111/j.1468-2958.2009.01368.x

Peters, L. H., O'Connor, E. J., & Rudolf, C. J. (1980). The behavioral and affective consequences of performance-relevant situational variables. Organizational behavior and human performance, 25(1), 79-96. https://doi.org/10.1016/0030-5073(80)90026-4

Rieger, D., & Schneider, F. M. (2022). Testing the TEBOTS model in self-threatening situations: The role of narratives in the face of ostracism and mortality. Frontiers in communication, 7. https://doi.org/10.3389/fcomm.2022.967464

Rosenberg, B. D., & Siegel, J. T. (2018). A 50-year review of psychological reactance theory: Do not read this article. *Motivation Science*, *4*(4), 281–300. https://doi.org/10.1037/mot0000091

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066x.55.1.68

Singhal, A., & Rogers, E. M. (1999). Entertainment-education: A communication strategy for social change. Routledge. https://doi.org/10.4324/9781410607119

Sinha, G. R., Viswanathan, M., & Larrison, C. R. (2024). Student loan debt and mental health: A comprehensive review of scholarly literature from 1900 to 2019. *Journal of Evidence-Based Social Work*, *21*(3), 363–393. https://doi.org/10.1080/26408066.2023.229901

Slater, M. D., Johnson, B. K., Cohen, J., Comello, M. L., & Ewoldsen, D. R. (2014). Temporarily expanding the boundaries of the self: Motivations for entering the story world and implications for narrative effects. Journal of communication, 64(3), 439–455. https://doi.org/10.1111/jcom.12100

Vaidis, D. C., & Bran, A. (2019). Respectable challenges to respectable theory: Cognitive dissonance theory requires conceptualization clarification and operational tools. *Frontiers in Psychology*, *10*, 1189. https://doi.org/10.3389/fpsyg.2019.01189

Vorderer, P., Klimmt, C., & Ritterfeld, U. (2004). Enjoyment: At the heart of media entertainment. Communication theory, 14(4), 388-408. https://doi.org/10.1111/j.1468-2885.2004.tb00321.x

Wolfers, L. N., & Schneider, F. M. (2021). Using media for coping: a scoping review. Commun. Res. 48, 1210–1234. https://doi.org/10.1177/0093650220939778

Zanna, M. P., & Cooper, J. (1974). Dissonance and the pill: An attribution approach to studying the arousal properties of dissonance. Journal of personality and social psychology, 29(5), 703–709. https://doi.org/10.1037/h0036651

APPENDIX

Full List of Measures

Pre-Test Tuition Attitudes – α = 0.903

Post-Test Tuition Attitudes – α = 0.904

Semantic Differential -3 to 3 presented with adjectives anchored at -3 (negative adjective) and 3 (positive adjective)

Please rate your attitude towards **tuition costs** by clicking the circle on each line that best represents your position on each pair of adjectives below:

- Bad - Good
- Dislike - Like
- Foolish - Wise
- Negative - Positive
- Undesirable - Desirable
- Harmful – Beneficial

Psychological Discomfort – α = 0.898

1 = Does not apply at all – 7 = Applies very much

Please indicate how you are feeling right now by selecting an option for each of the below.

- Uncomfortable
- Uneasy
- Bothered

Frustration (Narrative) – α = 0.824

1 = Not at all – 7 = Very much

Please indicate your agreement with the following statements.

- Trying to read the story was a very frustrating experience.
- Being frustrated comes with reading the story.
- Overall, I experienced a lot of frustration while reading the story.

Frustration (Math) – α = 0.809

1 = Not at all – 7 = Very much

Please indicate your agreement with the following statements.

- Trying to solve the problems was a very frustrating experience.

- Being frustrated comes with solving the problems.
- Overall, I experienced a lot of frustration while solving the problems.

Audience Response – α = 0.929

1 = Strongly disagree – 7 = Strongly agree

Please indicate your agreement with the following statements.

- It was fun for me to read this story.
- I had a good time reading this story.
- The story was entertaining.
- I found this story to be very meaningful.
- I was moved by this story.
- The story was thought provoking.
- This story will stick with me for a long time.
- I know I will never forget this story.
- The story left me with a lasting impression.
- I was at the edge of my seat while reading this story.
- This was a heart-pounding kind of story.
- The story was suspenseful.

Transportation – α = 0.842

1 = Not at all – 7 = Very much

Please indicate your agreement with the following statements.

- While I was reading the story, I could easily picture the events in it taking place.
- While I was reading the story, activity going on in the room around me was on my mind.
- I could picture myself in the scene of the events described in the story.
- I was mentally involved in the story while reading it.
- After finishing the story, I found it easy to put it out of my mind. (Reverse Coded)
- I wanted to learn how the story ended.
- The story affected me emotionally.
- I found myself thinking of ways the story could have turned out differently.
- I found my mind wandering while reading the story. (Reverse Coded)
- The events in the story are relevant to my everyday life.

- The events in the story have changed my life.
- While reading the story I had a vivid image of the boy, Noni.
- While reading the story I had a vivid image of the dog, Nimuk.
- While reading the story I had a vivid image of the floating iceberg.
- While reading the story I had a vivid image of the seaplane pilot.

Boundary Expansion – $\alpha = 0.938$

0 = Not at all – 10 = Very much

Please indicate your agreement with the following statements.

When you read the story, did you experience:

- … relationships between people that are different from relationships in your life?
- … what it might be like to relate others in ways different that you normally do yourself?
- … getting to know people you would never otherwise know?
- …what it would be like to have skills and abilities that are different from your own?
- … what it would be like to have emotional and interpersonal skills that are different from your own?
- …doing things the characters did, that you haven't done before?
- … being in a time or place other than where you are now?
- … facing situations and challenges other than those in your own life?
- … what it was like to have someone else's thoughts and feelings?
- … what it was like to be someone else (that is, one or more of the characters in the story)?

Attention Checks

1. First Attention Check

Please select 'strongly agree'. We want to make sure that we have your attention.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

2. Final Self-Report Attention Check

We care about the quality of our survey data. For us to get the most accurate measures of your opinions, it is important that you provided thoughtful answers to each question and maintained focus without distraction for the study's duration.

Do you feel that you were able to provide thoughtful answers and were able to avoid distraction from the study during your participation? Your honesty is appreciated and any response to this question will be sufficient for full completion of the study.

- I cannot promise either way
- No, I was not able to do this
- Yes, I was able to do this

Demographics

1. What is your sex?
    - Male
    - Female
    - Non-binary/ Other
    - Prefer not to say
2. What is your age?
3. What is your ethnicity?
    - Asian
    - Black/African American
    - Hispanic/Latino
    - Native American
    - Non-Hispanic White/Caucasian
    - Pacific Islander
    - Multiracial
    - Other

Counter-Attitudinal Tuition Essay Condition Prompts

Low Choice Condition

Michigan State University has formed a committee to determine whether tuition should be raised for the next year. The committee is gathering student thoughts on this issue. The committee wants to see student arguments on both sides of the issue to facilitate their decision.

You have been assigned to write an essay **in favor of increasing tuition.**
(Participant Option)

- I have read the instructions and I am ready to proceed.

High Choice Condition

Michigan State University has formed a committee to determine whether tuition should be raised for the next year. The committee would like to gather student thoughts on this issue. The committee wants to see student arguments on both sides of the issue to facilitate their decision.

At this point in the data collection, we have already met our quota for essays arguing against increasing tuition. We would like you to write an essay in favor of increasing tuition.

Would you be willing to write an **in favor of increasing tuition**?
(Participant Options)

- I have read the instructions and I am willing to write an essay in favor of a tuition increase.
- I refuse to write an essay on this topic.

Prompt During Essay Authorship

Please author an essay to present a well-reasoned argument supporting the 12% tuition increase from a student perspective.

Stimuli

Narrative Stimulus

Each paragraph was shown on a separate screen to participants.

"Two Were Left"

by Hugh B. Cave

On the third night of hunger, Noni thought of the dog. Nothing lived upon that floating island of ice except himself and the dog. When the ice broke up, Noni had lost his sled, his food, his furs, even his knife. He had saved only Nimuk, his great devoted husky. And now the two, completely alone, marooned on the ice, eyed each other warily. Noni's love for Nimuk was real, very real. It was as real as hunger and cold nights and the gnawing pain of his injured leg.

But the men of his village killed their dogs when food was scarce, didn't they? And they killed them without thinking about it twice. He told himself that Nimuk, when hungry enough, would begin to seek food. "One of us will soon be devouring the other," Noni thought. "So..." He could not kill the dog with his bare hands. Nimuk was powerful and much less tired than he. A weapon, then, was needed.

Noni took off his mittens and unstrapped the brace from his injured leg. When he had hurt his leg a few weeks before, he had made the brace from bits of harness and two thin strips of iron. He kneeled and wedged one of the iron strips into a crack in the ice. Then he began to rub the other iron strip against it with firm, slow strokes.

Nimuk watched him, and it seemed to Noni that the dog's eyes glowed more brightly. He kept working, trying not to remember why. The strip of iron had an edge now. It had begun to take shape. By daylight his task was completed. He had finished making a knife!

Noni pulled the knife from the ice and felt its edge. The sun's glare reflected from it. Its brightness stabbed at his eyes and, for an instant, blinded him momentarily. Noni forced himself to call the dog. "Here, Nimuk!" he called softly.

The dog suspiciously watched him. "Come here," Noni called. Nimuk came closer. Noni saw fear in the animal's gaze. He could see hunger and suffering in the animal's labored breathing and awkward movements. Noni's heart wept. He hated himself and fought against it.

Closer Nimuk came, aware of Noni's intentions. Now Noni felt a thickening in his throat. He saw the dog's eyes and they were pools of suffering. Now! Now was the time to strike! A great sob shook Noni's kneeling body. He cursed the knife. He swayed blindly and threw the

knife far away from him. With empty hands outstretched, he stumbled toward the dog and fell.

The dog growled as he circled the boy's body. And now Noni was sick with fear. In flinging away the knife, he had left himself defenseless. He was too weak to crawl after it now. He was at Nimuk's mercy. And Nimuk was hungry. The dog had circled him and was creeping up from behind him. Noni heard a rattle in the animal's throat.

Noni shut his eyes, praying that the attack might be swift. He felt the dog's feet against his leg, the hot rush of Nimuk's breath against his neck. A scream gathered in the boy's throat. Then he felt the dog's hot tongue licking his face. Noni's eyes opened. Crying softly, he thrust out an arm and drew the dog's head down against his own.

The plane came out of the south an hour later. Its pilot was a young man in the coast patrol. He looked down and saw the large floating iceberg. And he saw something flashing. The sun was gleaming off of something shiny, which moved.

His curiosity aroused, the pilot circled and flew lower. Now he saw, in the shadow of the mountain of ice, a dark, still shape that appeared to be human. Or were there two shapes? He set his seaplane down on the water and investigated. There were two shapes, a boy and a dog.

The boy was unconscious but alive. The dog whined feebly but was too weak to move. The gleaming object, which had caught the pilot's attention, was a crudely--made knife. It was stuck, point down, into the ice a short distance away, and was quivering in the wind.

The End

Non-Narrative (Math) Stimulus

Questions below were randomized after each minute to give participant problems for entire 9-minute duration. Parentheses contain multiple choice answers offered to participants.

3 + 3 = ?, (9, 6, 1)

3 + 6 = ?, (9, 8, 4)

2 + 5 = ?, (7, 4, 8)

1 + 5 = ?, (8, 2, 6)

10 + 10 = ?, (1, 20, 30)

3 + 0 = ?, (30, 3, 6)

4 + 2 = ?, (5, 6, 9)

3 - 3 = ?, (0, 3, 1)

5 - 3 = ?, (2, 1, 4)

5 - 1 = ?, (2, 1, 4)

2 - 1 = ?, (2, 1, 4)

7 - 3 = ?, (2, 1, 4)

4 - 1 = ?, (2, 4, 3)

8 - 1 = ?, (5, 3, 7)

2 - 2 = ?, (2, 1, 0)

7 - 6 = ?, (2, 1, 4)

5 x 1 = ?, (5, 1, 4)

0 x 3 = ?, (9, 1, 0)

2 x 2 = ?, (2, 1, 4)

10 - 9 = ?, (2, 1, 4)

3 x 2 = ?, (10, 7, 6)

10 - 9 = ?, (2, 1, 4)

2 x 4 = ?, (2, 1, 8)

5 - 0 = ?, (2, 1, 5)

2 - 1 = ?, (2, 1, 8)

1 + 3 = ?, (2, 1, 4)

4 + 3 = ?, (2, 1, 7)

0 + 2 = ?, (2, 9, 7)

5 + 5 = ?, (3, 10, 7)

6 - 3 = ?, (3, 5, 7)

2 + 8 = ?, (2, 10, 3)

7 - 4 = ?, (3, 9, 7)

5 x 1 = ?, (5, 1, 6)

1 + 3 = ?, (2, 1, 4)

5 x 3 = ?, (9, 15, 6)

2 + 2 = ?, (2, 0, 4)

7 + 3 = ?, (2, 10, 3)

1 - 0 = ?, (9, 1, 7)

9 - 7 = ?, (2, 1, 4)

3 - 1 = ?, (2, 1, 4)

3 + 3 = ?, (0, 7, 6)

7 x 1 = ?, (5, 1, 7)

2 - 2 = ?, (9, 1, 0)

1 + 6 = ?, (0, 1, 7)

2 - 2 = ?, (2, 10, 0)

9 - 8 = ?, (2, 1, 4)

9 - 6 = ?, (2, 3, 7)

5 + 3 = ?, (9, 3, 8)

7 - 0 = ?, (2, 9, 7)

1 x 3 = ?, (2, 1, 3)

2 x 10 = ?, (2, 1, 20)

1 x 10 = ?, (2, 10, 4)

10 x 3 = ?, (8, 0, 30)

2 + 1 = ?, (7, 9, 3)

8 + 2 = ?, (7, 10, 6)

5 + 6 = ?, (8, 11, 3)

7 + 7 = ?, (14, 1, 4)

8 - 8 = ?, (8, 9, 0)

0 + 0 = ?, (0, 11, 12)

9 + 3 = ?, (4, 12, 6)

5 x 3 = ?, (8, 15, 6)

5 + 9 = ?, (6, 14, 4)

10 - 3 = ?, (2, 0, 7)

8 + 1 = ?, (9, 1, 0)

4 - 3 = ?, (2, 1, 4)

11 - 3 = ?, (8, 5, 4)

5 x 5 = ?, (20, 25, 30)

7 x 3 = ?, (6, 30, 21)

2 x 2 = ?, (2, 1, 4)

4 x 4 = ?, (16, 7, 4)

5 x 2 = ?, (2, 1, 10)

5 - 3 = ?, (2, 1, 4)

5 - 0 = ?, (3, 1, 5)

10 - 3 = ?, (9, 1, 7)

10 x 2 = ?, (0, 10, 20)

8 x 4 = ?, (1, 32, 16)

3 x 0 = ?, (9, 0, 3)

2 + 8 = ?, (9, 10, 7)

1 + 1 = ?, (9, 2, 6)

7 + 4 = ?, (4, 3, 11)

1 - 1 = ?, (10, 1, 0)

4 - 1 = ?, (3, 0, 2)

9 + 9 = ?, (14, 18, 7)

6 x 2 = ?, (3, 10, 12)

3 x 5 = ?, (15, 25, 35)

9 - 8 = ?, (2, 1, 4)

9 x 1 = ?, (9, 10, 7)

6 + 2 = ?, (8, 3, 10)

11 - 3 = ?, (1, 10, 8)

7 x 2 = ?, (22, 10, 14)

5 + 1 = ?, (6, 10, 9)

2 x 2 = ?, (0, 4, 7)

8 - 3 = ?, (2, 7, 5)

4 - 3 = ?, (1, 0, 3)

12 + 1 = ?, (7, 13, 17)

9 - 7 = ?, (9, 2, 7)

3 x 6 = ?, (9, 18, 36)

11 x 3 = ?, (22, 33, 11)

9 - 3 = ?, (8, 5, 6)

2 x 4 = ?, (6, 10, 8)